EXPLORING THE EMPLOYER PERSPECTIVE ON THE IMPLEMENTATION OF REGISTERED NURSE PRESCRIBING IN NOVA SCOTIA

by

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Submitted in partial fulfilment of the requirements
for the degree of Master of Science

at

Dalhousie University
Halifax, Nova Scotia
March 2019

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ABSTRACT

Nurse prescribing has been implemented internationally for over 20 years in response to growing demands for healthcare services and demographic shifts. Nova Scotia is examining opportunities for innovative healthcare delivery models that optimize the scopes of practice of existing health professionals. The objective of this study was to explore the perspectives of employers on the implementation of registered nurse (RN) prescribing in Nova Scotia.

Using a qualitative descriptive design, employers from primary healthcare, long-term care, home care and mental health were interviewed. Results revealed that employers believe that RN prescribing will improve access to timely and appropriate care, specifically in the areas of palliative care, wound care, and medication management, as well as promote interprofessional practice, ensure patient safety, and offer continuity between the nurse and the patient. By exploring known barriers and facilitators, these findings support policies that will impact Nova Scotian's access to timely and appropriate healthcare services.

LIST OF ABBREVIATIONS USED

DHW	Department of Health and Wellness
CIHI	Canadian Institute for Health Information
CNA	Canadian Nurses Association
CPD	Continuing Professional Development
CRNNS	College of Registered Nurses of Nova Scotia
NHS	National Health Service
NMP	Non-medical prescribing
NP	Nurse Practitioner(s)
NSHA	Nova Scotia Health Authority
RN	Registered Nurse(s)
SRNA	Saskatchewan Registered Nurses Association
UK	United Kingdom

ACKNOWLEDGMENTS

The completion of this thesis would not have been possible without the kind and continuous support of my supervisor, Dr. Ruth Martin-Misener. I am extremely thankful for her guidance and encouragement during the more difficult moments of this degree. I would also like to thank my thesis committee members, Dr. Marilyn MacDonald and Dr. Kelly Lackie, for their patience and expertise.

I would like to thank my mother, Martine, for the hours spent editing this work and the moments spent on the phone reassuring me in times of distress. The support of my family has been integral to the completion of this work.

Finally, I would like to thank my partner, Colin. I am grateful for the love and support he has provided me on a daily basis throughout this educational adventure. He has shared in the successes and the tears of the many milestones of this degree, and I am excited share the next chapter of my life with him and our many pets.

CHAPTER 1: INTRODUCTION

Introduction of Registered Nurse Prescribing

Prescribing by a nurse was first proposed in the Cumberledge Report in the United Kingdom (UK) in 1986 (Royal College of Nursing, 2012). The report recommended that community-based nurses be allowed to prescribe from a limited list of medications in order to improve patient care and utilize resources more effectively (Cope, 2016). Community nurses were thus granted the authority, in 1992, to prescribe from a limited formulary and within the context of a care plan. In 1998, following the success of prescribing rights for community nurses in the UK, it was announced that community nurses and health visitors (nurses who would visit patients in their homes) could independently prescribe from a Nurse Prescriber's Formulary. In 1999, what we now know as supplementary prescribing was introduced, and any qualified nurse partnered with an independent prescriber (i.e., physician) would be allowed to prescribe from the Nurse Prescriber's Formulary within a patient-specific clinical management plan. Many advances in prescribing were made over the following years and in Spring 2006, qualified nurse prescribers could independently prescribe any licensed medication for any medical condition. This became what is now known as independent prescribing (Cope, 2016). The early implementation of this practice has allowed the UK to have over 30,000 independent and supplementary nurse prescribers, along with a large body of knowledge and research available to countries or jurisdictions moving forward with the implementation of nurse prescribing (Royal College of Nursing, 2017).

Healthcare is undergoing change and modernization on a global scale due to workforce shortages, changing demographics, and resource constraints (Groves, 2012).

Health authorities worldwide have consequently implemented or are considering implementing a variation of nurse prescribing in order to conciliate growing needs and narrowing budgets. Many countries have similar reasons for implementing nurse prescribing, such as increasing the range of choices patients have for accessing healthcare, the appropriate use of healthcare worker expertise, easier and more efficient access to care, and improving patient care without compromising safety (Office of the Nursing Services Director, 2008; Watterson, Turner, Coull, & Murray, 2009; Welsh Assembly Government, 2011). Other outcomes of non-medical prescribing found in Wales and Scotland were the increased flexibility of healthcare teams working within the National Health Service (NHS) Trust and the increase in physicians' availability to pursue other tasks. Sweden opted to implement RN prescribing for similar reasons, including improvement of patient services, reduction of physician workload and ensuring access to a variety of healthcare professionals (Courtenay & Carey, 2008). Alternatively, the lack of access to healthcare, coupled with the shortage of physicians and nurse practitioners in rural areas, has pushed Canadian provinces to consider authorizing prescriptive authority for nurses (Canadian Nurses Association [CNA], 2014, 2015; Registered Nurses' Association of Ontario, 2016).

Common Models of Nurse Prescribing

Independent prescribing model. As defined by the Department of Health in England, independent prescribing is "prescribing by a practitioner (e.g. physician, dentist, nurse, pharmacist) responsible and accountable for the assessment of patients with undiagnosed or diagnosed conditions and for decisions about the clinical management required, including prescribing" (Department of Health, 2006, p.2). Independent nurse

prescribers may therefore prescribe any licensed medication, including certain controlled medications, for any medical condition that is within their area of competence and experience (Department of Health, 2006). The independent prescribing model offers the most flexibility, as it does not require a physician to establish a diagnosis or a clinical management plan. It also allows for prompt treatment of acute and minor illnesses, and improves patient access to healthcare professionals and treatments (Cooper et al., 2008a). Conversely, independent prescribing is the model that offers the least structure, and raises concerns regarding safety. Other concerns include, independent nurse prescribers may prescribe outside their area of competence or may lack the assessment and diagnostic skills necessary to safely and confidently prescribe (Cooper et al., 2008a). Nevertheless, the independent prescribing model offers nurses the most professional autonomy and is well established in England, Scotland, Ireland, and Wales (Drennan et. al., 2009; Watterson et al., 2009; Welsh Assembly Government, 2011).

Supplementary prescribing model. In the supplementary prescribing model, the physician conducts the initial assessment and diagnosis of the patient and creates a clinical management plan. The clinical management plan includes a list of medications that the nurse supplementary prescriber is authorized to prescribe, including controlled medications (Courtenay & Carey, 2008). This model, while particularly relevant for patient populations with long-term or chronic illnesses, is not suitable in settings such as emergency care or first contact care because a physician will not have established a clinical management plan for patients with acute or minor illnesses. As such, supplementary prescribing has been seen as restrictive and resource intensive (Cooper et al., 2008a; Scottish Executive Health Department, 2006). However, supplementary nurse

prescribing is useful for increasing a newly qualified nurse prescriber's confidence due to their more restrictive nature, or in settings where care is provided in a team-based approach (Scottish Executive Health Department, 2006). Physicians also tend to be more comfortable supporting a supplementary prescribing model, as they perceive it increases patient safety through a joint decision-making process (Cooper et al., 2008a). Many countries in the UK have both supplementary and independent nurse prescribers. Supplementary prescribing can be used as a stepping stone to independent prescribing, and both models require successfully fulfilling educational requirements (Royal College of Nursing, 2017).

Patient group directive model. In this model, clinical decision-making tools are developed by experienced healthcare professionals for a specific illness, patient population, or situation. Qualified nurses may then refer to these tools and prescribe from an authorized list of medications for that specific situation or condition (Gielen, Dekker, Francke, Mistiaen, & Kroezen, 2014). This model is the most restrictive model and is currently being used in Brazil and Canada (Bellaguarda, Nelson, Padilha, Caravaca-Morera, 2015).

Patient Populations

In the UK, independent and supplementary nurse prescribing is available to all qualified and eligible nurses. Eligibility criteria include being a registered nurse, practicing in an area that has a clinical need for prescribing, having minimum three years practice experience with one year in the intended prescribing area, having the employer's support, being accepted in an approved prescribing education program, and having a designated medical practitioner who has agreed to the terms of supervised practice.

However, these nurses must be supported by their employer and the Trust in which they work. While this has created a vast array of patient populations who benefit from nurse prescribing, the majority of nurse prescribing in the UK is based in primary care settings such as general practices and clinics. In a national survey that randomly sampled 1992 nurse prescribers in England in 2006, 65% of nurse prescribers worked in primary care settings, while 24% worked in secondary care settings (Courtenay & Carey, 2008). The independent nurse prescribers who reported working in primary care settings worked in general practices, walk-in centres, family planning clinics and minor injury units. Other areas reported by primary care nurse prescribers included Accident and Emergency care and palliative care (Courtenay & Carey, 2008). This trend continues in other countries of the United Kingdom. For example, in Scotland, where 71% of sampled nurse prescribers worked in health centres or general practices. It was also specified that 44% worked in practices that covered an urban area, while 41% reported working in a rural area (Watterson et al., 2009).

A systematic review conducted by (Gielen et al. (2014) reported on patient populations in primary and secondary care settings that have experienced nurse prescribing. Included are patients with acute and minor illnesses (e.g. sore throat, upper respiratory infections), chronic illnesses (e.g., asthma, diabetes, hypertension) and mental health concerns, as well as patients with specific service needs (e.g., contraception, constipation management and chemotherapy/radiation side effect management).

Implementation of Registered Nurse Prescribing

Internationally. Following the fulfillment of different educational and clinical requirements, nurses in Ireland, Finland, Netherlands, Sweden, Spain and New Zealand

are granted prescriptive authority, either as independent or supplementary prescribers, or through patient group directives/protocols (Kroezen, Francke, Groenewegen, & van Dijk, 2012). While many countries allow Master degree level educated nurse practitioners (NP) to prescribe with varying degrees of restriction, fewer countries have allowed registered nurses (RNs), most of whom are baccalaureate educated nurses, to prescribe with as much independence (Kroezen et al., 2012). The nurse prescribing body of literature contains large variations in the meaning of terms such as "nurse" or "nurse prescribers", making interpretation of international literature difficult. Many articles that discuss nurse prescribing often include advanced practice nurses and RNs, but do not distinguish between them. For example, most Canadian jurisdictions have both the "Registered Nurse" and "Nurse Practitioner" titles protected by their Registered Nurses Act (College of Registered Nurses of Nova Scotia [CRNNS], 2018a). However, according to the Nursing and Midwifery Council in the UK, there is no difference in title between a nurse who can prescribe and a nurse who does not prescribe (Nursing and Midwifery Council, 2018). Furthermore, the role of the "Advanced Nurse Practitioner" in the UK, is described as an "umbrella term utilized to describe advanced nursing roles" (King, Tod, & Sanders, 2017, p.4). Advanced nurse practitioner roles are analogous to the role of an NP in that they can practice autonomously, including medication prescription. However, advanced nurse practitioners are regulated by their employers rather than the national nursing regulatory body and have a wide range of titles (King et al., 2017). This contributes to the lack of role clarity and difficulty in obtaining accurate workforce data. Furthermore, in the UK, prescriptive authority is regulated on a national level, therefore including both advance nurse practitioners and nurses who prescribe (King et al., 2017).

These differences in regulation means that the status of nurse prescribing or RN prescribing can vary greatly within one country, creating further complication for understanding the literature.

Canada. In almost all provinces/territories in Canada, NPs are fully legislated and practice autonomously with respect to assessment, diagnosis, and prescription from a non-restricted formulary (Canadian Nurses Association [CNA], 2015). Across Canada, NPs are educated in approved graduate programs with a minimum of 700 clinical hours, followed by a licensing examination and registration process that protects the title of NP. While the precise number of NPs in northern Canada is unknown, it is known that there are fewer than 10 in the Yukon or Territories/Nunavut (Canadian Institute for Health Information, 2017). However, as of January 2019, regulated RN prescribing is only available in Saskatchewan, Manitoba and Quebec. Other provinces, such as Alberta and Ontario, are in the process of developing the RN prescriber role which is defined as "experienced RNs with baccalaureate or higher education levels, who have achieved the competencies required for RN prescriber registration or licensure in a province or territory" (CNA, 2015, p.6). Registered nurse prescribers in Saskatchewan, Manitoba and Quebec are permitted to diagnose pre-determined conditions, order and interpret limited diagnostic tests, and prescribe and dispense a limited range of medications.

Many Canadian RNs do not consider these acts as part of their scope of practice nor perform them on a regular basis within their work environment. However, in northern and remote/rural communities, where resources are limited, RNs have had to take on expanded roles to meet the needs of communities for access to health care (Kaasalainen et al., 2010; Martin Misener et al., 2008). Historically, the RN role in rural and remote

areas has been mainly an employer responsibility, primarily the First Nations Inuit Health Branch of the federal government. However, in recent years, some provincial nurse regulators have implemented regulatory strategies for the role of RNs in rural and remote areas (Martin Misener et al., 2008). For example, in 2010, British Columbia required that all nurses who were employed in remote communities become certified for Remote Nursing Certified Practice. This certification allows specially educated nurses to assess, diagnose, and treat specific diseases and disorders using decision support tools (College of Registered Nurses of British Columbia, 2017) In Saskatchewan, RN prescribing was developed specifically for primary care settings in Northern communities (Saskatchewan Registered Nurses Association [SRNA], 2018a). Launched in 2016, RNs who can prescribe are registered as RNs with Additional Authorized Practice and must use clinical decision tools to support their prescribing practice (Saskatchewan Registered Nurses Association, 2016a). Given the increasing needs of populations and resource constraints, there is a recognition that all health care providers need to practice to their optimal scope of practice (Postl, Shamian, & Sketris, 2014). One component of optimizing the role of RNs is for Canadian provinces to enable RNs to prescribe in a broader range of settings.

With provinces moving forward with the implementation and regulation of RN prescribing within the context of their individual healthcare systems, CNA developed a Framework for RN Prescribing in Canada (Figure 1). The framework was created to promote consistency across Canada's federated governance model and support a pan-Canadian approach for the design and regulation of RN prescribing (CNA, 2015a). The framework was developed after an extensive review of nurse prescribing in the UK and elsewhere. Nine principles are grounded within the fundamental elements of *structure*

(legislation and regulation), *competence* (education and continuing competence) and *practice* (utilization/deployment and evaluation). The nine principles guiding the Canadian framework for RN prescribing are: relevance to population health and system needs, safety, high quality, universal accessibility, transparency, evidence-based, collaboration, patient-centeredness, and sustainability (CNA, 2015b).

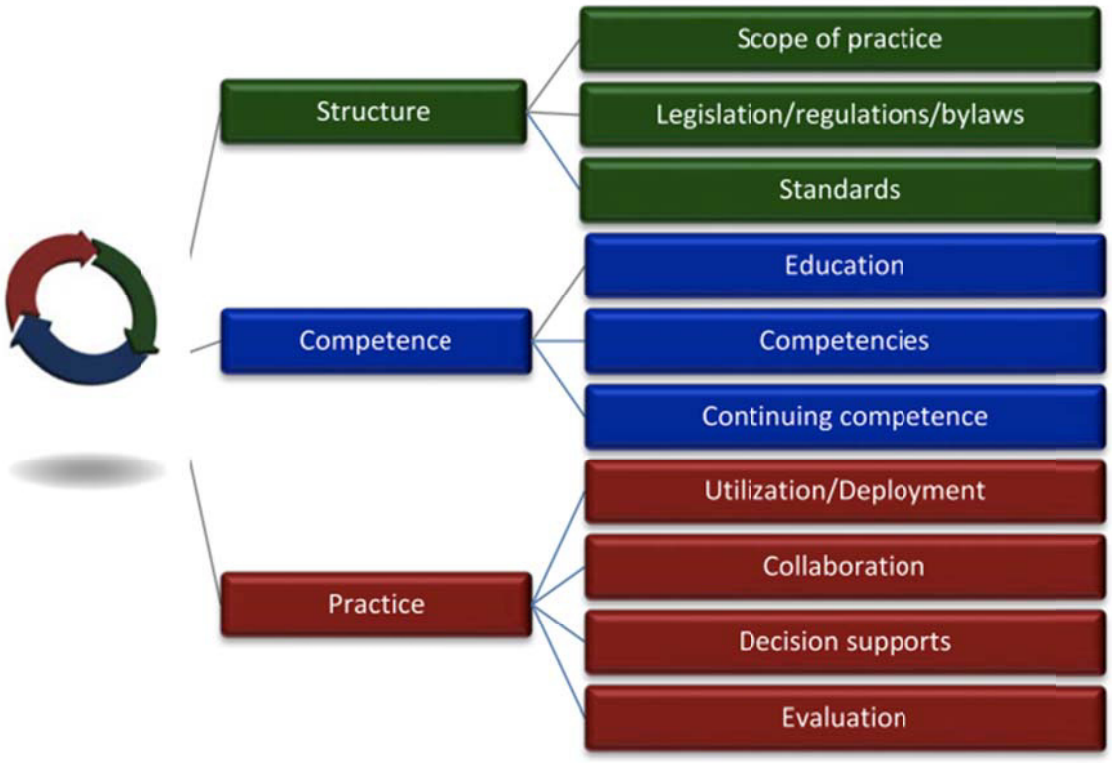

Figure 1. Canadian Nurses Association's Framework for Registered Nurse Prescribing in Canada taken from https://www.cna-aiic.ca/en/professional-development/rn-prescribing-framework.

Alberta, Saskatchewan, Manitoba, Ontario, and Quebec are currently at different points in the development and implementation process of RN prescribing. Quebec allows nurses to obtain authorization to prescribe from a limited list of medications after fulfilling certification requirements (Ordre des infirmières et infirmiers du Québec &

Collège des médecins du Québec, 2015). Saskatchewan allows for RN prescribing in northern communities with the use of decision support tools (SRNA, 2018b) and Manitoba saw its first group of RN prescribers enroll in courses at Red River College in September 2018 (College of Registered Nurses of Manitoba, 2018). Ontario has completed several environmental scans and surveys of health care professionals and stakeholders, and are moving forward with changes in regulations and legislation (College of Nurses of Ontario, 2017; Registered Nurses' Association of Ontario, 2016a). Alberta's new regulations for RN prescribing come into effect in May 2019 (College & Association of Registered Nurses of Alberta, 2018).

The province of Nova Scotia is also exploring RN prescribing as a means of providing safe, efficient, and accessible care for Nova Scotians. To explore different educational models, as well as legislative and regulatory changes, the province has created the *Improving Access to Care: RN Prescribing Committee*. In addition to the educational, legislative and regulatory components, the committee is also tasked with engaging with key stakeholders and to identify potential clinical areas that may benefit from the implementation of RN prescribing (CRNNS, 2018b). Updates about the RN prescribing initiatives in NS are being shared on the CRNNS website (https://crnns.ca/).

