

The Utilization of Nurse Practitioners and Physician Assistants: A Research Synthesis

Prepared for the Michael Smith Foundation for Health Research

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Glossary and Abbreviations

AAPA	American Academy of Physician Assistants
ALC	Alternative Level of Care
AMA	American Medical Association
ANA	American Nurses Association
APN	Advanced Practice Registered Nurse
APPAP	Association of Postgraduate Physician Assistant Programs
BC	British Columbia
BCMA	British Columbia Medical Association
BCNPA	British Columbia Nurse Practitioners Association
CA	Clinical Assistants
CAPA	Canadian Association of Physician Assistants
CFMSS	Canadian Forces Medical Services School
CFPC	College of Family Physicians of Canada
CHSRF	Canadian Health Services Research Foundation
CIHI	Canadian Institute for Health Information
CMA	Canadian Medical Association
CNA	Canadian Nurses Association
CNM	Certified Nurse Midwives
CNPI	Canadian Nurse Practitioner's Initiative
CNS	Clinical Nurse Specialist
CPAP	Canadian Physicians Association Program
CPSA	College of Physicians and Surgeons of Alberta
CPSBC	College of Physicians and Surgeons of British Columbia
CPSNB	College of Physicians and Surgeons of New Brunswick
CPR	Coalition for Patient Rights
CRNBC	College of Registered Nurses of British Columbia
CS	Controlled Substances
CSC	Collaborative Services Committee
Divisions	Divisions of Family Practice
DNP	Doctorate of Nursing Practice
ED	Emergency Department
FFS	Fee For Service
GNP	Gerontology Nurse Practitioner
GP	General Practitioner
GP4ME	GP For Me Initiative
GPSC	General Practices Services Committee
HA	Health Authority
HEABC	Health Employers Association of British Columbia
ICD	International Classification of Diseases
LPN	Licensed Practical Nurse
MCHB	Maternal and Child Health Bureau
MoH	Ministry of Health
MSFHR	Michael Smith Foundation for Health Research
MSOC	Majority Source of Care

MSP	Medical Services Plan
NAMCS	National Ambulatory Medical Care Survey
NCCPA	National Commission on Certification of Physician Assistants
NHS	National Health Services
NP	Nurse Practitioner
NRAC	Nursing Research Advisory Council
OTA	US Office of Technology
PA	Physician Assistants
PACC	Physician Assistants Certification Council
PHC	Primary Health Care
PHCO	Primary Health Care Organization
PHCTF	Primary Health Care Transition Fund
PQID	Professional Quality Improvement Day
RCPSC	Royal College of Physicians and Surgeons of Canada
RCT	Randomized Controlled Trials
Regulation	Nurses (Registered) and Nurse Practitioners Regulation
RFP	Request for Proposals
RN	Registered Nurse
SOPP	Scope of Practice Partnership
WHO	World Health Organization

Executive Summary

The Michael Smith Foundation for Health Research (MSFHR) funded this Research Synthesis for Health Research on behalf of the Nursing Research Advisory Council (NRAC). Its purpose was to: 1) provide decision makers in the British Columbia (BC) health sector with a comprehensive international review and synthesis of the research literature pertaining to nurse practitioners (NP) and physician assistants (PA), including information regarding their current and potential organization, financing, funding, regulation, and service delivery in BC; and 2) offer pragmatic advice in regard to the future implementation and utilization of these two professions within this province. A set of nine questions posed by NRAC provided a framework for the project.

An Advisory Committee comprised of experts from both Canada and the US (Appendix A) was established to provide advice on the approach and content, which in addition to the scoping literature review included a review of publicly available policy documents pertaining to primary health care (PHC) renewal and NP implementation in BC and semi-structured interviews (n=21) with senior executives and policy leaders within the BC health sector.

This report is divided into six sections. Section 1 provides our methodological approach. Section 2 provides basic factual information about each of the two professions, including relevant legislation and regulation, scope of practice and autonomy, education, settings and roles, and quality and collaborative practice. Section 3 provides an overview of the relevant research literature, with particular attention to major research reviews published since 1981. It also explores several key issues emerging from the literature and identified as relevant to NP and PA implementation in BC. Section 4 details the national and provincial health policy context between 1998 and 2012, as it relates to the Canadian Nurse Practitioner Initiative (CNPI) and the renewal of the PHC system, based on review of relevant national and BC documents, websites, and early interviews. Section 5 provides the content analysis of the information provided through interviews with senior health executives and policy makers. Section 6 provides answers to the nine questions posed by NRAC.