Purpose of the Study

The successful implementation of RN prescribing requires an understanding of employers' perspectives on priority patient needs and service gaps that could be addressed by RN prescribing, as well as the facilitators and barriers to its implementation (Bowskill, Timmons, & James, 2013). While several countries in the UK and provinces in Canada, such as Saskatchewan and Ontario, have conducted stakeholder and/or

employer surveys on different aspects of RN prescribing, no research has been found that explores the Nova Scotian health employers' perspectives on such changes. Such knowledge is imperative to the success of this policy and aligns with the "Practice" element of CNA's Framework for Registered Nurse Prescribing (utilization/deployment and evaluation). The purpose of this study is to explore Nova Scotian health employers' perspectives regarding patient populations that could benefit from RN prescribing, and the individual, organizational, and system factors that facilitate or impede implementation of RN prescribing policy in Nova Scotia.

CHAPTER 2: LITERATURE REVIEW

A considerable body of research has been developed since the implementation of nurse prescribing in England in 1992. The addition of this role for nurses in other countries has also contributed greatly to the variety and depth of research on nurse prescribing. The following chapter explores current literature that has quantitatively and qualitatively explored the implementation and outcomes of nurse prescribing through three sections. The first section gives an overview of different countries, including the UK, that have implemented nurse prescribing. The second section explores patient, nurse, and stakeholder perspectives relating to nurse prescribing, including barriers and facilitators to its implementation. Finally, the Canadian perspective on RN prescribing is discussed and includes literature from Saskatchewan, Ontario, and various Canadian stakeholders.

International Context of Nurse Prescribing

While many countries have implemented some form of nurse prescribing, there is very limited data with regards to stakeholder perspectives in countries other than the UK. The following is a summary of how other countries have adapted nurse prescribing to their needs.

United Kingdom. England remains one of the countries with the most research associated with nurse prescribing due to its lengthy history with an extended scope of nursing practice. Furthermore, the UK has expanded prescribing authority, not only to nurses, but to a range of other healthcare professionals such as pharmacists, optometrists, and allied health professionals (radiographers, chiropodists, podiatrists, physiotherapists, and occupational therapists) (Bissell et al., 2008). However, only nurses and pharmacists

are currently permitted to be independent prescribers (Bissell et al., 2008). Thus, non-medical prescribing (NMP) is the term commonly used in the UK to identify professionals who are not physicians but have the authority to prescribe. Both NMP and nurse prescriber terminology will be used interchangeably in this paper to identify nurses who have the authority to prescribe. Both terms are widely used in the literature.

United States of America (USA). Nurses in select states have had some type of prescribing authority for 40 years. Ross (2012) interviewed and shadowed mental health nurse prescribers in the USA to learn about the background of their prescribing practice. They found that regardless of the state where they were employed, nurses required a minimum of one master's degree before being qualified as Advanced Practice RNs (Ross, 2012). Some Advanced Practice RNs scope of practices included prescribing but this depended on their specialization and the state in which they work. Becoming an Advanced Nurse Practitioner with prescribing authority required further education specialization. Finally, each state has their own rules and regulations. For example, Psychiatric Mental Health Clinical Nurse Specialists can only prescribe in states where they are considered to be advanced nurse practitioners, in others they cannot. The US has many titles and means by which to obtain prescribing authority, complicated by the fact that each state is different, and their healthcare system varies greatly from Canada and the UK.

Spain. RNs in Spain were prescribing before the 1950s. Then, during dictatorship and hospital modernization, nurses were denied the authority to prescribe and were suddenly dependent on physicians to fulfill their needs for essential nursing care supplies, such as wound care supplies, and medications (Romero-Collado, Homs-

Romero, Zabaleta-del-Olmo, & Juvinya-Canal, 2014). In was not until the primary care reform of 1984 when nurses stopped relying on informal protocols and verbal agreements to deliver necessary nursing care. Following the reform, nurses in Spain were assigned to every 2000 inhabitants, increasing their autonomy by allowing primary care nurses to provide all nursing care needs. Still not explicitly authorized to prescribe, primary care nurses continued to provide such items as wound care supplies, absorbent pads, or over-the-counter pain and fever medications such as ibuprofen or acetaminophen, under the assumption that these items were integral to the nursing care they were responsible for providing (Romero-Collado et al., 2014). In 2006, new healthcare legislation made it illegal for nurses to provide medication and healthcare supplies, while also naming physicians, dentists, and veterinarians as sole healthcare professionals authorized to prescribe. However, in 2009, a new law was decreed to counter the 2006 legislation, which authorized nurses, who had successfully completed a mandatory accreditation program, to prescribe from a limited formulary (Romero-Collado et al., 2014). In October 2015, following several legislative changes, nurses in Spain became authorized to prescribe based on guidelines drawn up by a physician following a patient's initial diagnosis. In addition to the initial accreditation, nurse prescribers were required to undergo a training program within the first five years of their prescribing practice to validate knowledge and competency (Romero-Collado, Raurell-Torreda, Zabaleta-Del-Olmo, Rascon-Hernan, & Homs-Romero, 2017). Furthermore, Spain also has protocols for the management of specific minor diseases and conditions, which has proven to be successful (Romero-Collado et al., 2017). Spain has implemented both the supplementary

nurse prescribing model and the group protocol nurse prescribing model with positive outcomes.

Brazil. Prescribing by nurses working in primary care has been legal in Brazil since 1986 (Santos Martiniano et al., 2016) and has been increasingly applied since the development of the Family Health Strategy in 2006, which aims to offer family-focused healthcare within the family's environment (Bellaguarda et al., 2015). While nurses working in hospitals are also allowed to legally prescribe since 2013 (Santos Martiniano et al., 2016), many choose not to because of hierarchical subordination between physicians and nurses (Bellaguarda et al., 2015). Nurse prescribing in Brazil follows a group protocol model where protocols are defined by the Policy for Primary Healthcare or by healthcare institutions.

Brazilian nurses remain the first point of contact in primary care areas addressing women, adult, elderly, pediatric, and adolescent health, as well as chronic diseases like diabetes and hypertension (Bellaguarda et al., 2015). While nurses working in primary care in Brazil have the opportunity and authority to assess, diagnose, and prescribe, nurses are not obliged to receive additional or specific training for prescribing beyond their initial undergraduate degrees (Santos Martiniano et al., 2016).

Perspectives Relating to Nurse Prescribing

Patient perspectives. Four major themes emerged in the literature when reviewing patient perspectives related to RN prescribing, including positive nurse-patient relationship, timeliness and ease of access, confidence and support of nurse prescribing, and patient concerns regarding nurse prescribing.

Positive nurse-patient relationship. Foremost, patients tend to find nurses approachable, characterizing nurse prescribers as relaxed, empathetic, attentive, reassuring, and caring. Such qualities contribute to patients reporting being more comfortable with their nurse prescriber than their physician (Brooks, Otway, Rashid, Kilty, & Maggs, 2001; Courtenay, Carey, Stenner, Lawton, & Peters, 2011; Stenner, Courtenay, & Carey, 2011). Patients find that nurse prescribers provide more holistic care by addressing several aspects of their lives other than their physical health. As such, patients believe they are actively engaged in their healthcare decisions (Dhalivaal, 2011; Stenner et al., 2011).

Timeliness and ease of access. Patients who have experienced nurse prescribing describe it as a more efficient use of their time (Dhalivaal, 2011). Other studies report increased efficacy of the healthcare services being provided, which thereby decreased physician caseload (Banicek, 2012; Brooks et al., 2001). In certain settings, nurse prescribers were easier to access and offered a more flexible schedule than physicians (Brooks et al., 2001; Stenner et al., 2011; Watterson et al., 2009). For example, Courtenay and colleagues (2010) reported decreased frequency of visits to the clinic for patients with diabetes when able to communicate with the nurse prescriber via telephone.

Confidence and support of nurse prescribing. A large majority of patients in several studies support RN prescribing. Overall, patients believe that nurses have the experience and knowledge necessary to safely prescribe and work within an extended scope of practice (Berry, Bradlow, & Courtenay, 2008; Brooks et al., 2001; Darvishpour, Joolaee, & Cheraghi, 2014; Stenner et al., 2011; Watterson et al., 2009).

Patient concerns regarding nurse prescribing. While a large proportion of patients express confidence in nurse prescribers, common concerns of patients also emerged from reviews of nurse prescribing practice. Patients expressed concerns about nurse prescribers having less time to fulfill other nursing responsibilities (Banicek, 2012) which was in fact an evaluated outcome in Scotland where nurse prescribers were found to have increased administrative tasks compared to their non-prescribing counterparts (Watterson et al., 2009). Another recurring concern remains the difference in training and prescribing knowledge between nurse prescribers and physicians; patients are aware that nurses do not receive the same amount of education as physicians (Brooks et al., 2001; Watterson et al., 2009). Despite this concern, evidence suggests that nurses make very few prescribing errors. During an observational study of 10 nurse prescribers, Latter et al. (2007) determined that prescriptions were accurate and written in full. The nurses demonstrated themselves to be competent with the skills required to take an accurate and complete health history and make a diagnosis. However, the same study showed that nurses did not always collect all relevant information related to over-the-counter medications and allergies to medicines (Bissell et al., 2008). In fact, reviews of the literature report that nurses are no more likely to inappropriately prescribe than physicians, with evidence showing that nurses tend to err on the side of caution when prescribing, staying well within the limits of their area of competence and expertise (Nuttall, 2018; Watterson et al., 2009). However, it is important to note that organizations are inconsistently equipped with the systems necessary to monitor, review, and audit prescribing data (Courtenay, Carey, & Stenner, 2012). There is also a lack of randomized controlled trials demonstrating safety of nurse prescribing (Stewart et al., 2017).

Nurse perspectives. Nurse prescribers report that the increase in scope has positively impacted their job satisfaction, professional autonomy, and quality of patient care (Bissell, et al., 2008; Molly Courtenay et al., 2017; Watterson et al., 2009). Many nurses enroll in nurse prescribing courses to provide improved care to their patients and further their professional development. Patient benefits, as perceived by nurse prescribers, included improved continuity of care, convenience, appropriate use of patients' time, and increased patient education opportunities (Darvishpour et al., 2014; Watterson et al., 2009). While some nurse prescribers also reported a negative impact on their time, especially regarding the amount of administrative work required, others reported spending less time seeking a physician for the prescription needs of patients (Bissell et al., 2008; Watterson et al., 2009).

Stakeholder perspectives. Research on independent or supplementary nurse prescribing in the UK that involves stakeholder views often includes one or several of the following groups of people: employers, administrative staff, non-medical prescribing staff, qualified nurse prescribers, physicians, and non-medical prescribing leaders. For the purpose of this literature review, perspectives of all stakeholder types were included.

Education and continuing professional development. Non-medical prescribing courses in the UK are typically over 26 days of full-time courses and a minimum of 12 days clinical practice under the supervision of a designated medical practitioner (Cope, Abuzour, & Tully, 2016). Interviews with key stakeholders involved in supplementary prescribing for nurses and pharmacists revealed that the training was perceived as adequate preparation, with most programs offering a flexible study schedule (Cooper et al., 2008b). However, it was noted that current programs offered few

opportunities for the students to train in their selected clinical areas and were therefore limited by the course content (Cooper et al., 2008b) For example, a study conducted on stakeholder views on nurse prescribing in dermatology report that there is little opportunity for continuing professional development (CPD) specific to this specialty (Carey, Stenner, & Courtenay, 2010). In Scotland, however, this constraint was viewed as an opportunity to offer CPD that focused on clinical areas of interest (Watterson et al., 2009). In a systematic review of barriers and facilitators of independent non-medical prescribing, Noblet and colleagues (2017) discuss how the inability to access CPD, or lack thereof, hinders a prescriber's ability to maintain a strong knowledge base and negatively influences prescribing practice (Noblet, Marriott, Graham-Clarke, & Rushton, 2017). The structure and approach to CPD is inconsistent throughout the UK as there is no formal national infrastructure guiding CPD among non-medical prescribers (Noblet et al., 2017). For example, the most common form of CPD for nurses in primary care is peer support and advice-seeking from colleagues (Djerbib, 2018). Nurse prescribers engage in other CPD opportunities such as enrolling in courses, partaking in self-directed study, using guidelines and institution protocols, or engaging in experiential learning through discussion with colleagues to bridge gaps in knowledge, especially when moving to a new clinical area (Smith, Latter, & Blenkinsopp, 2014).

Patient safety. Patient safety is a universal theme among stakeholders, including the monitoring and auditing of nurse prescribing. While there are currently few or no issues with supplementary and independent nurse prescribing reported (Darvishpour, Joolaee, & Cheraghi, 2014), it is important for organizations and employers to maintain appropriate clinical governance, including the monitoring and

auditing of prescribing data (Courtenay et al., 2012; Watterson et al., 2009). Smith et al., (2014) state that less than two-thirds of acute and mental health Trusts who responded to their national survey had a system for monitoring prescribing. Smith et al., (2014) also reported that primary care centers were less likely to participate in clinical audits. Nurse prescribers in dermatology reported keeping records of their own prescribing practice data due to delayed or non-existent feedback from auditing or monitoring procedures (Carey et al., 2010). Also discussed was how "it was important to nurses to have the means to discuss and confirm the appropriateness of their assessment and prescribing decisions" (Carey et al., 2010, p.503). Unfortunately, avenues offering this type of support, such as regular clinical supervision sessions or formal prescribing support meetings, were reported to be either defunct or in the process of being implemented (Carey et al., 2010). Newly authorized nurse prescribers working within a supportive team offering mentorship and support was reported to be a factor influencing patient safety among stakeholders in Scotland (Watterson et al., 2009). Other stakeholders maintain that rigorous and high quality courses ensure patient safety, while the "careful selection of competent and experienced nurses" was also said to contribute (Watterson et al., 2009, p.103).

Information technology. In addition to education, CPD, and patient safety, information technology (IT) issues remain problematic for stakeholders. Many expressed concerns that the lack of access to patient electronic medical records and ineffective or non-existent electronic script systems are threats to patient safety (Cooper et al., 2008a; Watterson et al., 2009). Without the appropriate IT infrastructure or lack of access to such, nurse prescribers may be unable to verify important information such as previous

medical history, allergies, and previous prescribing history (Watterson et al., 2009). In England, primary care settings are equipped with an electronic-prescription analysis and cost trend systems which allows organizations to pull data and audit prescriber trends.

Interprofessionalism. Interprofessionalism remains one of the more contested aspects of nurse prescribing. On the one hand, non-medical prescribing in the UK has shown to enhance team-work and improve trust and professional relationships between nurses and physicians (Carey et al., 2010; Cooper et al., 2008a; Watterson et al., 2009). On the other hand, stakeholders report incidences where physicians feel threatened by nurse prescribing and there may be feelings of animosity or resistance, demonstrating a lack of interprofessionalism (Cooper et al., 2008a). Issues with boundary encroachment or role confusion can be mitigated through interprofessional education, where the healthcare team learns about, from, and with one another while learning about changes to nursing scopes of practice (Watterson et al., 2009). As stated in Carey et al., (2010): "Actually, the nurses can't do it all and the doctors can't do it all, so actually you need a team (…)" (p.502). Improved interprofessional relationships and team-work benefit all involved, including patients.

Economic impact. Cooper et al. (2008b), through their analysis of semi-structured interviews with stakeholders, reported perceived advantages and disadvantages of the economic impact supplementary prescribing has on the NHS in England. Several stakeholders offered that supplementary prescribing may decrease costs through increased patient compliance, increased awareness of the cost of medication, and up-to-date training received by supplementary prescribing nurses and pharmacists (Cooper et al., 2008b). It was also argued by all stakeholders that one economic advantage of

supplementary prescribing is that it is performed by lower-paid healthcare professionals, and therefore cuts costs in the healthcare system (Cooper et al., 2008b) Then again, several stakeholders also mentioned that few nurses were interested in gaining prescriptive authority due to the modest salary increase in relation to the expanded scope of practice. In addition, stakeholders mentioned that supplementary prescribers may demand higher salaries, voiding all economic benefits (Cooper et al., 2008b). Other indirect costs voiced by stakeholders included the cost of training supplementary prescribers, longer consultation times, and the influence of pharmaceutical companies on nurses through the distribution of medication samples (Cooper et al., 2008b). Unfortunately, there is very little data to support either the economic impact of supplementary prescribing in the UK.

Barriers. The implementation of a new policy demands an evaluation of the barriers that were encountered during its implementation in other settings. The UK has evaluated barriers to nurse prescribing from the perspective of nurses, healthcare professionals, non-medical prescribing leads, and stakeholders. As a result, there is a plethora of translational knowledge available to others embarking on nurse prescribing or ameliorating prescribing policies in different healthcare settings. If barriers are not addressed during the initial planning of nurse prescribing, it may be executed sub-optimally, resulting in less than ideal returns on investments, and a misuse of resources (Lim, Courtenay, & Fleming, 2013). Many barriers and enablers are antonymic; for example, a lack of support from staff and peers is considered a barrier, whereas supportive staff and peers would be an enabler. Following are the main barriers and facilitators, as determined by employers and various stakeholders.

Lack of support. Support from nursing peers, interprofessional team members, and organizations is vital for the success of nurse prescribing. Nurse prescribers, who are not supported by their peers, may not feel confident in prescribing or may get pressured into returning to their old ways of functioning (Bissell, et al., 2008), especially if they are the only one authorized to prescribe on their unit or in their establishment (Watterson et al., 2009). Other nurses may circumvent the nurse prescriber to have prescriptions signed by the physician if they do not support the new nurse prescriber's role (Cooper et al., 2008a). The nurse prescriber may then feel isolated, which can lead to cessation of prescribing by the nurse, impeding benefits from the new policy (Kelly, Neale, & Rollings, 2010). Some studies report that a lack of understanding of the healthcare team making inappropriate prescribing requests, leaving the nurse prescriber to explain the boundaries of their role (Graham-Clarke, Rushton, Noblet, & Marriott, 2018). For example, a study by Daughtry and Hayter (2010), that explored the experiences of nurses transitioning to nurse prescribers in primary care, stated:

> I think as soon as they realize you can prescribe they expect you to be able to do exactly what doctors can do. They don't understand your limitations and you can only work within the scope of your knowledge, and they expect you to sign repeat prescriptions, and send everybody through to you. So it can be quite difficult at times explaining to them (Daughtry & Hayter, 2010, p. 311)

The role misunderstandings were not specific to any one profession (Daughtry & Hayter, 2010), highlighting the importance of education and role clarity in creating a supportive environment for nurse prescribers.

Support from physicians is equally important; yet, concerns of boundary encroachment and the resultant turf-protection remains an issue with reports of negative comments, resistance, animosity, and suspicion (Cooper et al., 2008a). Nurse prescribers

in the UK must work with a designated medical practitioner as a practice supervisor to complete their education. Nurse prescriber trainees are required to liaise with a designated medical practitioner themselves; a relationship that is an important factor in the nurse prescriber's learning experience and subsequent confidence (Courtenay et al., 2011). Respondents in Lim et al's. (2013) study reported that designated medical practitioners who embraced the nurse prescriber role became strong advocates and partners in nurse prescribing, factors that facilitate both its implementation and success.

Organizational support can range from strategic planning to clinical governance and remains imperative to the implementation of nurse prescribing. Barriers such as outdated policies, lack of appropriate equipment (formularies, prescription pads), lack of formal or informal support groups (Courtenay et al., 2011; Lim et al., 2013), poor communication, and lack of nurse prescribing culture (Cooper et al., 2008a) all stem from various organizational levels and must be adequately addressed for successful implementation of nurse prescribing policy.

Lack of confidence. Confidence on behalf of the nurse prescriber indicates that they believe they competently understand the management and prescription of medications following adequate education and training (Blanchflower, Greene, & Thorp, 2013). Nurse prescribers who lack confidence, newly qualified or not, may shy away from writing prescriptions, indicating that confidence is an important facilitator to nurse prescribing (Courtenay et al., 2011; Darvishpour, Joolaee, & Cheraghi, 2014; Watterson et al., 2009). Decreased confidence following qualification may be the result of lack of support from peers and staff members, as previously mentioned, thus making formal or informal support such as support groups, meetings, networking, and peer/colleague

support important in the success of nurse prescribing (Courtenay et al., 2011; Watterson et al., 2009). Delays in registration or delays in receiving supplies following the completion of training also resulted in a decrease in confidence as new nurse prescribers were unable to put their new knowledge to practice (Courtenay et al., 2011; Watterson et al., 2009).

Lack of continuing professional development. Difficulty accessing CPD, whether due to lack of time for courses, lack of financial or supervisory support, or unavailability of staff members, is a barrier to nurse prescribing (Courtenay et al., 2011; Lim et al., 2013). CPD courses have been reported to be limited in breadth and depth (Graham-Clarke et al., 2018), and lack interprofessionalism, which could compromise patient safety (Bissell, et al., 2008; Nuttall, 2018). Furthermore, inadequate CPD can negatively affect nurse prescribers' confidence, which may result in a decrease in prescribing activities, as previously mentioned (Bissell et al., 2008; Courtenay et al., 2011; Lim et al., 2013; Nuttall, 2018). Finally, nurse prescribers reported not completing their CPD requirements as there was confusion related to whose responsibility it was to ensure CPD completion (Lim et al., 2013). It is essential to have accessible, up-to-date, interprofessional CPD opportunities available for nurse prescribers as soon the policy is in place, as well as clear guidelines outlining the requirements and expectations regarding CPD.

Other. Another common barrier is inadequate IT infrastructure. Respondents reported computer software that was unable to accommodate nurse prescribing, inability to print prescriptions, and lack of access to patient medical records (electronic or not) impeded nurse prescribing (Bissell et al., 2008; Molly Courtenay et al., 2011; Lim et al.,

2013). Appropriate IT infrastructure and medical record access are also important components of patient safety (Watterson et al., 2009). Finally role confusion can also be a contributing barrier to nurse prescribing (Courtenay et al., 2011); stakeholders have noted it as an issue for professionals and patients (Watterson et al., 2009). Education geared towards role clarity for healthcare professionals and patients is needed as nursing roles change and responsibilities overlap with other professions (Watterson et al., 2009).

Facilitators. There are many facilitators to the implementation of nurse prescribing as described by employers and stakeholders; however, two main themes appear in the literature: strategic planning and nurse-physician relationships. While not exhaustive, these themes encompass several elements that are essential for a successful implementation.

Strategic plan. Strategic planning is essential to support several aspects of the implementation and subsequent functioning of nurse prescribing (Carey et al., 2010; Courtenay et al., 2011; Watterson et al., 2009). Without an extensive strategic plan for nurse prescribing, its benefits will not be realized (Carey et al., 2010). Strategic plans in the UK, which are developed by the individual organizations (Lim et al., 2013) and often involving senior management, healthcare professionals, and pharmacy, cover topics such as patient benefits, potential clinical areas, supports for staff transition period, communication plans for staff and patients, timelines, and designated implementation leaders (Scottish Executive Health Department, 2006). Organizations that have a strong strategic plan often experience less barriers to implementation due to the attention given to important aspects within the plan (Noblet et al., 2017). Courtenay and colleagues (2011) explain that, workforce planning, candidate selection, clinical supervision

requirements, support measures, CPD, and organizational preparedness, are vital parts of a nurse prescribing strategic plan and offer a solid framework justifying the need for the policy.

Nurse-physician relationship. Several studies have reported that a positive nurse-physician relationship prior to the implementation of a nurse prescribing role is central to its success (Stenner & Courtenay, 2008; Watterson et. al., 2011). For nurses who require supervised training from a physician, having a pre-established relationship can make the process of finding a designated medical practitioner for the final clinical practicum much easier (Courtenay et al., 2011). In addition, a previous positive relationship between the nurse and physician may indicate that the physician already has confidence in the future nurse prescriber's skills (Cooper et al., 2008a). For example, when nurse prescribing was implemented in a diabetes clinic, positive relationships between nurses, physicians, and other healthcare professionals contributed to enhancing the supportive culture around the new role and promoted supportive behaviour and acceptance (Stenner et al., 2010). To ensure facilitation of the implementation of nurse prescribing, it is important to evaluate the interprofessional relationships prior to implementation and how nurse prescribing may influence these relationships.

Canadian Perspectives on Registered Nurse Prescribing

Although there are no peer-reviewed articles were found pertaining to the stakeholder or employer perspective of RN prescribing in Canada, there are reports available that shed some light on the Canadian context.

Saskatchewan. Saskatchewan is currently in the process of dissolving their Transfer of Medical Function, a policy that allows physicians to authorize RNs to

perform acts that are outside of their scope of practice, and instead supports a policy allowing northern RNs to become authorized prescribers (SRNA, 2016a). The project included surveying 19 employers of northern RNs. A baseline survey was conducted in 2013 and the same survey was conducted again in 2015. The survey measured and tracked responses in three major categories: "perceptions of care provided", "process and transition", and "impact on care". While employers felt more informed in 2015 about the transition process than they were at the baseline survey in 2013, ratings for "maintain patient care and positive for patients" decreased from a rating of 3.9 (range 1-5) to 3.7 (SRNA, 2016a). However, employers' overall satisfaction with the care being provided in the community was maintained between 2013 and 2016, indicating that high-quality healthcare that is being delivered by northern RNs. Two areas of concern that were noted in the results of 2015 were that there would not be enough RNs to provide care and uncertainty of how replacing Transfers of Medical Function with RN prescribing would impact care (SRNA, 2016a).

In 2016, the same survey was again distributed, and the same conclusions as the 2015 survey were found. Employers perceived that changes from the Transfer of Medical Function to RN prescribing was beneficial for patients; however, ratings of the perceived impact on patient care decreased from 2.9 in 2013 to 2.3 (range 1-5) in 2016 (SRNA, 2016b). Similar concerns regarding the number of RNs available to provide care in the north were raised, as well as concerns that RNs may have difficulties accessing a physician or an NP in a timely manner (SRNA, 2016b). While the evaluation conducted within the RNs Leading Change Project pertains mainly to employers' perspectives of the transition process, rather than RN prescribing policy itself, it does offer insight into the

perception of patient care during a critical time. The baseline and mid-project surveys allowed leaders to establish whether their communication methods were adequate and measured the impact the changes had on patient care. The final report is expected to be released spring 2019.

Ontario. In November 2015, the Ontario Ministry of Health and Long-Term Care requested that the Health Professions Regulatory Advisory Council consult with key stakeholders, healthcare practitioners, and patients regarding their views of three models of RN prescribing for Ontario: independent, supplementary, and protocols/group directives (Health Professions Regulatory Advisory Council, 2016). The Health Professions Regulatory Advisory Council held a consultation session with key stakeholders to gather views and issues in relation to the models of RN prescribing in Ontario. Submissions (n=254) were in the form of online surveys with both open and close-ended questions, and letters (n=20) from stakeholder organizations for a total of 274 survey responses. The 20 organizations who responded in letter form represented a myriad of professional groups such as medicine, nursing, optometry, physiotherapy, and pharmacy. Other responses were provided from organizations representing primary care, protective associations, Faculties of Medicine, and hospitals. Many letters stated that they did not have enough information to endorse one specific RN prescribing model, offering instead suggestions and recommendations based on the knowledge and expertise of their organization. For example, the College of Optometrists of Ontario, the Ontario College of Pharmacists, and the Ontario Pharmacists Association did not support one specific model. Rather, they suggested that there should not be a list of specific drugs that RNs are authorized to prescribe, but that RNs should be allowed to prescribe for a certain

condition or from a specific class of medication (Health Professions Regulatory Advisory Council, 2016). These organizations argue that restrictions to specific medications are difficult to update or amend when there are changes to best-practices or when new medications become available.

The Association of Ontario Health Centres, the First Nations Inuit Health Branch of Ontario, the Ontario Association of Primary Health Nursing Leaders, the Ontario Nurses Association, and the Registered Nurses Association of Ontario supported the Independent Prescribing model. Conversely, the Nurse Practitioners Association of Ontario, the Council of Ontario University Programs in Nursing, and the Provincial Heads of Nursing, Colleges of Applied Arts and Technology did not support the development of RN prescribing in Ontario, stating that RNs can undergo rigorous training to become an NP if they wish to become authorized prescribers. However, they did state there is a possibility of support for a cautious supplementary model or updated protocol model. In addition, they offered alternative solutions such as funding more NP seats and increasing the number of NPs working in nurse-practitioner led clinics.

Organizations representing physicians such as the College of Physicians and Surgeons of Ontario, the Deans of the Council of Ontario Faculties of Medicine, the Ontario College of Family Physicians, and the Ontario Medical Association support RN prescribing to various degrees. Three of the four physician organizations that provided feedback in letter form suggested the protocol model stating that RN prescribing remains more appropriately under the jurisdiction of the NP. The Deans of the Council of Ontario Faculties of Medicine supports the supplementary model, but with additional graduate education.

The report provided by the Ontario Association of Public Health Nursing Leaders in response to the Health Professions Regulatory Advisory Council's request was an environmental scan on RN prescribing within the context of public health (York Region Public Health, 2016). Their report focused on the three models of RN prescribing, as well as perceived barriers and facilitators to public health unit implementation. Nursing practice leaders and chief nursing officers at all 36 public health units were consulted via telephone or online survey regarding their preferred RN prescribing model, barriers and facilitators, and advantages of their chosen model. Of the 36 public health units, 16 (44%) participated in the survey. Findings showed that the public health units surveyed preferred the independent RN prescribing model (43.8%, n=7) and the protocol/group directives model (43.8%, n=7), with very few choosing the supplementary RN prescribing model (12.5%, n=2). As stated in the report, the variation in public health units' preference of prescribing model may be due to accessibility to primary care practitioners or its rural/urban geographic location (York Region Public Health, 2016).

Nursing practice leaders and chief nursing officers were also asked to provide advantages pf their preferred model. For them, advantages to the independent RN prescribing model included: increasing the independent scope of practice of primary care nurses; improving nurses' understanding of assessment, treatment and supportive care for clients; improving compliance for best practice treatment guidelines; enhancing service, access, and continuity of care for priority populations; preventing delays in treatment for sexually transmitted infections, prescription of oral contraceptives, and tuberculosis medications; and, providing the opportunity to work collaboratively with primary care partners.

Advantages for the protocols/group directives RN prescribing model included: allowing nurses to practice more independently; use of existing medical directives in practice; ensuring consistency in clinical practice; encompassing direction from a physician; and, being the model that is least likely to result in errors. The survey also confirmed that many public health units already use protocols/group directives or similar policies for nursing care. The Ontario Association of Public Health Nursing Leaders stated that they recommend the independent RN prescribing model for the public health nursing sector in Ontario because it allows for nurses to practice within a broader scope as well as supporting accessible care for many of the rural and remote communities in Ontario (Health Professions Regulatory Advisory Council, 2016; York Region Public Health, 2016).

Canadian stakeholder perspectives on barriers and facilitators to the implementation of RN prescribing in Canada. Assessing perceived barriers and facilitators prior to implementation of RN prescribing is crucial in ensuring the policy's success. In addition to failing to deliver the expected benefits for professionals and patients, poor implementation results in wasteful use of time and financial resources (Courtenay et al., 2011).

As previously mentioned, the Ontario Association of Public Health Nursing Leaders conducted an environmental scan on the perspectives of public health units (PHUs) on RN prescribing models and barriers/facilitators to their implementation (York Region Public Health, 2016). Leaders in PHUs in Ontario were surveyed on the factors impacting the implementation of the independent RN prescribing model which included: ensuring nurses have the knowledge, skill and confidence to diagnose and prescribe;

ensuring continuous education and monitoring; ensuring support from patient and members of the healthcare team; and alleviating concerns by citing positive benefits (York Region Public Health, 2016).

A summary of factors impacting the potential implementation of protocol/group directives RN prescribing model included: requiring the creation and maintenance of more medical directives that must be kept up-to-date; exclusion of nurses who do not work in clinical settings full time and likely do not meet the threshold of clinical experience required to prescribe; and the need to review additional medications that may apply to certain populations and the need to provide the nurses with additional education on such changes (York Region Public Health, 2016). These results differ slightly from barriers and facilitators as perceived by stakeholders in articles or reports from outside Canada, since many of these articles collect data following several years of the practice being in place. While the Canadian healthcare context is unique and benefits from research tailored to its particularities, many barriers and facilitators discussed in Canada and compared to the rest of the world are similar.

CHAPTER 3: METHODOLOGY

Purpose of the Study

The purpose of the study is to explore the Nova Scotian employers' perspectives on RN prescribing and perceived barriers and facilitators to its implementation. The research questions are:

a) What patient care areas in the Nova Scotia healthcare system would benefit most from RN prescribing?

b) What model of RN prescribing would be most appropriate to implement in patient care areas in Nova Scotia?

c) What are some possible barriers and facilitators to the implementation of RN prescribing in Nova Scotia?

Qualitative Description

Qualitative description is an ideal method of qualitative inquiry for healthcare research as it allows the researcher to explore complex phenomena by answering questions using terms used by the participants and remaining faithful to their perspectives (Colorafi & Evans, 2016). Qualitative description achieves such closeness through its distance from theoretical and philosophical commitments, differentiating it from other methods of qualitative inquiry such as grounded theory, phenomenology, ethnography, and narrative inquiry and rendering it a less interpretive methodology (Colorafi & Evans, 2016; Sandelowski, 2000, 2009). While qualitative description is known for its distance from philosophical lenses, it does, however, draw on the general principles of naturalistic inquiry (Sandelowski, 2000). Naturalistic inquiry involves committing to observing something in its natural state and having "no a priori commitments to any one theoretical

view of a target phenomenon" (Sandelowski, 2000, p. 337), leading to a true understanding of said phenomenon (Colorafi & Evans, 2016). In terms of qualitative description, this provides an advantage in that researchers can choose a theory or framework to guide their study and analysis while having the flexibility to change, if necessary, throughout the study (Colorafi & Evans, 2016). It also means that qualitative descriptive studies may employ "hues, tones, and textures" from other qualitative methodologies such as phenomenology, grounded theory, and feminism, thus contributing to its flexibility as a methodology (Sandelowski, 2000, p. 337).

The implementation of RN prescribing in Nova Scotia is a complex healthcare phenomenon and the purpose of the interviews with employers is to uncover responses to the research questions. As previously stated, one of the hallmarks of qualitative description is its commitment to remaining true to the participant's spoken word by providing a ''comprehensive summary of an event in the everyday terms of those events'' (Sandelowski, 2000, p.336). Therefore, qualitative description is an ideal method of qualitative inquiry to truly capture the perspectives of employers on the implementation of RN prescribing in Nova Scotia and provide answers rich in participant narration.

Contributing Frameworks

In addition to the Framework for Registered Nurse Prescribing in Canada (CNA, 2015a), the Socio-ecological model was adapted and used to classify data during data analysis. The socio-ecological model is a theory-based framework that suggests that an individual's behaviour is impacted by multiple and interrelated levels of influence (Kilanowski, 2017). The socio-ecological model was introduced by Bronfenbrenner in the 1970s (McLeroy, Bibeau, Steckler, & Glanz, 1988) and became popular in health

promotion and public health due to its emphasis on the influences of different factors on individuals and their environments (Richard, Gauvin, Ducharme, Leblanc, & Trudel, 2012).