This work is limited in that the review of articles did not include a critique of their methods. Interviewing more respondents may have provided additional or alternative views and perspectives. However, no new information arose following the 22nd interview. This work is also limited to the extent that changes to health policy continue to happen as we conclude this report.

The findings of this report provide evidence that NPs are autonomous professionals, legally responsible for their own practice and clinical judgments. PAs are a trained health care provider with the skills, knowledge, and aptitude to undertake delegated medical services solely under the supervision of a registered physician. Numerous systematic reviews conducted during the past 35 years provide strong and consistent evidence that, within their scope of practice, NPs provide equivalent quality of care compared to their physician counterparts and that they are well-accepted by patients. Although considerably less research was found pertaining to PAs, their ability to safely conduct an increasingly wide range of clinical diagnostic and treatment

procedures under the supervision of a physician and within their area of competence is also well documented.

Despite this evidence, NPs are reported to face numerous barriers to and in practice, including lack of government leadership, organized medicine and physician attitudes, role confusion, and issues associated with payment models. Considerably fewer reports of barriers to PAs were identified and there is some evidence that physicians prefer to work with PAs.

In BC, following considerable investment during the early 2000s to develop Master Level programs at three BC universities designed to develop a NP workforce to expand primary health care capacity, as many as 30% of graduates are reported to be unable to find work as a NP. This failure to fully implement NPs is seen to be largely the consequence of inconsistency between two major health human resource initiatives that have been simultaneously underway in BC since the early 2000s. On one hand, the BC government committed to a long-term agenda to develop and implement a NP workforce with the aim of strengthening interprofessional PHC as part of the national PHC renewal strategy announced in 2000. On the other hand, as part of a negotiated settlement with the British Columbia Medical Association, the government made a commitment to strengthen and sustain full service family practice in BC and not to undertake major structural changes to the primary health care sector.

The focus on maintaining the traditional fee for service practice model, in part, shifted BC's primary health care agenda away from the national PHC renewal agenda that had promised major structural change, thereby eliminating the opportunity to establish new service models and multidisciplinary teams. The current NP PHC market is saturated and without a strong provincial strategy to expand or develop new interprofessional service capacity outside of the current PHC practice environment, BC health authorities have few opportunities to establish new positions in the PHC sector. In response, several have chosen to deploy NPs in acute care or in the specialty sector. While this deployment required considerable investment in orientation, it was reported that these NPs have been well received. The other key barrier to full NP implementation identified was lack of sufficient funding to establish positions and to develop needed infrastructure supports for this new workforce

PAs currently are not employed in BC and are not designated as a health profession under BC's *Health Professions Act*. Despite the provincial medical association's expressed interest in using PAs, major considerations such as their role, funding, or training have not been publicly explored. It would seem that the potential benefit of introducing PAs to the health system as a whole needs to be balanced against the potential costs of their implementation, including establishing training and regulatory requirements and the likelihood of their add-on costs to the health system. Consequently, while in no way intended to disregard the strong evidence that PAs can very effectively substitute for many physician activities and increase their productivity and efficiency, it is suggested that these implementation issues be explored in more depth prior to a decision to implement PAs in BC.

1. Introduction

1.1 Purpose

The Michael Smith Foundation for Health Research (MSFHR) commissioned this research synthesis on behalf of the Nursing Research Advisory Council (NRAC). This report aims to provide: 1) a comprehensive international review and synthesis of the research literature pertaining to nurse practitioners (NP) and physician assistants (PA); 2) decision makers in the British Columbia (BC) health sector with information regarding their current and potential organization, financing, funding, regulation, and service delivery; and 3) pragmatic advice in regard to the future utilization of these two professions within BC's current health care system.