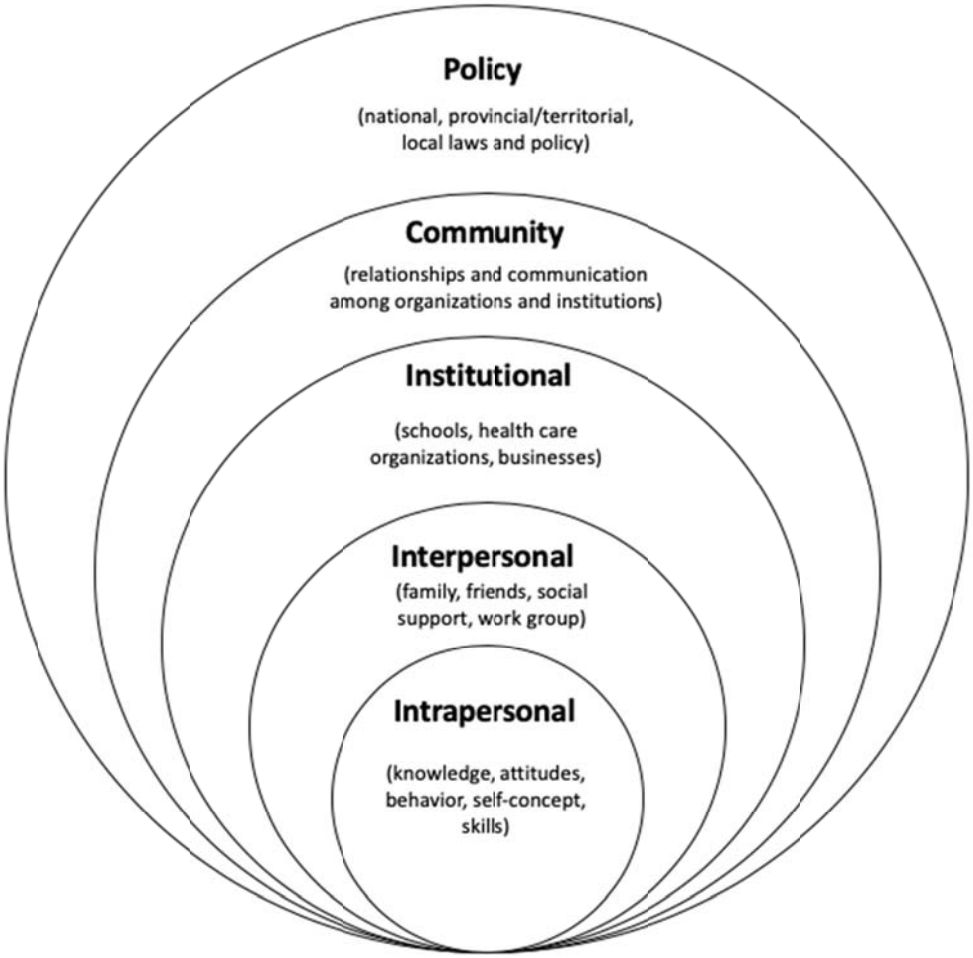

Figure 2.1 The socio-economic model as described by McLeroy et al. (1988)

The different levels of influence in the socio-ecologic model are represented by five nesting circles with the individual in the center (Figure 2.1). The higher the level of impact a level has on an individual behaviour, the further away the circle (Lee, Bendixsen, Liebman, & Gallagher, 2017). Typically, the levels in in the socio-ecologic model influencing the individual are intrapersonal, interpersonal, institutional,

community, and policy. However, the model may be adapted to suit the subject of interest (McLeroy et al., 1988). The adaptation used in this study focuses on three levels: Individual, Organization and System (Figure 2.2). The individual level has been adapted to include intrapersonal and interpersonal factors. The organization level consists of "systems with a formal multiechelon decision process operating in pursuit of specific objective" (Kok, Gottlieb, Commers, & Smerecnik, 2008, p. 437), and includes both the community and institutional levels from the McLeroy et al. (1988) model. The organization level refers to individual healthcare organizations in the context of this study. The system level refers to political players and policy-makers that oversee the healthcare system and includes but is not limited to the policy level described by the McLeroy et al. (1988) model. The levels of the socio-ecological model were adapted based on the nature of the research questions for this study, which focused on models of nurse prescribing, patient care areas, and barriers and facilitators to the implementation of RN prescribing in NS and did not refer extensively to the community or institutional levels. Furthermore, little is known about RN prescribing in Nova Scotia, thus a more parsimonious adaptation of the socio-ecological model was employed.

With the socio-ecologic model, factors that emerge during data analysis allow for the identification of barriers and the levels at which they occur (Bogardus, Martin, Richman, & Kulas, 2017). Such information allows for a better understanding of the interaction of factors between levels and identifies barriers and facilitators to implementation that can be addressed.

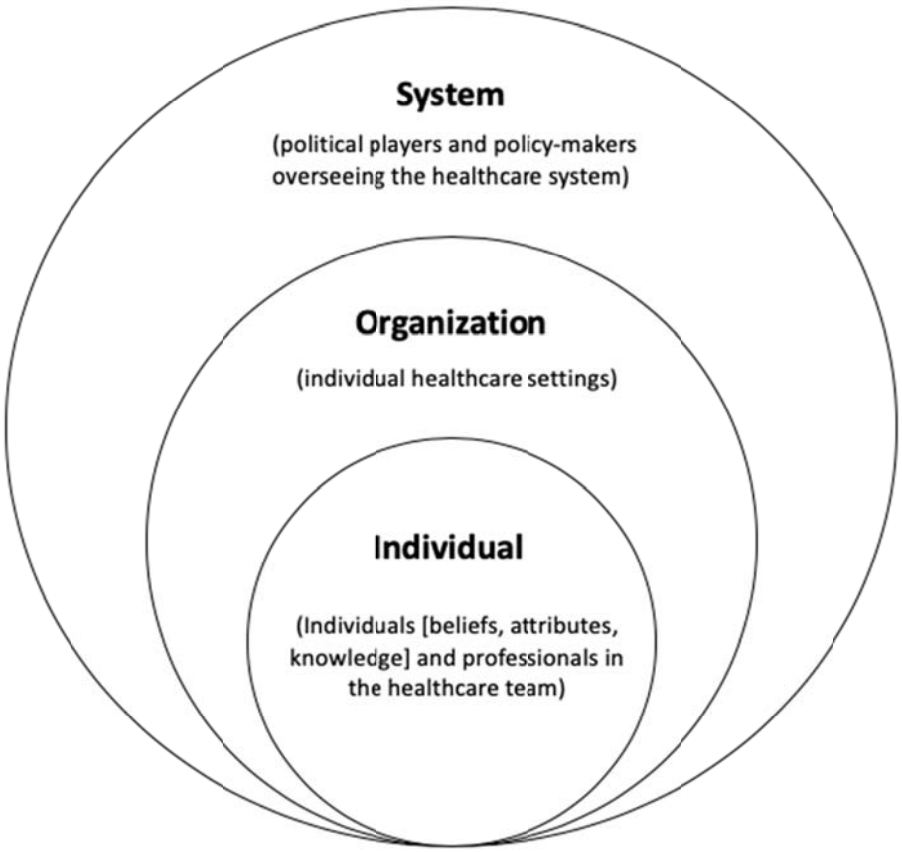

Figure 2.2 The socio-economic model as it applies to RN prescribing in Nova Scotia

Methods

Sampling and recruitment. The sample was selected using purposive and snowball sampling as it allowed potential participants to be chosen based on their ability to purposively address the research questions and be representative of the criteria of interest. Snowball sampling, when early participants refer other potential participants from their network who fit the inclusion criteria, was also used (Polit & Beck, 2012, p.516-517). Participants were employers, such as senior administrators, directors, and senior directors of adult patient programs within the Nova Scotia Health Authority (NSHA). This study aimed to collect qualitative data from eight to 15 participants. This

range of participants is consistent with current literature on similar qualitative studies and ensured that a variety of NSHA sites and patient-care areas were included (Hennink, Kaiser, & Marconi, 2017). Data collection ended once data saturation was reached, meaning that no new information was being reported by participants and redundancy was attained (Polit & Beck, 2012, p.521).

Recruitment was done via the NS RN Prescribing Steering Committee. The committee was formed to coordinate a provincial approach to the development, communication, analysis and implementation of RN prescribing in Nova Scotia between the Department of Health and Wellness (DHW), healthcare employers, CRNNS, and Dalhousie University. Senior administrators/directors within the NSHA were informed by the co-chairs of the NS RN Prescribing Steering Committee about the RN prescribing project at regularly scheduled organizational meetings. Potential participants were given the opportunity at these meetings to refuse being contacted by the PI. The PI then sent an introductory email inviting potential participants to participate in the study and included the PI and supervisor's email addresses. The co-chairs of the Provincial Steering Committee for RN Prescribing have access to potential participant emails through their role on the committee.

Participant inclusion criteria were as follows: a) responsible for RN practice in settings that offer health services for adults in Nova Scotia; b) held their position for a minimum of 1 year; and, c) were able to read and write in English. The study was being restricted to adult sites as the initial RN prescribing policy would be implemented in adult settings. These criteria ensured that participants did in fact employ and manage a setting with RNs, and that the participants understood their setting, the patient needs and the

roles of the RNs in the setting. Finally, the ability to communicate in English ensured that the participants would thoroughly understand the process of informed consent and the interview questions as they were in English. It was not within the scope of this study to conduct and transcribe the interviews in French or other languages.

Prospective participants who were employers in pediatric settings were excluded, as this study focused solely on the adult healthcare setting.

Data collection. The interviews were semi-structured and digitally tape-recorded with the use of a prepared interview guide. This ensured that the content provided by the participant was within the interest of the study, but also allowed for the participants to use their own words and speak freely on the topic (Gill, Stewart, Treasure, & Chadwick, 2008; Polit & Beck, 2012). Interviews took place at a time and place convenient to participants. If the participant was within reasonable distance to the PI, the interview took place in or near their place of work. The interview took place via telephone for those who worked in areas that were difficult to access or that were more than one hour driving distance from the PI. Consent to participate in the study and consent to record the interview was confirmed at the beginning of the session (Creswell, 2013).

Items (questions) in the interview guide were created based on an extensive literature review, which included prior surveys and qualitative studies addressing similar concepts (Polit & Beck, 2012). The questions in the interview guide were also informed by the Framework for RN Prescribing in Canada (CNA, 2015a). The interview guide was reviewed by members of the NS RN Prescribing Steering Committee. Interview strategies

included the use of silence to allow for contemplation and elaboration and asking for clarification for certain remarks or using probing questions (Gill et al., 2008).

Final interview questions and prompts were established following pilot interviewing with a volunteer from the Dalhousie University School of Nursing. . The volunteer was asked to comment on clarity and flow of the questions and probes, and on the interview process, including length and interviewing style. Pilot interviewing was useful to make any adjustments to the questions and to help the interviewer practice their interview skills (Gill et al., 2008).

Data analysis. Data were analyzed using thematic analysis, using the computer software NVivo 12.0 for data management (QSR International PTy Ltd., 2018). Thematic analysis is a popular analysis method in qualitative inquiry as it identifies, analyses, and reports patterns and themes within data (Braun & Clarke, 2006). Thematic analysis includes breaking down the participant narratives into smaller units of content and grouping them into themes (Vaismoradi, Turunen, & Bondas, 2013). Organizing emerging themes through thematic analysis "provides a rich and detailed, yet complex, account of the data" (Vaismoradi et al., 2013, p. 400) and fulfills the commitment to stay close to the words of the participant. Thematic analysis is therefore ideal for analyzing responses from participants on a complex matter such as the implementation of RN prescribing in Nova Scotia. Thematic analysis allows qualitative description to remain a low-interpretation approach to qualitative inquiry in relation to other methods where interpretation may be done through a certain theoretical or philosophical frameworks (Sandelowski, 2000). However, qualitative description is not free from interpretation. In fact, no research is ever free from interpretation. The data resulting from the qualitative

descriptive study was interpreted through the eyes of the researchers and a conceptual framework, both not without pre-conceived ideas and structures (Colorafi & Evans, 2016; Sandelowski, 2009). Thematic analysis was both deductive and inductive, and analysis of the collected data retained aspects from both. The research questions, informed by the CNA Framework for RN Prescribing in Canada, provided a basic framework, or *a priori* codes, for the analysis of the data, satisfying the deductive component of the analysis. Finally, categories and themes emerging from the data were organized by levels based on an adaptation of the socio-ecological model (Figure 1).

The process of thematic analysis happened in several phases and followed those laid out by Braun and Clark (2006). First, the transcripts were read and listened to several times in order for the PI to be immersed in the data. Second, initial emerging codes, different than *a priori* codes previously mentioned, that "identify interesting aspects in the data items that may form the basis of repeated patterns (themes)" (Braun & Clarke, 2006, p. 89) were generated throughout the entire data set. Third, the codes were sorted into potential themes and sub-themes, ensuring that all data that related to those themes were coded. The Fourth phase was the creation of a thematic map to review and refine the themes. All codes in each theme were reviewed for relevance and potential patterns, and then all themes in the map were reviewed for accuracy in relation to the entire data set. The transcripts were reread at this stage to ensure coherence with potential themes and ensure that no potential data codes had been missed. In the Fifth and final phase, the data within each theme was analyzed and the themes were further refined. This included naming and defining the themes.

Abstraction describes the process of grouping and creating categories as far as is reasonable for the context of the study (Elo & Kyngäs, 2008). This process was completed once and then checked independently by the supervisor (Creswell, 2013). This allowed for consistency and consensus regarding the codes, categories and descriptions created during the organization phase (Brooks et al., 2001). An independent check also enhances validity and reduces researcher bias (Burnard, 1991).

Data re-presentation. The outcomes from thematic analysis of a qualitative descriptive study were intended to be showcased in a manner most fitting to the phenomenon being studied. Key themes pertaining to the research questions (i.e. employer perspective, potential RN prescribing models, and barriers and facilitators) were expected to emerge from the analysis of the data and were represented as such.

Trustworthiness. The rigour of a qualitative study is defined as trustworthiness. Lincoln and Guba (1985) defined four criteria for establishing the trustworthiness of qualitative studies: credibility, dependability, confirmability, transferability, and authenticity. Following is a brief description of each criteria, ensuring that trustworthiness of the study was met.

Credibility. Credibility refers to the level of truth of the data (Colorafi & Evans, 2016). This was ensured in this qualitative descriptive study through the collection and verbatim transcription of rich descriptions from participants and data saturation (Creswell, 2013; Polit & Beck, 2012). The low-interpretive and factual nature of qualitative description also allowed for a high level of credibility (Sandelowski, 2000).

Dependability. Dependability is described as "consistency in procedures across participants over time" (Colorafi & Evans, 2016, p.23). This was maintained in the study

through the development of the semi-structured interview questions and appropriate prompts beforehand, and the testing of interview questions (Colorafi & Evans, 2016). Dependability was also ensured through double coding of the data (Polit & Beck, 2012). Both the PI and another researcher separately coded approximately 10% of the data and verified that both came to the same coding conclusions. Any discrepancies were discussed and both parties arrived at a consensus on common meaning.

Confirmability. Confirmability of the study was ensured by providing a detailed account of the study methodology, including data collection and analysis (Creswell, 2013). This offered transparency about the study design and allowed the study to be reproduced (Colorafi & Evans, 2016). Any personal assumptions or personal biases on behalf of the researcher were reported in the study so as to maintain transparency and enhance trustworthiness (Colorafi & Evans, 2016; Creswell, 2013). Finally, the findings accurately reflected the participants' narratives through the inclusion of verbatim quotes to illustrate findings (Polit & Beck, 2012).

Transferability. Transferability refers to whether the findings of the study have "a larger import and application to other settings or studies" (Colorafi & Evans, 2016, p.24). This was shown by comparing and contrasting the findings to the results from similar studies presented in the literature, and by giving the characteristics of the participants in the study (Colorafi & Evans, 2016). This will also allow for other researchers to compare with other groups and make an informed decision about whether the findings transfer to their population of interest or not (Creswell, 2013). Transferability was also achieved through data saturation, double-coding, and the inclusion of participant quotes throughout the study (Polit & Beck, 2012).

Ethical Considerations

Process of informed consent. Ethics approval was obtained from the Nova Scotia Health Authority Research Ethics Board (Creswell, 2013). Prior to the interview, time was dedicated to discussion of the informed consent process and to answer any questions the potential participants may have had. Participants were told that participation was voluntary and that they were free to withdraw consent at any time during the interview, and up until the transcripts were coded. Participants were told that once the transcripts had undergone coding, it would impossible to withdraw any information from the study. Participants were asked if they consented to having unidentifiable or non-attributable quotes taken from their interview. Consent also implied that the interviews were to be transcribed by a third party who had signed a confidentiality agreement. No compensation was given to participants during this study. Interviews took place in the participant's place of work unless they indicated a preference for an alternative location or for conducting the interview by telephone.

Confidentiality. Participants were assigned an identification number and had all identifying data anonymized in order to maintain confidentiality. There are no names or any information that would make the participant identifiable (i.e., the specific unit they worked on, specific departments, unit numbers, etc.).

Data storage. Audio recordings were destroyed after transcription. Physical copies of the transcribed interviews and any other hard-copy document that contained participant information are stored in a locked drawer within a locked room. Participant identifiers, in any electronic documentation, were removed and replaced with a code and then kept on a password protected file and on a password protected computer. All

relevant electronic documents for the study are backed up on an alternate system and password protected (Creswell, 2013). Hard copies of transcripts are kept in a locked drawer in a locked office. Both electronic and hard copies of transcripts will be destroyed after 7 years. Hard copies will be destroyed via a document shredder and electronic copies will be put on a USB key and then physically destroyed according to Nova Scotia Health Authority protocol.

Risks. This study presented very little risk to the participant. However, it was a considerable time commitment for directors who were busy. Participants were told that all information would be confidential and non-identifiable. Participants could skip any questions they wished to not answer, and they could take as long as they liked to answer the questions.

CHAPTER 4: RESULTS

This study explored the perspective of employers on the implementation of RN prescribing in Nova Scotia using qualitative descriptive methodology, and sought to answer the following questions:

- What patient care areas in the Nova Scotia healthcare system would benefit most from RN prescribing?
- What model of RN prescribing would be most appropriate to implement in patient care areas in Nova Scotia?
- What are some possible barriers and facilitators to the implementation of RN prescribing in Nova Scotia?

The following chapter contains the findings from the interviews, presented as themes that relate to the research questions.

Study Participants

Interviews with nine participants were conducted between April and October 2018. The patient care areas reflected by the participants are long-term care, homecare, primary care, and community mental health. Specific demographics will not be discussed to preserve the confidentiality of the participants, as they could potentially be identified through the demographic data. However, most participants have practiced in a clinical setting and are currently RNs. The level of experience in their managerial roles varied between 1 to 10+ years.

Participants were invited to engage in a semi-structured and audio-recorded interview in person or over the phone. Interviews lasted between 45-60 minutes and participants were encouraged to share their thoughts and experiences relating to the

implementation of RN prescribing in Nova Scotia. The quotes included in this chapter have been edited slightly for readability, while maintaining meaning. This chapter separates the findings of the interviews into three parts based on the research questions. Part One discusses the models of RN prescribing and includes themes such as promoting interprofessional practice, safety, and continuity. Part Two explores the patient care areas that may benefit from RN prescribing and focuses on increased access. Part Three reports the factors (barriers/facilitators) influencing the implementation of RN prescribing in NS. Part Three is separated into three sections following the socio-ecologic model that guided data analysis: individual level, organization level, and system level.

Models of RN Prescribing

Not all participants were unfamiliar with the three models of RN prescribing (independent, supplementary, and protocol-based) and required the interviewer to explain the models before being able to comment on them. Therefore, in order to reflect the discussions during the interviews, the findings are categorized into concepts that were noted to be of importance to the participants when discussing potential models of RN prescribing for their patient care areas. Concepts included promoting interprofessional practice, safety, and continuity.

Promoting interprofessional practice. Interprofessional practice was noted to be an important concept when discussing whether a model of RN Prescribing fit or did not fit into a certain healthcare setting. When asked about the independent model, participants noted it lacked interprofessionalism and communication; nurses would no longer need to work closely with physicians, which could lead to a breakdown in communication about the patient:

> And the one where nurses are entirely independent risk that there may be splits between the physician and the nurse practice. Or relegation of duties so much to the nurse that the physician isn't kept abreast fully of the patient's situation anymore. [Participant 8]

The same participant also pointed out how the supplementary model could have a positive impact on interprofessional collaboration through increased communication:

> Well, because it forces us basically to work together interprofessionally with the physicians… So I think the [supplementary model] allows the nurses and physicians to work together and ensure that there's good communication between the two. (Participant 8)

The increased communication would allow the nurse and the physician or nurse practitioner (NP) to practice cohesively to the benefit of the patient:

> I value the interdisciplinary team. And having that physician interaction, number one, with that patient and then with the nurse, it's important. And that you understand then that from the get-go, you're on the same page with a diagnosis and then yes, go forward then and implement the plan, tests. [Participant 2]

Some participants noted that the protocol-based model would allow the patient to receive care from the appropriate provider in the healthcare team:

> Say in that particular team they're the best person to do any kind of sexual education with the patient. And then the patient needs and wants to have a birth control method. So I could see the protocol-based [model] would work in that particular situation. [Participant 7]

Allowing nurses to prescribe in situations where they are very familiar with the patient promotes interprofessional collaboration through communication of frequent patient assessments:

> There's certainly areas where there's consistency in the nurses seeing clients, it's more appropriate for them to use that knowledge that they gather through frequent [assessments]. (Participant 5)

It was clear throughout the interviews that participants greatly valued interprofessional practice within their setting and want to ensure that future policy changes reflect that priority, regardless of the setting.

Safety. Safety is at the forefront of all changes in healthcare. It was no different for the participants in this study who voiced the importance of safety, no matter the model chosen. It was clear that both the supplementary model and the protocol-based model offered safety components that were not present in the independent model. The protocol-based model was described by one participant as having a "safety net" built in through its decision-making tool. This safety component was noted to be of increased importance for nurses working with limited resources, such as those doing homecare:

> They don't have a lot of resources to support them. They don't have the same supplies that are in the hospital or in a long-term care facility. They don't have people to go talk to. If they're in a hospital, you walk down the hall and you say, "Hey, can you come look at this." So they're extremely autonomous in their practice, and they need to be pretty highly skilled in what they're doing to make sure that it's safe. And I think if it's about a certain situation or condition that they're able to prescribe in, but yet there's some limitations to it, that just to me seems safer and it will keep them within their scope. [Participant 6]

The concept of safety was also mentioned to possibly play a role in the nurse's confidence. Nurses are familiar with policies and procedures being created to keep them safe in their practice, and the protocol-based model offers a similar set-up, potentially leading to increased confidence in the newly acquired skill. Participant 6 also stated: "I think for safety-wise, I like the protocol-based. And it will keep them safe and I think they'll feel more confident", highlighting the relationship between safety and nurses' confidence in their practice.

Finally, safety was noted to come in the form of interprofessional practice in the supplementary model, with the nurse working with the physician to support the patient:

> So I feel for them to have that support with the physician to […] do the assessment and advise. But then giving them the autonomy to actually prescribe the order and to facilitate treatments and care. (Participant 3)

The blend of interprofessional practice and autonomy were noted to be positive components of the supplementary model, ensuring that the patient received safe, appropriate and timely care.

Continuity. Nurses have the opportunity to form unique nurse-patient relationships in all patient care areas. Participants noted that RN prescribing would work best in areas where there was continuity between the nurse and the patient, or between the nurse and the patient population. One example was in diabetes education clinics (DEC), where nurses assess and educate patients; it was noted to be a "great group to have an opportunity to be able to order the insulin supplies and order insulin or other anti-hyperglycemic medications" (Participant 7). In the community, nurses go into patients' homes, do assessments, provide care, monitor progress and update the physician. Participant 5 discussed the continuity nurses have in a community setting:

> We follow clients, kind of as they go into acute care and then back out to community, and however many times they transfer. So, we have a little bit of consistency that way. And we follow clients for long periods of time. [Participant 5]

Nurses in the community are a continuous figure, and the relationship they form is important because they're seeing the client more than the physician is, and more than a nurse is in an in-patient setting.

The nurse-patient relationship was noted to be important in long-term care facilities, and could play a key role in RN prescribing:

> We've got really good relationships with our residents here (…). And who better than the registered nurse to be able to go and have that discussion and take that extra time to be able to educate them based on what they're ordering, what we're doing, what medication now we think is best for you. I think that's huge. [Participant 2]

In addition to having the strong nurse-patient relationships, RNs in long-term care are also very familiar with the patient population:

> A lot of our long-term care clients, their medications are pretty standard. (…) If you look at the list, they're very similar type of medications across the board. The dose may be a little bit different or the frequency or the amount of medications that they're actually taking. But it definitely would facilitate that process if the RN could have the ability to sign those orders or prescribe those medications. [Participant 3]

Overall continuity, whether it be through a strong nurse-patient relationship or familiarity with the patient population, was noted to be important in the success of RN prescribing among participants.

Participants also discussed how the independent model made the role of the nurse prescriber seem too similar to that of an NP. There were concerns that there would need to be increased education to explain the differences between RN and NPs, and that an RN prescriber "might as well be a nurse practitioner". Participants wanted RN prescribers to be distinct from NPs, who have broad legislated prescriptive authority. In contrast, they viewed RN prescribers as having the autonomy to provide timely care, including the ability to prescribe some medications, for a specific patient care need as determined by the team and organization. .

While participants were not able to comment on the structures of the different models of RN prescribing, their narratives highlighted three major themes (promotion of interprofessional practice, patient safety, and continuity between the RN and the patient or population) that should be considered when creating policies and education on RN prescribing in NS.

Patient Care Areas That Could Benefit from RN Prescribing

Participants provided rich data that described situations and settings where RN prescribing would or would not be appropriate. Overall, most participants discussed how RN prescribing could improve access to appropriate healthcare services. However, settings that provide palliative care, wound care, and/or supportive care were noted to be patient care areas that could distinctly benefit from RN prescribing.

Access. All participants gave examples of how RN prescribing could improve access to timely care for their patient population. Participants described how the physician's busy schedule can cause delays:

> So we have 2 physicians for the building. And they have full-time jobs elsewhere. So it happens quite frequently that we call. They're in the middle of speaking with a patient. We get their secretary. They might get back to us an hour or something later. So really that gap of time when somebody is having issues and we know what they need is huge. And it's really unfortunate for the patient. [Participant 2]

In long-term care, there may be delays for things described as "simple" such as pain relief or bowel medication that help make the patient more comfortable or alleviate symptoms until they can be assessed further. Some physicians remain easily available to reach; however, participants noted gaps for care needed after-hours:

> If it's after 11 pm and we have a concern, the client either has to wait until morning when there's physician coverage or if it's serious and they can't wait then we have to send them to hospital. (Participant 3)

In some patient care areas, there is also the added layer of receiving the medication once it is prescribed by the physician:

> Well, we have Lawton's for our medications. And they make a trip Monday, Tuesday, Wednesday, Thursday, Friday, every evening to bring medications. (…) So say one of my residents has something going on. By the time I call the doctor, the doctor's in clinic or the doctor is not in or whatever. By the time they get back to me if I've missed a 2:00 or 3:00 turnaround, then I'm not getting the medication until the next evening. Or unless we get a special delivery. But if the

> nurse was doing the assessment, implementation, following the algorithm or the supplementary process, she's already ordered it, faxed it in to Lawton's. Lawton's is working on it and sending it out with our orders that evening. [Participant 4]

Many facilities have close partnerships with pharmacies in the community. However, the reality is that medications are not available on site in long-term care facilities and require time to prepare and deliver. If prescriptions are sent after the "cut-off time", then the medication is delayed until the following day. This time must be factored in when considering the time it can take before a patient receives the needed medication.

For patient care areas that are considered rural, the physician often calls in orders to the RN or the pharmacy in between scheduled visits to the site. For both long-term care and homecare sites, that stated that there was more than a 45-minute drive for a physician to reach the institution/home, it was noted that RN prescribing could facilitate timely access to medications that patients required and prevent unnecessary redirections to family physicians or to acute care sites.

In different settings such as primary care and homecare, participants discussed how patients, who required care that could not be achieved via verbal orders, such were being directed to their family physician or emergency clinics, making them go back and forth:

> Like our system is so hampered with all of these pushbacks back to the family doctor or to the nurse practitioner, primary care provider. But there's no opportunity in the system to actually get some work done because the patients are just being rushed around from different place to different place, and then back to their main provider. Whereas in the [diabetes education clinics], they could go ahead and write those things for the patient, and put in their note that they send back to the main provider – This is what we've done. And the main provider will be saying, "Thank you.". [Participant 7]

Participants also see RN prescribing as an appropriate opportunity to offer continuity in addition to timeliness, considering their expertise and assessment skills. In many situations, nurses spend time with the patient, do the assessment and then need to call the physician or nurse prescriber to order a test, treatment, or medication. However, it is important to note that participants had many examples of physicians being very receptive to the needs in specific patient care areas, often resolving issues in the same day. Reported delays in patient care due to lack of timeliness by physicians is not a reflection of the physicians themselves, but of the provincial issue of lack of physician coverage. Participants provided concrete examples of patient issues that would most benefit from RN prescribing. They include palliative care, wound care, and supportive care (including prescription refills).

Palliative care. One participant in a long-term care setting took pride in the palliative care team, noting that the nurses were extremely knowledgeable and in a position to appropriately initiate and fulfill palliative care orders. The need for palliative care orders tended to be unpredictable, as noted by another participant:

> Even for end of life kind of care, that's a big area that we find. Because our clients are so elderly and frail, and we don't tend to prescribe end of life orders until they're absolutely required. But of course that's not predictable. And sometimes, through the night or on a weekend or whenever it's not convenient is when a client declines enough that they would need end of life orders. And that's a standardized order set throughout. But yet we have to wait for that physician to initiate it. So even if that was something that the physician could assess and advise from the get go, and then the nurse have the ability when it's appropriate to initiate those orders, it would be really good. [Participant 3]

Palliative care is one example of nurses having the knowledge, expertise, and opportunity to prescribe in situations that are unpredictable.

Wound care. Wound care plays a major role in the care provided by nurses in homecare. As per Participant 6, "approximately 50% of our clients receive wound care". Participants from both long-term care and homecare described having RNs who seek certifications from organizations such as the Wound Canada and lead interprofessional wound care teams. Their expertise in wound care is acknowledged by the other members of the healthcare team, including the physician:

> So, the RN that heads that committee is very knowledgeable. She's on the Canadian Wound Association committee or association. And she does a lot of suggesting of what should be. And really the physicians just default to her with regards to what her suggestions are. [Participant 2]

Wound care requires physician orders for tests, products and medications. Nurses must contact the associated family physician or NP to order swabs or any products beyond the standardized wound care list, which is noted to be outdated. However, patients without family physicians or NPs must seek help for wound care from walk-in clinics or emergency rooms. One participant described a typical situation in homecare:

> Like I said, they have 50% of wound care. And if you can have a nurse come in and assess and make a decision about what kind of (…) antimicrobial (…) and order it, and the client not having to go into a doctor's office for that, that's huge. You have clients who really are house-bound. They live out in the middle of nowhere. All their children live in Calgary. And they have no way to get in to see a doctor. So you have someone who is able to go in and help them with that. I think that wound care is going to be one of the (…) biggest areas if the nurses can prescribe. And it's just going to facilitate those clients as I say who can't get to their [family physician] or [don't have] a family physician so [they] have to go to emerg or go to a clinic. And then you have someone who actually knows them in there making those decisions. Astute, evidence-based, best practice decisions on what would be best for that client so that they can heal. So I see that as such a wonderful thing. [Participant 6]

Many nurses who suspect their patients have wound infections are unable to prescribe the tests or the products necessary to treat them, requiring trips to the family physician or acute care centers.

Supportive care. Participants discussed many other examples of RN prescribing that would improve access to timely care and improve patient outcomes. Two participants explained that anticoagulation management was an area where RN prescribing could improve efficiency and outcomes, as they often experience delays in receiving warfarin orders from physicians:

> I don't know if INR management and using thrombolytics is on some of that. (…) We have a protocol. But sometimes it's hard to get a hold of [the physicians]. And so the thrombolytics get all messed up (…). So if [the nurse] was able to manage that and continue to go with that, I think it would improve resident outcomes. [Participant 4]

In addition to anticoagulation management, the ability to initiate intra-venous (IV) fluids or treatments was noted to be a task that would improve access, as long-term care facilities currently depend on outside agencies to manage IVs or must send their residents to emergency. Finally, many participants in various settings noted that forms that must be signed by a physician can cause delays. An example includes forms for the wheelchair accessible buses:

> There's things that we use for safety or things that we use for support. Like sometimes we need a bandage and we need a prescription, and we have to call the physicians. An example, (…) the application for the wheelchair accessible buses. (…) So we fill out all the paperwork and the doctors sign their name at the end. [Participant 4]

Other forms include those necessary to transfer patients from the community into long-term care such as medical status forms or medication information:

> Once a client is in that transition from moving from their community to a long-term care facility, there's also that need for that medication information to be now written into a prescription for that accepting home, the accepting long term care facility to bring them in. So they almost need their medication orders re-written. (…) We know that involves that client having to connect with a family physician if they have one, and someone who knows the global perspective of all their medications they're on. [Participant 5]

Several participants discussed how there are delays in discharging patients from acute care into long-term care due to forms that require physician signatures.

Another way that RN prescribing can support patient care is through prescription refills. Participants from all settings noted that medication refills remain an area with a potential for high impact by RN prescribing. One participant, who works in homecare, explained that clients without a family physician must go to an emergency department to have their prescriptions refilled. A common situation in the community is a client who has "some medication that's been taken for 3 years and need[s] a refill" (Participant 6). Participants agreed that RN prescribing could impact patient outcomes through timely prescription refills.

Settings that provide palliative care, wound care, and supportive care have the potential to greatly increase patient access to timely and appropriate care with the incorporation of RN prescribing. Participant interviews illustrated situations where RN prescribing could have a powerful impact in NS.

Factors Influencing the Implementation of RN Prescribing

The factors (barriers and enablers) to the implementation of RN prescribing in NS have been categorized into levels based on an adaptation of the Socio-ecologic model (Figure 3). Factors influence implementation at the a) individual level, b) organization level, and c) system level.

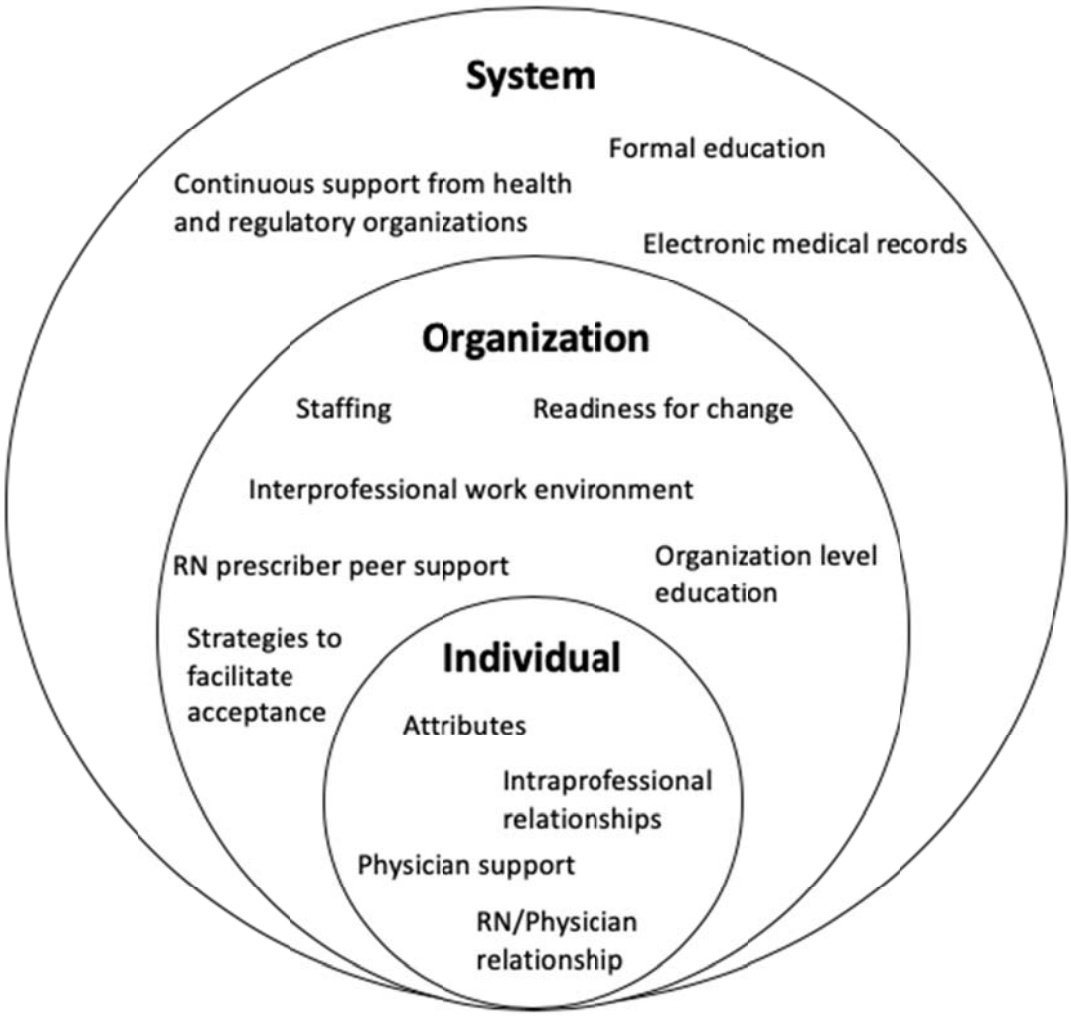

Figure 3. Illustration of factors affecting the implementation of registered nurse prescribing in Nova Scotia within the socio-ecologic model

System level. Three main themes describe (barriers/facilitators) at the system level: support from health and regulatory organizations, lack of provincial electronic medical records, and formal education for RN prescribing.

Support from health and regulatory organizations. The majority of participants mentioned how support, in various forms, was required from major stakeholders such as NSHA and DHW in order for RN prescribing to be successful in their respective settings. Financial support from provincial healthcare bodies both for the

organization and the RNs undergoing prescribing training was mentioned. Participant 3 noted that "we haven't been good at increasing dollars for knowledge with registered nurses at all", while Participant 6 stated that "the reality is it has to be financially supported by the government" (Participant 6). It was clear for all participants that there is an expectation that RN prescribing will be financially supported by appropriate stakeholders. Participants 1 and 5 discussed the need for the College of Registered Nurses of Nova Scotia and the Nova Scotia Health Authority to develop supportive regulatory and employment policies to ensure adequate accountability and parameters around the role. Participant 8 said:

> So an infusion of resources to make sure that this group of RNs have the proper support. You wouldn't necessarily have to have an infrastructure in every department, it could be for the health authority,that would serve as providing oversight to this group of RNs and keep the training up-to-date, troubleshoot. Like you know, if there's issues, who's going to police, kind of look at big picture what needs to change, and the training, etc.? Like somebody would have to take that on. And I don't think that we have resources in the system right now to cover that. [Participant 8]

Participant 6 also discussed the need for financial compensation:

> You're going to have nurses who are going to say, okay, why would I bother doing this? Are they going to be compensated differently? Say if I'm going to take on an extra course or an extra competency, and it's school, I'm going to be expected to see maybe different clients, they're going to look for compensation. [Participant 6]

Similar to financial compensation, compensation in terms of time will be required:

> So you need to make sure that there's protected time. That the nurses don't have to work full-time hours plus take that course. [Participant 6]

Overall, Participant 6 stated that there needs to be "continuous support" from the DHW the primary care stakeholder in Nova Scotia, meaning that the initiative is not only funded in its early stage, but also long-term. Participant 5 explains: "It's an organization,

we're grounded back in the Department of Health, and we're very limited by policies and processes", again highlighting the importance of support from the DHW in terms of having policies and regulations that support the development and implementation of RN prescribing in Nova Scotia.