This paper addresses the following nine questions set out in the Request for Proposals (RFP):

1. What are the varying scopes of practice and practice autonomy for both roles?
2. Which population health needs are best served by which role?
3. What are the strengths or exemplar contributions of each role?
4. Is there an opportunity to utilize both roles effectively?
5. What are the requirements for the successful implementation (singly or simultaneously) of both roles in general and as they pertain to BC specifically?
6. What are the barriers to implementation of both roles in general and as they pertain to BC specifically?
7. Are there barriers to implementing both roles simultaneously?
8. Can both roles effectively support the BC health care system and, if so, how?
9. What is required to make the roles successful over time?

1.2 Approach

The project approach included three major components. First, a comprehensive scoping literature review pertaining to NPs and PAs was conducted, starting with seminal papers published in the late 1970s, but concentrating mainly on research and reports published in the last decade that more closely reflect the current health care system and health legislation. Second, in order to ensure that the international literature could be interpreted within the BC context, we conducted a review of publicly available policy documents pertaining to primary health care (PHC) renewal and NP implementation in BC during the last decade.

Finally, semi-structured interviews were held with 21 senior clinical and policy leaders from the BC Ministry of Health (MoH), regional health authorities (HAs), and nursing and medical associations and colleges. An Advisory Committee comprised of experts from both Canada and the US (Appendix A) met twice to review drafts and provide feedback.

1.3 Search Methodology

The search strategy included the following three activities: 1) a search of electronic databases; 2) a website search; and 3) a search of reference lists of relevant key articles. Consistent with previous scoping literature reviews, established methods were followed to identify relevant literature (H Arksey & L O'Malley, 2005; Centre for Reviews and Dissemination, 2001; National

Health Service Center for Reviews and Dissemination, 2001; O'Malley & Croucher, 2005; Roland et al., 2006).

Relevant databases, such as Medline, CINAHL, Cochrane, and Embase, were searched for literature published between 1970 and January 2011 using MeSH Headings and free text key words in combination with Boolean operators “AND” and “OR”. Based on consultation with a University of British Columbia (UBC) librarian, a list of MeSH headings and free text key words was developed. Additional references were then added from the bibliographies of the documents reviewed.

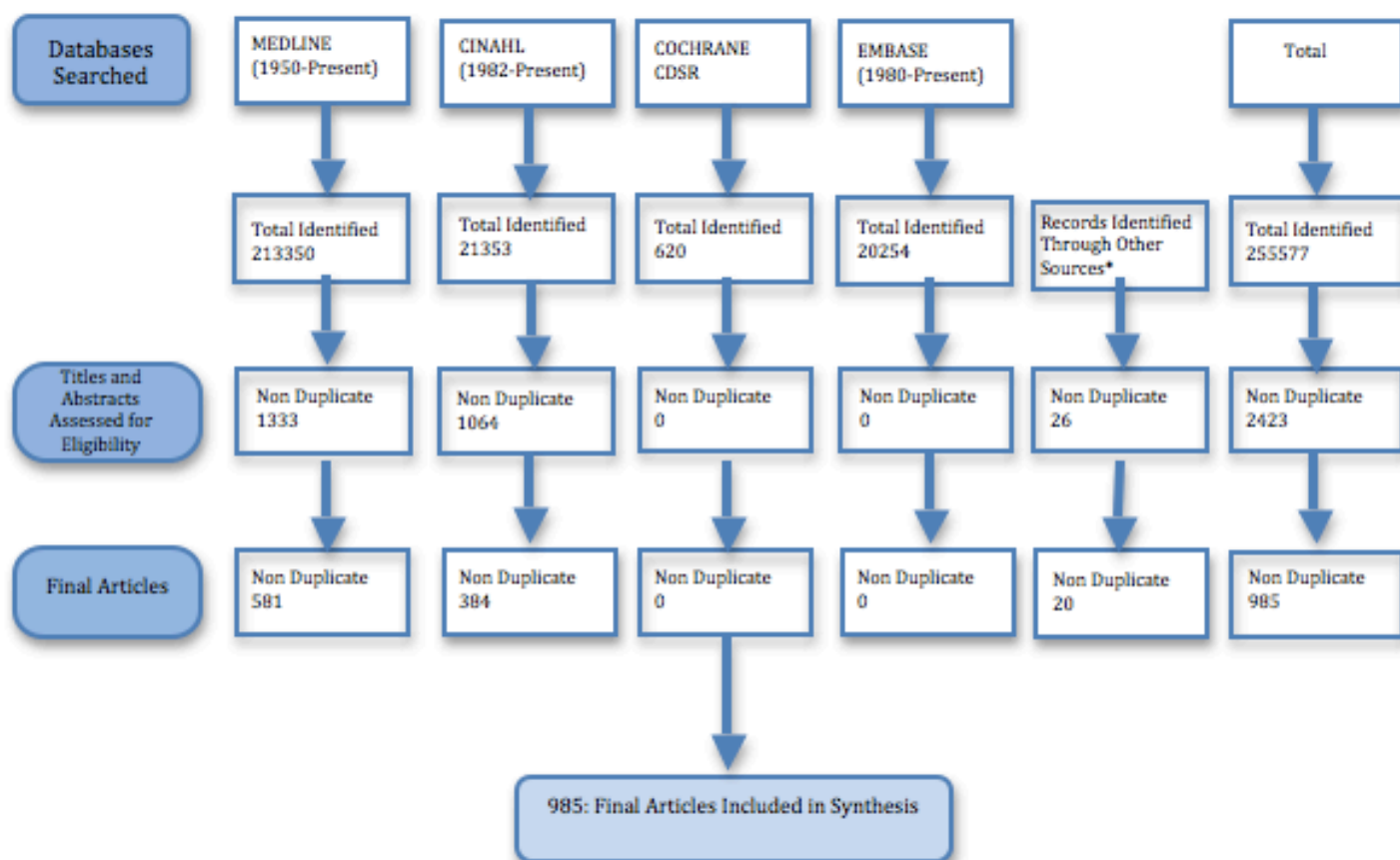
The criteria for inclusion included being published in English between 1970 and 2011 and based on relevant experiences within the following health care systems: Canada, US, UK, Australia, and New Zealand. Descriptive studies, randomized controlled trials (RCTs), reviews, and substantial commentaries were included. Specific emphasis was placed on examining past literature in the areas of primary care, PHC, gerontology, and mental health, since NPs were implemented in BC to fill gaps in these service delivery areas. Articles were explicitly excluded if they did not meet the inclusion criteria, including: letters, brief commentaries, studies which were focused primarily on a clinical issue, using NPs or PAs, but not *about* NPs or PAs, evaluative articles pertaining to NP prescribing authority prior to 1990, and evaluative reports that did not include comparison with physicians.

Two levels of review were conducted. First, both project leads (SW, VF) independently evaluated the title and abstract of each paper retrieved from the peer-reviewed literature. Second, those articles selected as relevant were subject to an independent full text review by both project leads. Any disagreements were discussed and consensus reached.

Finally, data from each relevant article were extracted using a common data extraction form. Atlas TI, a qualitative software program, was used to help organize all the data. Our first level of review yielded a total of 2,423 relevant articles (see Figure 1). After the second level of review, 985 articles were reviewed using our common data extraction form.

Our process did not critique the methodological quality of the literature reviewed. However, a number of the systematic reviews examined did raise such considerations and these are included in this report.

Figure 1. Scoping Review Search Methodology



*Other: includes Freely Accessible Journals, Nursing Center.com, lww.com, SAGE, experts.com, book reviews, ingenta.com, nursinglibrary.org, healthaffairs.org, highbeam.com, ASCOpubs, lancet, American Medical Association Journals Backfile, AAPA.org, Accessthrough.com

1.4 Interview Methodology

Potential interviewees were included based on: 1) their experience in implementing health service delivery or their responsibility for health policy and planning in BC, and 2) suggestions from our advisory committee. E-letters of invitation were sent out to potential interviewees. After individuals agreed to be interviewed and returned their signed informed consent form, they were provided with a summary of the findings from the literature review in advance of their interview.

Each interview was guided by a set of questions reflecting key issues that had been identified through the literature review process and customized to reflect their unique role and knowledge. Interview questions were also shaped by input from our Advisory Committee and the MSFHR. One-hour interviews were conducted by one or both of the authors by telephone or in-person, depending on the interviewee’s preference. With the exception of two, interviews were audio-recorded and transcribed. Written summaries were created for the two interviews that were not

audio-recorded. All procedures were approved by the MSFHR and the UBC Research Ethics Boards.