Participant 8 also questioned what type of supports would be in place for managers in terms of training and monitoring RN prescribing staff, stating: "I think managers' concerns would be if RNs are prescribing and they need training and monitoring and stuff, what supports are going to be there for them? Because we have so many training needs (Participant 8).

Finally, Participant 1 discussed the importance of having nursing regulatory body support for RN prescribing through strong policy development and ensuring a safe practice environment. For Participant 1, it is important that RN prescribing is not portrayed as a "quick fix" for lack of physician coverage and that RN prescribing policies are supported across the NSHA. Overall, support in many forms is considered to be an important requirement from major stakeholders in order for organizations to successfully implement RN prescribing in patient care areas.

Electronic medical record. Due to a lack of a common provincial electronic medical record system, many settings have purchased their own while others remain with scanned paper charts. This creates variability in how settings may or may not integrate RN prescribing. Participant 4 noted that some systems do not interact with each other, having care plans in one system and medication administration records in another. For other settings, it was specifically the lack of transfer of information, or continuity,that was problematic:

> It's that lack of transfer of information when clients move from acute care into community, or even family physician to community. (…) It seems like every time someone kind of jumps into acute care and out, we kind of have this information gap, at times. [Participant 5]

Nurses providing care to patients struggle to fill in those gaps of information, which is necessary for safe and comprehensive care. Participant 4 also discussed how having all the necessary information easily accessible in one place facilitated care planning, especially as patients become increasingly complex in community and long-term care settings, stating: "We need to manage them in a smarter way, not a harder way". It was also noted that an electronic medical system would increase efficiency and accuracy in terms of evaluation:

> So if we had to evaluate something like this, we would have to pull paper files to do an audit. Somebody would have to go through each one individually to see if something's working. And because we're not usually funded to have staff just to pull charts. Then generally those type of audits don't happen, right. [Participant 8]

The majority of health record are written and scanned, making it difficult and "incredibly time-consuming" (Participant 8) to retrieve data. While there is variability in how sites manage patient health data, it is important to consider information technology for all aspects of RN prescribing as it can affect the uptake and success of the new practice.

Formal education. Included at the system level is the formal (i.e. university-level), graduate education required to be an authorized RN prescriber. The participant data regarding education is categorized on the competence and educational elements of the CNA Framework for RN Prescribing (Canadian Nurses Association, 2015a) (Figure 1) and are categorized as follows: prerequisites, curriculum and content, clinical mentorship, and continuing professional development.

Prerequisites. The majority of participants stated that "significant clinical experience" would be an ideal prerequisite (?) for an RN looking to undertakeundertake prescribing education. The participants also agreed that it was difficult to put a number on the years of experience necessary to be eligible for the program, with responses varying from 2 and 10 years. Ideally, participants stated that RNs would have received certifications from their specific area of expertise, if available, prior to enrolling to become an RN prescriber:

> I'm also thinking that registered nurses who work in any kind of a specialty, once they have their certification, they would have the proven knowledge base to be able to do the advanced assessments and understand the pharmacology to be able to write prescriptions. [Participant 7]

While it was difficult for participants to specify a specific number of required years of experience, many agreed that it was the type of experience and exposure the RN had rather than a precise number of years. Participant 4 said "I mean somebody can have 5 years' experience and someone could have 15 years' experience. (…) It's what experience you have." They also agreed that it should not be an entry-to-practice competency:

> I wouldn't do it as an entry to practice competency just because I don't know if everyone's exposed to the actual (…) physical application of your skill. Especially with wound care, until you've seen a variety, and you've been out there and played in the wounds, you get that judgement, that ability to kind of be more confident with it and to make those decisions. [Participant 5]

In addition to clinical experience, participants discussed if and how managers should be involved in the process of choosing RNs for prescribing education. Only two participants noted that they thought RNs should be allowed to apply without managerial support. For Participant 6, it was due to the number of nurses in their setting:

> I think it needs to be open for any nurse to apply at the very least. Because here's the thing, as a manager, they might…they don't know every nurse. And if you have 200 nurses or something, you might overlook somebody that really has those skills and just isn't out there going, "Hey, pick me, pick me."

Other participants recommended that the RN applying have strong references from managers. Participant 7 noted that "Well, considering they're employed and their employer is the one who's going to be dealing with the risk if something goes wrong, I think they have to be endorsed by their employer". Participant 4 discussed that the decision should be made collaboratively with staff. In general, participants wanted to have a say in who would be eligible for RN prescribing education, "looking at their experience and their performance (…) to ensure that it's the best fit and the safest for the client" (Participant 3).

Curriculum and content. Pharmacological content was frequently suggested as being an important piece of RN prescribing knowledge. In fact, many participants assumed that pharmacology would be part of the educational content. Health and physical assessment were also mentioned by several participants as playing a large role in RN prescribing. Participant 1 said that RNs "need to have knowledge about what blood work needs to be done to support a prescription refill for another year (…) because it affects kidney function, liver function, pressures in your eyes, and all those things". Participant 5 also suggested that there should be a review of "chronic diseases that are present in society" such as diabetes, chronic obstructive pulmonary disease, palliative care, and wound care. Finally, Participants 3 and 4 indicated that content should include education on creating plans, following algorithms, evaluation, ethics, and standards of nursing practice.

Clinical mentorship. Most participants believed that a preceptorship or clinical mentorship was a positive aspect of the formal RN prescribing education, especially in terms of increasing or solidifying the RN's confidence in their abilities to prescribe. Participant 3 said: "I think [physician preceptorship] would really empower them and I think it would be really good for them to have that one-on-one with a physician just to make them feel more comfortable in the decision-making that they do". Furthermore, Participant 1 noted that clinical mentorship increases the awareness of each other's roles and challenges, ultimately aiding in understanding the change in nursing practice. However, participants did not agree on which profession should take on the preceptor role. Answers varied between pharmacists, nurse practitioners, and physicians.

Continuing professional development. Most participants found it difficult to conceptualize what continuing professional development would entail with limited knowledge on the policy. Participant 2 suggested that there be testing every three years to ensure a strong knowledge base, while Participant 6 said:

> I think it would be the same as for all RNs. It's up to them to be competent. It's up to them to be reading and ensuring that they're competent. I don't think it should be any different than what they do now for other RNs

Participants agreed that RN prescribers would need to "keep up their skills" and engage in ongoing education. However, there was no consensus on how that would be achieved or who would be in the best position to monitor the ongoing education.

In summary, factors influencing the implementation of RN prescribing at the system level include ongoing support from major stakeholders, availability of an electronic medical record system, and formal education. These factors should be assessed

and, if needed, addressed in order to ensure optimal outcomes from the implementation of RN prescribing.

Organization level. The organizational level holds the most factors that would potentially affect the implementation of RN prescribing in NS. The key factors discussed by participants include: interprofessional work environment, staffing, readiness for change, peer support, and organization level education. Finally, participants discussed strategies to overcome certain barriers, which will be discussed at the end of this section.

Interprofessional work environment. A strong interprofessional work environment is key to the successful implementation of RN prescribing. Some settings, such as primary care, have prioritized interprofessionalism and now boast long-running collaborative practice teams. Certain mental health specialties have also built strong interprofessional teams. Participant 8 explains the importance of interprofessional collaboration for RN prescribing:

> I think where there is a high functioning interprofessional practice going on that that would be really supportive of RN prescribing. I think that's the ideal environment for RN prescribing because people won't be isolated and will feel supported. And if they're properly trained, they will develop the confidence because they won't be practicing in isolation. They'll have a chance to ask questions or bounce concerns off the physician or other nurse prescribers. [Participant 8]

However, it is important to take into consideration the variability of work cultures across different sites. Participant 9 noted that "it really varies practice to practice. Some collaborative practices have been up and running for quite some time. And they've got lots of experience. Other are just getting started". The same can be noted in long-term care, where the teams work in specific "neighborhoods" or "cottages", creating the feeling of working in silos. Some sites, especially in rural communities, are spread over

hundreds of kilometers. The physical proximity of different team members contributes to the culture of interprofessionalism and further promotes the idea that each site is different in terms of factors influencing policy changes.

Some settings function under a specific model of care. For example, some long-term care facilities follow the Care by Design model (Marshall, Clarke, Peddle, & Jensen, 2015). Participant 4 explained that Care by Design is viewed as a strength because it ensures that a long-term care facility is assigned a team of physicians who, through rotating schedules, can secure 24/7 on-call services. Some long-term care facilities have a medical director who is involved in Care by Design and who is available to assist with other activities such as policy development. Furthermore, most long-term care facilities also have good relationships with community pharmacies and pharmacists:

> We deal with Shoppers Drug Mart here. We have a contract with them. And we meet monthly with the pharmacist to talk about client issues, we do education, we do safety reports, that sort of thing. We go over all of our medication incidents that have happened. And we've got good communication with her. We can reach her by fax, we can reach her by email. (…) We do experience issues, that's for sure. But we do have a forum where we can address them, which is really good. And I do feel like she would support us through this process because she's very keen on kind of moving forward and getting the nurses onboard. She gets them very involved. [Participant 3]

The support of a pharmacist was deemed a strength by other long-term care settings as well. For example, Participant 4 discussed their relationship with the local pharmacy: "I just think that the pharmacists are so supportive. I never really had support like this before. (…) They're always answering our questions, they're always approachable for the staff. So that's a great resource." Finally, it is important to have the support of the other healthcare professionals such as occupational therapists and physical therapists. Participant 3 explains that they've achieved that level of support: "Our

interdisciplinary team here is pretty supportive of one another. I think that overall I don't think that [animosity between different professionals] would be too much of an issue." A work environment that is heavily focused on interprofessional collaboration is ideal for the implementation of RN prescribing. However, different factors can influence interprofessional collaboration such as the physical environment or care delivery models.

Staffing. Staffing issues were noted to be an important factor potentially influencing the implementation of RN prescribing. Due to changing demographics of health care providers, mental health settings are noticing a large influx of new RNs with less experience and "getting the number of experienced [RNs] who could take on these roles might be a challenge" (Participant 8). Other settings would struggle to release staff for training as they are already functioning with a minimal number of RNs. For example, some long-term care facilities have the site manager as the only full-time RN: "Yeah, it could be a barrier. Unless we give another task to the manager, I think. And the manager is already taxed enough because she's the only RN in the building" (Participant 4). The issue is also present in rural settings, where some posted positions have no applicants. Therefore, pulling a staff member out of work to receive education was noted by Participant 1 to be potentially challenging.

However, some sites discussed how they would manage releasing a staff member for education. In homecare, RNs may have to be staggered geographically to receive education:

> As a whole team, there is a lot of staff. I think we're still working in little pockets of geographical areas. That geographically if you look at an area, there would be a challenge there. But they're also supported in wound care. So, I think it would be doable. It might have to be staggered. [Participant 5]

In some settings, the RN may simply not be replaced, and the team would be required to absorb the extra workload temporarily. There remains considerable variability between sites regarding how they would manage shifts in staffing.

Readiness for change. Assessing individual site readiness for change and addressing potential barriers to change are important parts of policy implementation. Participants explain how timing and "current context" play a role in their site's readiness for change. For example, long-term care facilities discussed how they were in the process of optimizing scopes of practice for both RNs and licensed practical nurses (LPNs), and how there is room to integrate RN prescribing:

> We're just starting the process now of looking at utilizing the RN to their full scope. So, any time we have an extra in the building now, we're pulling the RN off the med cart to do the more clinical lead roles and really having her doing treatments and doing doctors rounds. Doing the things that the RN should be doing. So, I think we've got a number of really strong RNs that would excel in that role for prescribing. [Participant 3]

Participant 4 discussed how their long-term care facility is also looking to optimize the scope of practice of RNs: "And we're just now in talks of how to really rein that in and get it back to where we were". Several long-term care facilities are in the process of making changes that welcome new policies such as RN prescribing. However, other settings such as primary care discussed how they are already in the midst of change, and do not feel quite ready to take on more: "But the reason that I'm saying not primary care, not yet, is there is so much change going on in primary care right now with the building of collaborative teams" (Participant 9). Hence, many participants mentioned why timing and the evaluation of the current context play a role in readiness for change.

Another key factor in a setting's readiness for change is their reluctance to change. Participant 8 explained that "every time we change a practice, there's a

reluctance often on teams". Participant 3 suggested that in order to facilitate change and get buy-in from all team-members, the initiatives should be employer-led:

> How do we bring our teams together to help them understand this and support them through this change and get their thoughts and get their input? (…) I think it needs to come from us. Not come from somebody outside or corporately. Just a blank statement or an in-service thing – this is the way it's going to be from now on, and here's the education. It almost needs to come from within so that they feel more supported.

Furthermore, Participant 1 explained how there is often a period of "distrust" with change. However, they felt that could be mitigated by involving nurses who could be "champions for the change" and highlighting the positive outcomes. While most participants agreed that change is difficult to sell, the variability between settings is again highlighted as some are looking to welcome change, while others are already undergoing significant changes.

In addition to a setting's readiness for change is the support from high-level management. Participant 1 explained that if managers and directors were not open-minded about the new policies, then those views may possibly filter down to staff and create barriers during implementation. Many participants not only stated that they support RN prescribing, but described how they envisioned supporting it within their organization:

> In my role, or this is what I envision as the site manager and administrator of this building, is to be very actively involved. I need to be their liaison between what's coming down from corporate and the policies to the actual communicating and building that team and having them trust that this is going to work, they're going to feel supported. Like really making sure that that relationship is there. (…). I think we're going to have to be actively involved, absolutely. And I really believe we're the link between the communication and how that gets portrayed and how well they're going to feel supported and accepted as part of their role. [Participant 3]

Participant 7 also discussed that they would be supportive of RN prescribers in their setting and how their background as a nurse makes them a unique resource:

> Oh, I would see the manager as a resource for sure. And a facilitator to ensure that they get the training that they need, that they get the time off they need to get to the training, and that we've got coverage. (...) I'm just trying to think of it from a health services manager perspective. And some managers aren't even nurses. So really the manager's going to have to understand what this is all about and be able to support the person with whatever they need by way of training or having someone go do some mentoring. [Participant 7]

Participant 8 shared how they envision supporting RN prescribing in their setting as a director:

> My role as director would be to, once something was set up, to really work with the managers to identify the people and provide encouragement and support so that they could get the training and maintain it and know that the program was supportive of them doing it. Troubleshoot when things don't go well or when people have resistance. And help with the engagement around it. [Participant 8]

While a setting's readiness for change is not dependent on the support of the setting's manager or director, it does facilitate the implementation process.

RN prescriber peer support. Several participants discussed the importance of having a peer support network in place as RN prescribers navigate new skills and new challenges. Participant 8 stated:

> Another facilitator would be to have some kind of infrastructure. So people [RN prescribers] don't feel alone. There's someone in the Zone who kind of is in charge of this initiative who they can [contact], if they have ethical dilemmas or other questions about how it's set up, or problems that maybe are bigger than just what their manager might deal with on the unit. But more with the RN prescribing model, there would be a place that they knew that they could go and get feedback. [Participant 8]

While a peer-support network may be in place for a whole Zone or the entire province, Participant 3 suggested that the peer-support be provided within an organization:

> Because sometimes they're the only RN in the building, especially in our smaller homes. I would think as long as they have somebody that they can reach out to up here that is doing the same job, that they can run an idea by… So I think we need to build our communication and our team within our own company so that they know that they could pick up the phone and call [a facility] down the road and speak to the RN there, and have that collaboration. [Participant 3]

The RN prescriber may be the only one in their practice area, especially as the policy is at the beginning stages. Therefore, having the appropriate avenues established for RN prescribers to feel supported is extremely important.

Organization level education. Participants discussed organization-level education and two major themes emerged: the importance of role clarity and the barriers that can be addressed through education.

Role clarity. Role clarity refers to the clear definition of a scope of practice, more specifically on the clarity of the scope of practice of an RN prescriber. Most participants touched on the importance of role clarity during their interviews and was often discussed in relation to other healthcare team members understanding the role of RN prescriber. For example, Participant 6 explained that clear scopes of practice needed to be defined for RN prescribers in relation to NPs:

> So, I think we need to have clearer boundaries around what the RNs [are] going to be able to prescribe. And the specific situations they can do that in. Or else you're just creating sort of a chopped-up nurse practitioner role. (…) What's going to be the difference and how are we going to explain that and educate physicians specifically about the difference between an RN prescriber and an NP? [Participant 6]

Having clear roles and role understanding assists all team members, including RN prescribers, to understand the RN prescriber role in relation to other, perhaps similar, scopes of practice such as LPNs and NPs. Participant 1 discussed how providing education on changing roles can potentially mitigate any "angst or concern" that may

arise on behalf of LPNs, who, similarly, have seen their role expand into what was previously considered to be RN territory. Participant 4 pointed out that nurses value role clarity and that education should focus on scopes of practice for all healthcare professionals on the team:

> [Nurses] love role clarity. Absolutely, have clear roles. And that way nobody's going outside their roles. Having those clear roles, having an education online that we can all access to see what exactly is done. I think things like that would be helpful. (...) Having clear guidelines of what my role is, what the LPN role is, what the physician role is. [Participant 4]

Similarly, Participant 6 reiterated the importance of ensuring that the education provided by individual organizations should assist all members of the healthcare team in understanding the new RN prescriber role: "We'll have to make sure that [other professionals] understand what the role is going to be like". The majority of participants stated the importance of providing education that addressed the scope of practice of the RN prescriber to all members of the healthcare team. However, several also mentioned how the RN prescriber scope of practice should be defined in relation to other similar roles such as the RN, LPN, and NP.