Content analysis, a method for identifying, analyzing, and reporting patterns or themes within data, was used to produce description of themes regarding NP and PA implementation within the BC context (Braun & Clarke, 2006). Transcripts were read and coded independently by the two investigators. Summaries were independently created and then jointly discussed. Themes were created based on the issues found in the synthesis of the literature reviewed.

A total of 22 interviews were conducted with BC policy and decision makers: seven with representatives from the MoH (e.g., Health Authorities Division, Medical Services and Health Human Resources Division, etc.), seven with senior executives within each of BC's HAs, and seven with individuals representing the medical and nursing regulatory bodies, their respective associations, and those who had experience working with either NPs or PAs. A US informant with a leadership role with various organizations on the implementation of PAs was also interviewed. Individuals' professional backgrounds ranged from nursing, medicine, and health policy.

1.5 Synthesis and Analysis

Our approach to ensuring well documented responses to the questions set out in the RFP is captured in the overall project's approach and methodology. Section 2 of this report provides basic factual information about each of the two professions, including relevant legislation and regulation, scope of practice and autonomy, education, settings and roles, and quality and collaborative practice. Also included is a brief differentiation of the related and important concepts of provider substitution versus supplementation (i.e. substituting for a physician versus augmenting or enhancing their services).

Section 3 provides an overview of the relevant research literature, with particular attention to major research reviews published since 1981. It also explores several key issues emerging from the literature and identified as relevant to NP and PA implementation in BC. Importantly, it details the key barriers to implementing NPs and PAs as identified in the international literature. In general, the information provided in Sections 2 and 3 address Questions 1 through 6.

Section 4 details the national and provincial health policy context between 1998 and 2012, as it relates to the Canadian Nurse Practitioner Initiative (CNPI) and the renewal of the PHC system, based on review of relevant national and BC documents, websites, and early interviews. The detailed focus of the specific BC policy context allows the general information and themes identified in the previous sections to be made relevant for BC specifically, consistent with Questions 5 through 9.

Section 5 provides the content analysis of the information provided through interviews with senior health executives and policy makers. The questions developed for these interviews were based largely on the major research findings (Section 3) and information gathered regarding the BC policy context (Section 4), although information collected during interviews also was used to further augment Section 4.

Section 6 provides answers to the nine questions posed by NRAC. These responses are based on the information provided in Sections 2 through 5 of the Report. The response to the final question: “What is required to make the roles successful over time?” includes advice to NRAC based on the authors’ analysis of the evidence included in the report.

1.6 Limitations

This work is limited in that the review of articles did not include a critique of their methods. Interviewing more respondents may have provided additional or alternative views and perspectives. However, no new information arose following the 22nd interview. This work is also limited to the extent that changes to health policy continue to happen as we conclude this report.

2. Background: Nurse Practitioners and Physician Assistants

2.1 Nurse Practitioners

Description

The Canadian Nurses Association (CNA) (2009) describes NPs as registered nurses (RNs) with additional educational preparation and experience who possess and demonstrate the competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals, and perform specific procedures within their legislated scope of practice. They suggest that the NP role is derived from blending clinical, diagnostic, and therapeutic knowledge, skills, and abilities within a nursing framework that emphasizes holism, health promotion and partnership with individuals and families, as well as communities. The education and experience of NPs uniquely positions them to function both independently and collaboratively in a variety of settings across the continuum of care.

Legislation and Regulation

In Canada, provincial and territorial nursing regulatory bodies hold the responsibility for setting the requirements for competency to practice and for licensing of NPs, including identifying scope and standards of practice and approving NP education programs.

In BC, all nurses are governed by the *Nurses (Registered) and Nurse Practitioners Regulation* under the *Health Professions Act* (see Appendix B), which states that registrants of the College of Registered Nurses of BC (CRNBC), including both RNs and NPs, may practice *nursing*, as defined as the health profession in which a person provides the following services:

- Health care for promoting, maintaining, and restoring health
- Prevention, treatment, and palliation of illness and injury primarily by assessing health status; planning and implementing interventions; and coordinating health services

Autonomous Practice

As a regulated health care profession, NPs are autonomous professionals, legally responsible for their own practice and clinical judgments. In BC, they must maintain their competencies according to the standards set by CRNBC. Only registrants who are registered with CRNBC in the nurse practitioner class can use the title “nurse practitioner” or “registered nurse practitioner.”

Scope of Practice

Scope of Practice refers to the activities that NPs are educated and authorized to perform. In Canada, the US, and Australia, these are defined by the professional associations in the respective provinces and states.

In BC, NP scope of practice is established through the Regulation defining nursing practice and is complemented by a set of Standards, Limits, and Conditions (see Appendix C). The Regulation identifies a number of exceptions for NPs, including that they may only provide care within their authorized scope of practice and in the designated practice stream in which they are registered. In B.C. there are three 'streams' or populations that NPs are eligible to work in: family which covers infants to older adults; adult that covers adults and older adults; and pediatrics that covers infants to adolescents.

Exceptions apply in either life-threatening emergencies or where a formal delegation process is in place. The *Health Professions Act* requires a formal agreement between the College of Physicians and Surgeons of British Columbia (CPSBC) and CRNBC for such delegation. To date, BC has not approved any activities for delegation to NPs.

Section 9 of the Regulation assigns certain specific activities to NP practice, including diagnosing of a disease or disorder, prescribing drugs, and ordering forms of energy such as diagnostic imaging services, ultrasound, and laser. NPs also are authorized to independently carry out a number of restricted activities for which RNs require an order, such as starting intravenous therapy, inserting an intrauterine device, and performing a skin biopsy. They also are authorized to issue an order to a RN.

Standards and Competencies

The *Canadian Nurse Practitioner Core Competency Framework* was first published in 2005 and updated in 2010 (Canadian Nurses Association, 2010). This framework document was developed in collaboration with Canadian jurisdictions through the support of the CNPI. It defines the core competencies required for safe, competent, and ethical NP practice. These competencies are intended to be transferable across diverse practice settings and client populations. As a result, the framework is considered as fundamental to all NP practice in Canada and each regulatory body may adopt this document or publish the entry-level competencies in accordance with their context, policies, and requirements.

In March 2011, the CRNBC issued *Scope of Practice for Nurse Practitioners: Standards, Limits and Conditions*, detailing the standards of care that are reflected in the scope of practice articulated in the Regulation (see Appendix C). These standards apply to BC's three streams of NP practice, but with some limits and conditions that apply specifically to one or two streams. For example, a drug that may be prescribed by NPs designated in the adult stream cannot be prescribed by NPs designated in the pediatric stream. Likewise, a diagnostic service that can be ordered by NPs designated in the adult stream cannot be ordered by NPs in the pediatric practice stream.

Education

The Canadian Institute for Health Information (CIHI) reports that as of 2008 there were over 2,000 NPs licensed in Canada (Canadian Institute for Health Information, 2010). The majority have been trained at one of the 25 NP training programs across the country, offered by 33 educational institutions (Martin-Misener, 2010). Each program requires a baccalaureate RN degree as a minimal entrance requirement. The CNPI (2006) endorsed Master's-level preparation for NPs and set a goal for all pre-licensure NP education at the Master's level by 2015.

Despite agreement within the nursing profession that standardization at the master's level is vital to ensuring that NPs are educated in all the competencies that define advanced nursing practice, three provinces continue to educate NPs at the baccalaureate or post-baccalaureate level. There has been opposition by provincial governments to this requirement, including concerns that there is a lack of evidence to justify the time and expense associated with graduate education (DiCenso & Bryant-Lukosius, 2010). Martin-Misener (2010) suggested that failure to meet the CNPI goal will likely delay realization of a pan-Canadian legislative and regulatory framework and may result in inconsistencies in knowledge, skills, and abilities across jurisdictions, in turn undermining NP licensing, implementation, mobility, and credibility.

NPs are educated within the nursing model. This includes a holistic focus that encompasses both health and illness; emphasizes prevention, wellness, and patient education; and stresses the importance of the individual as the primary leader in their own care. NP education also emphasizes knowledge acquisition and decision making skills, supporting the analytical activities associated with primary care.