Strategies to facilitate acceptance of RN prescribing within healthcare organizations. Providing comprehensive and organization-oriented education can contribute to the successful implementation of RN prescribing. Participant 7 explained that education will be significant to address important barriers such as team member buy-in:

> We just would need to have some clear understanding of what it means and how it's going to impact on the team. So, I think any kind of expansion is a good thing as long as we can get buy-in from all members of the team. And it's a lot of work on management's part to make sure that the team understand it. So, management needs to really understand it. So, there would have to be quite an education campaign for management. (…) Once everyone understands, I think they will all

> come to the same conclusion that it's a good thing. But that's going to be a lot of the upfront work that has to happen. [Participant 7]

Participant 9 suggested that education should be delivered in an interprofessional setting to increase success with the new policy:

> But I think what would be really important is that it be interdisciplinary. So that we don't just take nurses away, give them a course, and then toss them out there and say, okay, go forth and collaborate. I think it would be fantastic to identify the group that you're going to do it with, and then have some sessions that involve everyone who will be collaborating with the nurse involved to set that nurse up for success, to set the team up for success. [Participant 9]

Several participants discussed the importance of allowing for ample delivery time for education. Participant 2 gave the example of when their facility transitioned to an electronic medication administration system. They required three months of practice with the new machine before completing the transition: "It's all good in the background to put things into practice, but people need to practice before it's put into practice" (Participant 2).

Participant 3 explained how early communication might allow for team members to feel more at ease with the changes:

> Yeah, I think we would need to start communication early. We would need to get it out there that this is the way we're moving forward. Get the LPNs' input on what they see as some of the barriers. How can we make them all feel more comfortable? If there's a decision that's made and the LPN doesn't support the decision, making sure she has…who does she reach out to for help or advice or support? And try to get the discussion starting early, happening early. Build that teamwork. [Participant 3]

Participant 2 also discussed how "prep time, a long period of time for conversation and concerns" would help alleviate tension that may arise between LPNs and RNs. The importance of the time allotted for education and the content of the education itself needs to be clear for all participants, and several participants discussed

how the educational component may address potential barriers during the implementation of RN prescribing.

Factors reported by participants to impact the implementation of RN prescribing at the organization level include: interprofessional work environment, staffing, readiness for change, peer support for RN prescribers, and organization-lead education. It was noted that organizations can mitigate potential barriers through interprofessional, comprehensive, and organization-led education sessions early on in the implementation process to allow for ample communication and team buy-in.

Individual level. This section reviews intrapersonal and interpersonal factors that may impact the implementation of RN prescribing includes attributes of the RN prescriber; intraprofessional relationships amongst different types of nurses such as RNs, LPNs, and NPs; physician support; and, RN/physician relationships.

Attributes of the potential RN prescriber. Numerous participants mentioned that they had several RN staff members who embraced educational opportunities. Participant 8 stated:

> There is an appetite for working to full scope, and especially among the younger nurses. They're not afraid to step up. (…) We never have any shortage of people wanting to take advantage of [specializations]. [Participant 8]

Participant 4 also had a specific RN in mind:

> I can see one of the evening nurses being really good at it. And she's always looking to advance herself and to do different things. So, I can see how she might jump onto that. [Participant 4]

Nursing staff who "love education" are ideal candidates for a role such as RN prescribing, as per Participant 4. Furthermore, Participant 8 pointed out that "it can be something that builds their careers, they can put it on their resume, it will help them

pursue other positions in the future," which may facilitate recruitment of RNs into the prescribing program.

However, some participants noted some potential barriers for motivating RNs to pursue the prescribing education. Participant 6 suggested that the increased responsibility of prescribing may "scare" some nurses. Participant 2 discussed the barrier of "lack of confidence" or "second-guessing", stating that:

> It's a confidence issue I think with some RNs as well. So, I think there would be an easy transition with some and a not so easy transition with others. [Participant 2]

Strategies to address the potential lack of confidence would be adequate time for the RNs to prepare for the implementation of the policy (Participant 2) and ensuring that the RN prescriber had ample opportunity to maintain the prescribing skill through frequent exposure to their population of choice (Participant 5).

Intraprofessional relationships. In addition to having a positive intraprofessional work environment (as mentioned in organization level factors), it is important to consider the intraprofessional relationships. When asked about the potential for animosity between RNs and RNs who achieve prescribing status, some participants stated that RNs would be supportive of their peers. Participant 6 explained their reasoning for their answer:

> I don't think so. And the only reason I don't think so, because this will be something that some people want to do, and others won't. Unless somebody really wanted to do it and they don't get chosen. But I think you'll have those ones who will say, "I don't want to do it. If you want to do it, great." You're going to have a few that might go, "I don't know why…" You will always have unfortunately those people who will be negative – "I don't know why you want to do something like that." That kind of thing. But I don't see it as animosity between those two. I mean as nurses, we all choose different roles and continuing education, or you go on to an advanced degree. That's our choice. [Participant 6]

On the other hand, Participant 2 pointed out that tensions may arise if one RN was picked over another.

In terms of intraprofessional relationships between RNs and NPs, Participant 7 said they could foresee pushback from the NPs if RNs were given the opportunity to prescribe:

> That's one of the main reasons why people become nurse practitioners. They want to be able to practice independently and diagnose and prescribe. [Participant 7]

Participants shared that similarities between the roles may cause some concerns on behalf of the NPs. Finally, participants in settings where the RN works closely with LPNs discussed the potential animosity that may develop between the two groups if RNs were to take on a prescribing role. For example, Participant 3 stated: "I do know just looking at my nurse RN and LPN population, there may be some hesitation I guess from the LPN as to, did the RN make the appropriate decision?", indicating potential mistrust as RN prescribers settle into their new roles. Participant 4 highlighted the reality of the similarities between the scopes of practice of LPNs and RNs in a long-term care facility; if an RN's scope of practice increases, LPNs will be expected to work to their full scope of practice rather than let the RNs continue performing the upper-level nursing tasks. However, not all participants thought there would be tension between the two groups.

Participant 2 stated that LPNs in their organization "follow directions from the registered nurse in the building all the time. So, it wouldn't be an issue."

The intraprofessional relationships between RNs, LPNs, and NPs are complex and have been evolving over several years. Assessing the status of these relationships is important for the implementation of RN prescribing.

Physician support. Most participants agreed that physician support, or buy-in, was essential for the successful implementation of RN prescribing. Participant 1 stated that the possible lack of support from physicians would be a definite barrier, and Participant 3 mentioned that "absolute support" from physicians is needed. Participant 5 gave an example as to why physician buy-in is so important:

> And, of course, the family physicians would have to be onboard with it and be supportive of it. Because if a physician is not supportive of it and then the nurse is in their client's home, and changing or suggesting things, that family's going to feel caught in the middle of that. That they have a nurse in their home suggesting something, and then they have a family physician who's not supportive of it. So we wouldn't want to see the family members kind of in this conflict state. [Participant 5]

The importance of physician buy-in amongst participants was clear; however, when asked about physician support, most participants discussed how it varied depending on the individual physician. For example, Participant 9 had heard many different opinions regarding RN prescribing from physicians and stated that views are "both very positive and very negative depending on who you talk to." Some settings reported having physician support:

> I think the physicians here that I have right now would be very good. But I can see some questioning just for the sake of questioning. (…) We're lucky here that we have two fairly young physicians who I know would be very receptive to it. [Participant 2]

Another setting reported having some physicians who would be supportive and others who would not:

> I have two female physicians here that are absolutely fantastic, and I know they would encourage it, they would mentor, they would have no problem with it at all. They would very much be supporting. I have a male physician that is leaving us in a couple of months. And I'm not sure how he would feel about it. [Participant 3]

In addition to variation in individual physician support is the issue of physician payment schemes. Fee-for-service (FFS) physicians are paid per action, while alternate payment plan (APP) physicians are salaried. Participant 7 explained how this would affect physician buy-in:

> You're going to get more pushback on the fee-for-service because they can charge for prescriptions, the physicians, and everything else that they do. (…) In the APP environment, probably there won't be as much pushback from the physician group. If they're APP, they'll embrace it. So there could be some issues around buy-in for sure. There always has been historically. Any time that the registered nurse role has expanded, there's been issues and pushback from the physician group. It's just that not understanding and the threatening of their particular role as well as the billing piece. Which we've never really looked at, I don't think. It's important to everybody. [Participant 7]

The physician's payment plan and their individual beliefs about RN prescribing may potentially influence their support around the new policy. Furthermore, many participants mentioned "turf-protection" or "scope creep" as barriers to physician support. Participant 9 gave an example of pharmacists being allowed to administer the flu vaccine:

> And I'm not sure if this is the same in other provinces but certainly in NS, there is quite a tension between physicians and other providers in terms of what some physicians perceive as scope creep. And so for example, when it became possible for pharmacists to give the flu shot, many physicians said, "Yeah, that's great, more access for my patients." But some said, "Oh, well, yeah, that's great but you just took away $20,000 of my income." You know what I mean? "So we're trying to get people to do part of my job, which is directly impacting me." So that was an issue. [Participant 9]

This relates, again, to the payment scheme of physicians. However, the same participant had another example relating to the scopes of practice of pharmacists and NPs:

> So there's certainly concerns amongst physicians about competencies of pharmacists who are doing INR testing, for example, because they're not sure they've been trained. There's currently some physicians in the province who are not confident in the scope of practice of nurse practitioners, even though they've been around for a long time. [Participant 9]

As with other barriers, the perception of "scope creep" between RN prescribers and physicians varied from participant to participant For example, Participant 6 explained why it is important to include physicians in the discussions around RN prescribing:

> I think family physicians would be more open to it than other physician specialties. But you never know because some have a problem with NPs. That's a hard one. Some will see it as positive and other people will see it as scope creep. Others will see it as, well, great. They're going to assist the clients to get [care] when they can't come in and see me or see another physician. I think that's going to be the biggest barrier, if there is one. And we won't know until they start talking to them. [Participant 6]

The variability of physician support within organizations was as variable as the organizations themselves, with perceptions of scope creep and payment schemes potentially influencing the individual physicians.

RN/Physician relationship. It is important to evaluate the quality of the relationship between the RN and the physician, as both will be collaborating when the RN undergoes prescribing education. Participant 3 discussed how the relationship between the RN prescriber and the physician can impact the implementation of RN prescribing:

> I have another physician that again, she's difficult to reach, she's not that engaged. The staff don't have a lot of trust in her because she's not present and she's very difficult to reach. So, in her case I can see that being an issue. Would the RN even have that trust in her mentorship skills? Would they feel supported or would they feel that would be a good experience with her? Probably not. Because the relationship with this one physician is not the greatest. Again, it depends on the physician. [Participant 3]

As with other barriers, the relationship between the RN and the physician is highly individual. For example, Participant 4 explains that in settings with multiple sites, the relationships vary by site as well. Since RN prescribing requires strong collaboration

between the RN and the physician, the potential for a positive relationship must be present.

This chapter categorized the rich narratives provided by participants into sections, themes, and sub-themes. The three main sections were based on the three research questions that guided this study: models of nurse prescribing, patient care areas to benefit from RN prescribing, and factors influencing the implementation of RN prescribing. In section one, the promotion of interprofessional practice, patient safety, and continuity were themes that participants thought should be central to RN prescribing in NS, regardless of the model chosen. In section two, findings from the participants showed that RN prescribing may improve overall access to timely and appropriate healthcare, notably in settings that provide palliative, wound, and supportive care. Finally, section three illustrated the factors influencing the implementation of RN prescribing and the levels at which they occur.

CHAPTER 5 – DISCUSSION

Interprofessionalism, Continuity, and Safety as Desired Features to RN Prescribing

While the three main models of nurse prescribing are well-known in the UK, participants in this study required a brief explanation of each model prior to discussing which model might be most appropriate in their patient care area in Nova Scotia. As such, participants may not have knowledge of the subtleties that characterize each model of Registered Nurse prescribing. This is a similar finding to some of the responses collected from Ontario's Health Professions Regulatory Advisory Council consultation with key stakeholders. Several stakeholders replied that they did not have enough information to comment on the appropriateness of a specific model for Ontario (Health Professions Regulatory Advisory Council, 2016). Key stakeholders varied widely in their support of RN prescribing, ranging from no support at all to complete support, and included endorsement for all three models of nurse prescribing (Health Professions Regulatory Advisory Council, 2016). There is no data on the perspectives of Canadian employers published in peer-reviewed journals. To the best of my knowledge, this is the first study of its kind in Nova Scotia.

The themes that emerged from participants in this study offer key features that employers consider important in the creation of RN prescribing policy for Nova Scotia. These include promoting interprofessional practice, safety, and continuity as concepts that should be central in RN prescribing, no matter which model is developed. These concepts were mirrored in a survey to nursing practice leaders and Chief Nursing Officers of Ontario public health units (York Region Public Health, 2016). Responses regarding

advantages to the independent prescribing model included: increased patient outcomes through compliance, access and timeliness; increased continuity of care; increased knowledge for nurses; and increased opportunities to work collaboratively with primary care partners. Responses regarding advantages to the protocol/group directive model included: allowing nurses to practice more independently; use of existing medical directives in practice; ensuring consistency in clinical practice; encompassing direction from a physician; and being the model that is least likely to result in errors (York Region Public Health, 2016). Similar to employers in Nova Scotia, public health stakeholders in Ontario highly valued interprofessionalism, continuity, and safety as central concepts to RN prescribing.

All models of nurse prescribing (independent, supplementary and protocol/group directive) offer opportunity for interprofessional practice, continuity, and safety to different extents. For example, the supplementary model consists of a clinical management plan that is drafted by the physician, agreed upon by the nurse prescriber and patient, and includes a list of medications that may be prescribed (Berry, Courtenay, & Bersellini, 2006; Courtenay, Carey, & Burke, 2007; Watterson et al., 2009). In the UK, supplementary prescribing is most often used for patients with chronic medical conditions (Courtenay et al., 2017). In terms of safety, the supplementary model offers a structure that provides clear boundaries for the nurse prescriber and therefore acts as a 'safeguard' (Bissell et al., 2008). Several studies have shown that nurse prescribers have a strong safety consciousness, usually implementing additional safeguards in their personal prescribing practice (Maddox, Halsall, Hall, & Tully, 2016; Nuttall, 2018). Nurse independent prescribing has been deemed safe in terms of competencies and standards

(Latter et al., 2010; Smith, Latter, & Blenkinsopp, 2014). However, there is a lack of quality research evaluating the safety of independent and supplementary nurse prescribing (Gielen et al., 2014).

In a study exploring nurse prescribers' views on the role of interprofessional relationships in an acute and chronic pain setting, Stenner and Courtenay (2008) found that nurse prescribing promotes collaboration, communication, and knowledge exchange with other professionals, namely the physicians. However, other studies found that nurses encountered resistance from physicians and were often confronted with misunderstandings about their prescribing role (Nuttall, 2018; Stenner & Courtenay, 2008). This is an issue with all models of nurse prescribing, highlighting how education can alleviate much of the barriers arising on behalf of other healthcare team members (Noblet et al., 2017; Nuttall, 2018). Nurse prescribers addressed these barriers by educating their coworkers about their role and the boundaries of their competencies. Literature from the UK focuses on the importance of interprofessional collaboration for the success of nurse prescribing (Noblet et al., 2017) and, therefore, barriers to interprofessional collaboration should be addressed prior to RN prescribing being implemented in a practice setting in Nova Scotia. The importance of interprofessional practice is discussed further in this chapter.

Studies evaluating independent and/or supplementary nurse/non-medical prescribing describe the positive outcome of increased continuity in patient care (Courtenay et al., 2007; Darvishpour et al., 2014; Smith, Coucill, & Nuttall, 2018; Watterson et al., 2009). Regardless of the model chosen, patients of RN prescribers in Nova Scotia have the potential to benefit from improved continuity of care.

Nurse prescribing in primary and secondary care settings

Nurse prescribing in the UK began with community nurses who were allowed to prescribe from a list that included laxatives, antifungals, emollients, simple analgesics, nicotine replacement products, catheter management products, stoma appliances, and wound dressings and management products (Courtenay, Deslandes, Harries-Huntley, Hodson, & Morris, 2018). Independent prescribing was established in 2001 (Courtenay et al., 2017). In 2016, there were approximately 30,000 nurse independent/supplementary prescribers, with the majority practicing in primary care (general practices) (Courtenay et al., 2018). A national survey of nurse and pharmacist independent prescribers conducted in 2010 reported that there was an average of 74.9 nurse independent prescribers working in a Primary Care Trust versus an average of 21.4 nurse independent prescribers working in an Acute Trust (Latter et al., 2010). Community nurses (adult) were the most common type of nurse independent prescribers in Primary Care with an average of 22.3 per Trust. In Acute Trusts, it was reported that there was a mean of 2.8 nurse independent prescribers per unit/ward (Latter et al., 2010).

For nurse independent prescribers in primary care, the most frequent areas of practice were general medical practice (40.8%), home visits (20.9%), walk-in clinics (6.7%), family planning clinics (4.8%), and nursing homes (3.5%) (Latter et al., 2010). The treatment areas that nurse independent prescribers prescribe for the most are infection (15.3%), asthma (9.8%), diabetes (7.9%), chronic obstructive pulmonary disease (6.1%), family planning (5.8%), wound care (5.6%), and dermatology (4.2)% (Latter et al., 2010).

Nova Scotia is Canada's second smallest province but has the second highest chronic illness rate (Nova Scotia Health Research Foundation, 2009). In 2012, the most common chronic diseases among Nova Scotians were overweight/obesity (61.2%), high blood pressure (22.9%), arthritis (22.7%), respiratory disease (13.0%), diabetes (9.9%), and heart disease (5.8%) (DHW, 2015). This suggests that areas that have seen a large uptake of nurse prescribing in the UK are similar to patient populations that may benefit the most from RN prescribing in Nova Scotia. The implementation of RN prescribing in areas with a high prevalence of patients living with chronic disease would allow patients to receive safe, appropriate, and timely care. In a systematic review and meta-analysis of the effect of nurse prescribing on glycemic control in type 2 diabetes in the UK, Tabesh and colleagues (Tabesh, Magliano, Koye, & Shaw, 2018) reported there was no significant difference in HbA1C levels between patients cared for by independent nurse prescribers and physicians, demonstrating that nurse prescribers can achieve similar outcomes to physicians when managing type 2 diabetes. Furthermore, a meta-analysis focusing on the improvement of hypertension in patients with type 2 diabetes through nurse-led interventions, including nurse prescribing, demonstrated that nurse-led interventions achieved a greater reduction in blood pressure compared to usual interventions (Clark, Smith, Taylor, & Campbell, 2011). When considering a population with a high burden of chronic disease, such as Nova Scotia, it is important to remain open to different methods of delivering safe and appropriate care, such as RN prescribing. RN prescribing, in conjunction with interprofessional collaborative care, can increase timely access for chronic disease patients and improve patient outcomes in Nova Scotia.