As a result of this broad education, NP practice is described as interpersonal and interactive, stressing communication and independent decision making, while being less technically or procedurally oriented. Ekwo, Dusdieker, Bean & Daniels (1980) observed that a large component of what PHC providers do during a patient visit is analytical, rather than technical. For example, they are generating, testing, and discarding diagnostic hypothesis well before all the data from the history and physical exam is complete.

Bednar, Atwater & Keough (2007) suggest that the more holistic orientation of NP education contrasts with the more technical and procedural approach of PAs, while Mentink, Trolinger, and O'Hara-Devereaux (1980) argue that the PA focus was in reaction to the nursing profession historically not being interested in expanding its role into these areas.

Settings and Roles

NP training was developed to prepare RNs to meet the need for increased access to primary care and so their skills and knowledge were purposefully expanded to enable them to substitute for physicians in primary care (Asubonteng, McCleary, & Munchus, 1995). In Canada, many NPs are employed in PHC settings, mostly in community health centers, but also in some primary care practices (DiCenso et al., 2007; Goldman, Meuser, Rogers, Lawrie, & Reeves, 2010; Koren, Mian, & Rukholm, 2010), senior's care (Donald et al., 2009; Humbert et al., 2007; Lemelin et al., 2007) and public health (de Guzman, Ciliska, & DiCenso, 2010). Although NPs historically have also worked in acute and specialty care in the US, this trend is more recent in Canada.

Beginning in the late 1990s, Canada's national agenda to renew PHC, which is discussed in more detail in Section 4, encouraged several provinces to develop new models of PHC that stress interprofessional and collaborative work, and these models now are the source of employment for many NPs. For example, Ontario introduced Family Health Teams to improve access to primary care and as of 2008, 30% of all NPs in Ontario worked in this setting, a significant increase from only 4% in 2005 (Koren et al., 2010).

NPs also play a large role in rural and remote health services and often are considered the "backbone of rural health care" (Canadian Health Services Research Foundation, 2010). Despite this perception, only 4% of the nearly 4,000 nurses that responded to a national survey of nursing practice in rural and remotes areas identified themselves as NPs, despite most of the nurses in these positions taking on advanced practice (Canadian Health Services Research Foundation, 2010).

As the population ages, chronic disease is becoming an important focus in primary care (Boville et al., 2007; Litaker et al., 2003) and it has been suggested that chronic disease management that includes patient self-management, decision support, and delivery system design are key roles for NPs (Watts et al., 2009). NPs work in similar roles in the rural US (Baldwin et al., 1998; Beachler, Holloman, & Herman, 2003; Bergeron, Neuman, & Kinsey, 1999; Burgess, Pruitt, Maybee, Metz, & Leuner, 2003; Kippenbrock, Stacy, Tester, & Richey, 2002; Krein, 1997; Shi et al., 1993) and in rural Australia (Hooke, Bennett, Dwyer, van Beek, & Martin, 2001; Lauder, Sharkey, & Reel, 2003).

NPs are also emerging as important additions to emergency departments (Drummond, 2007; Ducharme, Alder, Pelletier, Murray, & Tepper, 2009; Forgeron & Martin-Misener, 2005; Thrasher & Purc-Stephenson, 2008). Thrasher and Purc-Stephenson (2007) observed that this is in response to evidence from both Canada and the US that a significant proportion of emergency visits were the result of patients not having access to primary care in their community.

The Canadian Institute for Health Information reports that 41% of the NP workforce in Canada works in the acute care sector in 2011. Kilpatrick (2008) notes that the most common acute care NP specialties were cardiology, internal medicine, surgery, critical care, pediatrics, and neonatology. A number of papers reviewed described NP roles in specialty areas such as cardiology (Jensen & Scherr, 2004), cardiovascular surgery, geriatrics, medicine, pediatrics, nephrology, trauma, palliative care (Williams & Sidani, 2001), oncology (Bryant-Lukosius et al., 2007), and neonatology (DiCenso, 1998; Mitchell-DiCenso et al., 1996; Morneault, 2002).