Wound care was frequently mentioned by participants in this study as comprising a large percentage of their nursing tasks, specifically in long-term care and homecare. A study by Courtenay, Carey, & Stenner (2012) reported that wound care (27.8%) is the third most common area of prescribing for community nurse prescribers, following dermatology (35.5%) and minor ailments (33.3%). Guest and colleagues (2015) report a Canadian national wound prevalence of approximately 4.5%, not including wounds in nursing homes. Canada reports that approximately 4% of inpatients, 7% of homecare clients, and 10% of long-term care clients have compromised wounds (Canadian Institute for Health Information [CIHI], 2013). In the diabetic population in Canada, there is also data to support that effective wound care management is 10 to 40 times less costly than an amputation (CIHI, 2013). In Nova Scotia, 12% of in-patients suffer from pressure injuries, while 7% of residents in long-term care facilities have stage 3 or 4 pressure injuries (Henderson, 2018). While pressure injuries are completely preventable, their healing often requires prescription wound care supplies. A delay in receiving such supplies may lead to worsening of pressure injuries and negative outcomes, possibly resulting in death (CIHI, 2013). It is therefore reasonable to assume that, given similarities in data between the UK and Canada, that wound care is an important gap that can be addressed through RN prescribing, with significant financial implications.

Palliative care was often cited by participants as being a patient care area that could benefit from increased access to prescribing activity by RNs. A longitudinal and palliative-care specific study of the contribution of non-medical prescribing, found that the number of prescriptions written by non-medical prescribers remains small in comparison to those written by medical prescribers (Ziegler, Bennett, Mulvey, Hamilton,

& Blenkinsopp, 2018). Furthermore, 76% of non-medical prescriptions issued in palliative care are opioids. This percentage has been steadily increasing since 2012, when changes in legislation in the UK allowed non-medical prescribers to independently prescribe controlled drugs (Ziegler et al., 2018).

Another study in the UK, also conducted after the legislation changes in 2012, evaluated the time it took palliative care patients to receive their prescriptions before and after the clinical nurse specialist started prescribing (Dawson, 2013). The average time for patients to receive their medication following an assessment prior to the clinical nurse specialist in palliative care independently prescribing was 42 hours. Thirty-four percent (n=11) of participants received their medication between 24-48 hours, 15% (n=5) received their medication between 48-72 hours, and 13% (n=4) received their medication more than 72 hours following their assessment (Dawson, 2013). Once the clinical nurse specialists became an independent prescriber, the average wait time was reduced to 8 hours following the patient assessment. Eighty-six percent (n=15) received their medication in less than 24 hours with 50% of participants (n=9) receiving their medication within five hours of assessed by the independent nurse prescriber (Dawson, 2013). Also discussed was how the independent nurse prescriber offered a more flexible service, which led to timely symptom management, arguably reducing the palliative patient and families' stress (Dawson, 2013). Andrews and Morgan (2012) also explore the importance of timely intervention for constipation management in a palliative care population. With anywhere from 32-87% of palliative care patients experiencing constipation, a multifactorial issue that requires a comprehensive, holistic and timely assessment, nurse prescribers are well-placed to provide the long-term management

required (Andrews & Morgan, 2012). Finally, timely symptom management in palliative care can allow patients to remain in their chosen setting for their end of life care (Dawson, 2013; Ziegler, Bennett, Blenkinsopp, & Coppock, 2015). Therefore, there is potential for improved patient outcomes with nurse prescribing regardless of whether controlled drugs are allowed to be prescribed or not. This has important implications for jurisdictions that area jurisdiction considering nurse prescribing, such as Nova Scotia, which has one of the oldest populations in Canada and one of the highest rates of chronic disease (DHW, 2014). In 2014, Nova Scotia created a plan of action to increase patient access to integrated palliative care. The plan includes recommended actions for: access to 24/7 services, options for sites of care (home, long-term care, acute care, and hospice), enhancing continuing care, and streamlining services (DHW, 2014). The implementation of RN prescribing in palliative care settings in Nova Scotia would allow the province to improve the delivery of palliative care as planned.

Barriers and Facilitators

The factors discussed by the participants in the study are consistent with the barriers and facilitators present in the literature on the implementation of nurse or non-medical prescribing, with two exceptions: *Readiness for change* and *Electronic medical records.* Firstly, the emergence of the theme *Readiness for change* is most likely due to this study asking questions pertaining to barriers and facilitators prior to the implementation, whereas most literature is retrospective. Secondly, when exploring possible barriers, participants in this study also discussed how some settings have electronic charting systems whereas others continue with paper charts. In current literature, in formation technology (IT) is often cited as a considerable barrier to

effective uptake of nurse prescribing and includes issues such as inability to generate computer prescriptions, delays in obtaining prescription pads, and difficulty accessing patient records (Cooper et al., 2008a; Courtenay & Carey, 2008; Darvishpour, Joolaee, & Cheraghi, 2014). These are important barriers as well as a safety concern in terms of an RN prescriber possibly not having access to all the required information to write an accurate prescription or to monitor prescribing records. These barriers must be addressed either at the provincial system level or within individual organizations in Nova Scotia prior to the implementation of RN prescribing.

Continuous support from regulatory organizations. While healthcare delivery in the UK differs from that in Nova Scotia, appropriate support from governmental and regulatory stakeholders at all levels is imperative for successful change in healthcare. A systematic review by Noblet and colleagues (2017) reported that factors affecting the successful implementation and uptake of nurse prescribing at a system level included strategic planning, funding, clear policies and guidelines, and appropriate political leadership. For example, a potential barrier in terms of support from regulatory organizations would be the expectation that nurse prescribers will acquire additional skills and education with little to no financial incentive or role recognition (Noblet et al., 2017; Ross & Kettles, 2012). Adequate funding allows organizations to address logistical, administrative, and educational barriers encountered by RN prescribers (Cooper et al., 2008b; Noblet et al., 2017; Stenner & Courtenay, 2008). Additionally, governmental and regulatory organizations should ensure the development of scopes of practice guidelines, policies, and regulations at a systems level that support, rather than

restrict, the implementation of nurse prescribing at an organizational level (Courtenay et al., 2011; Graham-Clarke et al., 2018; Noblet et al., 2017; Stenner & Courtenay, 2008).

Participants in this study discussed the type of support required in Nova Scotia for the successful implementation of RN prescribing. Support from the DHW in terms of appropriate funding and the development of policies and regulations was deemed a facilitator, in addition to the support from the nursing regulatory body in the creation of policies that ensure a safe practice environment. Adequately funding RN prescribers, ensuring that RN prescribing is not portrayed as a "quick-fix" for poor physician coverage, and support across the NS Health Authority were also mentioned. Finally, participants explained that an important facilitator would be ensuring managers had sufficient financial and staffing support for training and monitoring RN prescribing in their settings. The supports required for the successful development and implementation of RN prescribing in NS are similar to those described in research focusing on nurse prescribing in other countries, such as funding, policy creation, and political motive from system-level stakeholders (Noblet et al., 2017).

Education and continuing professional development. In the UK, the education for nurse prescribing consists of 27 days of full-time education and 12 days of practicum, mentored by a designated medical professional (Stenner & Courtenay, 2008). Studies have reported mixed findings on whether students feel prepared to prescribe following their nurse prescribing courses (Bissell et al., 2008; Ross & Kettles, 2012). However, many studies cite the lack of consistent access to continuing professional development (CPD) after the initial nurse prescribing course as a barrier to the success of nurse prescribing (Bissell, et al., 2008; Graham-Clarke et al., 2018; Noblet et al., 2017).

Reported factors affecting successful CPD uptake include lack of: support from managers, course opportunities, time, and financial compensation (Latter et al., 2010; Noblet et al., 2017; Stenner & Courtenay, 2008). The absence of accessible CPD courses or the lack of support to access relevant CPD impedes nurse prescribing by reducing the opportunities for nurse prescribers to update and share relevant, evidence-based knowledge. This directly impacts utilization of nurse prescribing through a decrease in the nurse prescriber's knowledge and confidence (Noblet et al., 2017). In this study, participants agreed that CPD was important to the success and safety of RN prescribing; however, few were able to conceptualize what the CPD for RN prescribing in Nova Scotia would entail with limited knowledge about RN prescribing. Considering the substantial impact of CPD, or a lack thereof, can have on the success of RN prescribing, it is imperative that guidelines for the creation of relevant and accessible CPD opportunities be incorporated into the RN prescribing strategy at the early stages of planning.

Impact of interprofessional collaboration on the success of RN prescribing. Both current literature and this study discuss the important impact that interprofessional and intraprofessional relationships have on multiple factors influencing the success of implementation or uptake of nurse prescribing (Stenner & Courtenay, 2008).

Intraprofessional relationships, meaning relationships between nurses (i.e. nurse prescribers and/or registered nurses), influence a nurse prescriber's confidence and likelihood to flourish in the prescribing role (Stenner & Courtenay, 2008). For example, a lack of understanding around the new nurse prescriber's role may lead to animosity from

physicians or nursing peers. Studies have found evidence of healthcare team members having inappropriate expectations of nurse prescribers, such as prescribing outside of their area of competence or complete refusal of the nurse prescribing altogether (Bradley & Nolan, 2007; Cooper et al., 2008a; Noblet et al., 2017; Nuttall, 2018). These behaviours may deter the nurse prescriber from fulfilling their role (Maddox et al., 2016). However, positive peer relationships improve nurse prescribing confidence through mutual support and can enhance intra- and interprofessional collaboration (Graham-Clarke et al., 2018). Collaboration with all members of the healthcare team provides nurse prescribers with various avenues to seek advice and important information that informs prescribing decisions (Stenner & Courtenay, 2008). In this study, participants reported the possibility of nurse prescribers having supportive nursing peers and potentially skeptical or resentful co-workers. Participants also discussed how professionals from other disciplines, such as physiotherapy and occupational therapy, would be supportive of RN prescribing. These findings highlight the fact that every setting and work environment is different and requires a collaborative and personalized approach at the implementation of RN prescribing.

The relationship between the nurse prescriber and the physician plays a critical role in the uptake of nurse prescribing. According to a study by Stenner and Courtenay (2008), supportive nurse prescriber-physician relationships took the shape of formal or informal opportunities to discuss relevant clinical issues. Such opportunities were “an important means of discussing difficult cases, updating, sharing knowledge and building confidence” (Stenner & Courtenay, 2008, p. 279). The same study also demonstrated that nurse prescribers often shared their prescribing rationales with the physician to increase

trust in their prescribing abilities and to share knowledge (Karen Stenner & Courtenay, 2008). Without a supportive relationship, nurse prescribers may not feel comfortable discussing prescribing decisions, which may lead to a lack of confidence and a decrease in prescribing activities (Maddox, 2016). Furthermore, several studies report that a lack of physician support is an important barrier to nurse prescribing and discuss explicit objection on behalf some physicians (Courtenay et al., 2018; Noblet et al., 2017). For the most part, this seems to be due to perceptions of boundary encroachment, and a lack of awareness surrounding the role, responsibilities, and boundaries of nurse prescribing (Nuttall, 2018).

In a systematic review from Noblet and colleagues (2017), 79% (n=34) of evaluated studies found that "the thoughts and perceptions relating to acceptability and value of [non-medical prescribing] had a significant impact on its implementation and utilization" (p. 228). Similarly, a systematic review by Graham-Clarke and colleagues (2018) reported that physicians who were involved in the clinical mentorship of nurse prescribers were more likely to be supportive, which is possibly due to their increased understanding of the nurse prescriber's role, limitations, and education. This provides a strong argument to incorporate physician mentorship into the educational curriculum for RN prescribing, allowing physicians the opportunity to understand, interact, and build a strong collaborative relationship with the new RN prescriber. Similar findings are discussed in this study. Several participants agree that "absolute support" from physicians is necessary to the implementation of RN prescribing in Nova Scotia. Participants also reported mixed feedback from physicians, with some being very supportive and others not as much. Reasons given by participants for the potential lack of support from

physicians resemble those reported in current literature and include turf-protection, lack of confidence in registered nurses' skills and knowledge, and perceived loss of financial profit (Molly Courtenay & Carey, 2008b; Noblet et al., 2017). The latter is especially true for physicians paid under a fee-for-service model; a decrease in prescribing means less billing and therefore less income.

The literature highlights a critical barrier to RN prescribing implementation that can be addressed through interprofessional education. Noblet and colleagues (2017) discuss how a "strategic, collaborative and consultative" (p.225) approach to implementation that focuses on patient care rather than a single profession's interest is key in mitigating barriers such as turf-protection, fear of change, and lack of role clarity. Organizations implementing RN prescribing in Nova Scotia should focus on offering comprehensive interprofessional education on the new RN prescribing role, with a focus on role clarity and scopes of practice for all team-members. As discussed in international literature, lack of support often stems from a lack of understanding of the nurse prescriber's role and boundaries to said role (Stenner & Courtenay, 2008). This was reflected by participants in this study, who discussed the importance of role clarity for all healthcare professionals and its impact on the implementation of RN prescribing in Nova Scotia.

Intra- and interprofessional education sessions that address common concerns reported in local and international literature, such as changes in scopes of practice, scopes of practice in relation to other professionals, legal boundaries, practice boundaries, safety issues, and educational requirements, are necessary. Several studies discuss how addressing healthcare professionals' concerns or misconceptions about nurse prescribing

through education is an effective strategy to eliminate multiple barriers (Bradley & Nolan, 2007; Noblet et al., 2017). Having organizations deliver this type of information prevents nurse prescribers from finding themselves in situations where they are asked to perform inappropriate tasks or are met with animosity or reluctance (Bradley & Nolan, 2007; Noblet et al., 2017). Barriers that can be mitigated through consultative, interprofessional and comprehensive education at the organization level include tension within inter- and intra- professional relationships and lack of support from peers and physicians. Supportive relationships with peers and physicians are integral to the successful implementation of nurse prescribing and should be a primary focus for organizations throughout the implementation process.

Strengths and Limitations

Several strengths are noticeable throughout this study's design and execution. The qualitative approach and the descriptive methodology allowed for an in-depth perspective and understanding of the context in which the participants worked. The nine participants were from four different practice settings, in both urban and rural communities across Nova Scotia, which assured diversity to the findings of this study. Data saturation was attained with the nine participants. Member checking was performed throughout interviews through confirmation of key statements by participants. Approximately 10% of transcripts were secondarily coded by another researcher to ensure trustworthiness (Polit & Beck, 2012). Finally, this research is the first of its kind in Nova Scotia, and one of few in Canada. This research as the potential to directly inform the development of RN prescribing policies in Nova Scotia and is applicable to other provinces in Canada.

Exploration of the perceptions of patients and various healthcare providers in Nova Scotia were beyond the scope of this study but are of considerable importance and warrant future study. The timeliness of this research means that literature, policies, legislation, and regulations, relating to nurse prescribing in Canada and internationally, are constantly being updated; an attempt was made to include the most up-to-date information and references where possible.

Recommendations for Policy

- The creation of clear scopes of practice for LPNs, RNs, and NPs, and ease of accessibility and distribution of same, are important to lessen confusion between roles and. enhance understanding and support from healthcare professionals.
- The successful implementation of RN prescribing requires a strong, long-term commitment from provincial stakeholders; therefore it is crucial to include RN prescribing in NS Health Authority, DHW, and other healthcare organization's strategic plans.
- The creation of province-wide, evidence-based policies for RN prescribing is imperative. To facilitate the creation of organization-based policies, the NSHA and/or the DHW may consider creating draft policies that can easily be adapted to individual organizations and settings.
- Implementation of a province-wide, standardized electronic medical record system, that is accessible to all health care providers to ensure safe prescribing decisions.

- The update of organizational (or union) payment schedules to include financial compensation for RN prescribers in Nova Scotia.

Recommendations for Education

- Pharmacology should remain or become a priority in undergraduate nursing courses to ensure that nurses have a strong foundation before embarking on additional RN prescribing education. Pharmacology is often the area where nurses feel the least confident prior to prescribing. .
- RN prescribing education should have a clinical practicum, where RN prescribing students are in a preceptored/mentored by role with a physician or nurse practitioner.
- Interprofessionalism can be promoted through interprofessional education, where healthcare professionals can learn new content about, from and with one another.
- Guidelines for continuing professional development requirements following RN prescribing certification must be developed and standardized across the province. Organizations, as well as academic institutions, should offer CPD opportunities that are accessible and affordable. Organizations should support (time, and costs) RN prescribers attending CPD opportunities.

Recommendations for Practice

- Organizations or practice settings interested in implementing RN prescribing must have a strong interprofessional practice approach and

vision. They should also foster positive nurse/physician/NP relationships that promote shared-learning, collaboration, and support.

- In-service education pertaining to RN prescribing should be consultative and interprofessional. Sessions should focus on role clarity and positive patient outcomes.

CONCLUSION

Different healthcare roles are being optimized around the world to accommodate growing demands for healthcare services, demographic shifts, and financial pressures. This study provides valuable pre-implementation insight into the facilitator, barriers, and challenges of RN prescribing in the Nova Scotian context.

Interviews with employers overseeing health services for adults in primary healthcare, long-term care, home care, and mental health revealed crucial information on patient care areas, features, and barriers and facilitators impacting the implementation of RN prescribing in NS. The employer perspective is important to take into account and these findings support the creation of policies that will positively impact Nova Scotian's access to timely and appropriate healthcare services.

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APPENDIX A: Interview Guide

Main research questions :

a) What patient care areas in the Nova Scotia healthcare system would benefit most from RN prescribing?
b) What model of RN prescribing would be most appropriate to implement in patient care areas in Nova Scotia?
c) What are some possible barriers and facilitators to the implementation of RN prescribing in Nova Scotia?

Interview questions:

a) What type of patient population(s) do you oversee in your position?
b) Describe what the RN's role is in the practice areas you oversee? (Prompts: direct patient and family care responsibilities, caseload, reporting responsibilities, discharge planning, supervision of other staff, interactions with other health care providers, etc)
c) Are there any unmet patient needs in your practice areas that might benefit from having RNs with a prescribing role? (Prompt: How do you know these are unmet needs? E.g. from patient surveys, other data sources) Accessibility?
d) If you were to implement RN prescribing in your practice area, what characteristics or qualifications should these RNs need to have to be selected for this responsibility? (Prompts, experience level, education)
e) There are different models of RN Prescribing (explain models if needed); which of these do you think would work best in your patient care area and why?
f) What are the barriers you could foresee with the implementation of RN prescribing in the areas for which you are responsible? Or in the NSHA in general?
g) What are some facilitators (some strengths) you can think of that would enable the implementation of RN prescribing in your program? Or in the NSHA in general?
h) Do you have any other thoughts about implementations of RN prescribing in Nova Scotia?
i) If you were to implement RN prescribing in your practice area, how would you see your role in its successful implementation and sustainability?