The search process also retrieved a number of papers describing NPs in a variety of acute care and specialty settings in the US (Anderson, 1997; Bahouth, Esposito-Herr, & Babineau, 2007; Cummings, Fraser, & Tarlier, 2003; Kelley, Daly, Anthony, Zauszniewski, & Stange, 2002; Kleinpell et al., 2002; Kleinpell & Goolsby, 2006; Knaus, Felten, Burton, Fobes, & Davis, 1997; Rashotte & Jensen, 2010).

Finally, NPs also are increasingly employed in specialty ambulatory settings associated with hospitals, such as cardiac programs (Ballard-Hernandez, 2010; Bungard et al., 2009), where they

work in interprofessional teams and provide primary care services to “secondary care patients,” such as education and patient self-management.

In BC, MacDonald and Roots (2008) conducted a survey of 78 NPs working in BC. At that time 65% of NPs (about 45) were reported to be working in primary or community care, while 29% were reported to be working in acute or specialty care areas. Of those in community care, 50% reported working in a community health centre settings, in a geographically rural or remote community, or with marginalized populations.

As of late 2011, key respondents interviewed for this project suggested that about 130 NPs are employed *in their profession* in the BC health care sector, with an estimated 60% in PHC and 40% in the acute and specialty sectors. Consistent with MacDonald and Roots’ report, these respondents reported that most NPs working in the primary health care sector are employed in community health centers or in clinics in rural communities and those in the acute care sector work in a number of specialty areas. Two HAs reported having introduced NPs into fee for service (FFS) medical practices (Canadian Health Services Research Foundation, 2010; Vancouver Island Health Authority, 2009) but in this model the full costs of the NP salary and overhead continue to be borne by the local HA.

Quality Practice

The requirements established by the CRNBC for NP practice and their continuing competence program were modeled on those used for RNs but include additional requirements that reflect the NP’s expanded scope of practice. The continuing competence program includes a quality assurance program based on the practice review process of the College of Physicians and Surgeons of BC (CPSBC). This begins within the first two years after registration in BC and is conducted every five years thereafter.

Collaborative Practice

Despite NPs being autonomous professionals, the nursing model encourages interprofessional collaborative practice, rather than independent or solo practice. This approach is consistent with the recent report of the World Health Organization (WHO), *Framework for Action on Interprofessional Education and Collaborative Practice*, which summarized almost 50 years of evidence and concluded that “collaborative practice strengthens health systems and improves health outcomes” (2010). The importance of such interprofessional collaborative care also was embedded in the national PHC strategy agreed upon by the First Ministers in 2000, which is discussed in more detail in Section 4.

Summary

- There are over 2,000 NPs licensed in Canada.
- As a regulated health care profession, NPs are autonomous professionals who are legally responsible for their own practice and clinical judgment.
- Provincial nursing regulatory bodies hold the responsibility for setting the scope and competency requirements for the practice and licensing of NPs.
- In Canada, a graduate degree in nursing is considered essential for this advanced practice role, although three provinces continue to train NPs at the baccalaureate or post-baccalaureate level.

- NP education is grounded in the nursing model, which places an emphasis on knowledge acquisition and decision-making skills that support the analytical activities associated with PHC.
- NP programs also place a strong emphasis on population health and prevention, the importance of the social determinants of health, and interprofessional collaborative practice.
- Many NPs in Canada are employed in PHC settings, such as clinics and community health centers, but an increasing number are employed in acute and specialty settings.

2.2 Physician Assistants

Description

The Canadian Association of Physician Assistants (CAPA, (2011b) defines a PA as a health care provider with the knowledge, skills, and attitude to undertake delegated medical services.

Legislation and Regulation

PAs in the US are certified by the National Commission on Certification of Physician Assistants (NCCPA) and are state-licensed. Canadian PAs are primarily unregulated health care providers not directly accountable to a national or provincial regulatory body. At the time of this report, Manitoba was the only Canadian province with specific legislation in place regarding PA practice, having passed an amendment to the *Medical Act* in 1999 to allow for the licensing of registered Clinical Assistants (CA) on the Physician Assistant Register. This legislation was amended in 2009 to permit practice under the title of Physician Assistant.

The Council of the College of Physicians and Surgeons of Alberta (CPSA) passed a Bylaw in December 2010 to allow PAs to operate under the responsibility of a regulated member. This allows PAs in Alberta to be registered as non-regulated members of the CPSA, a new voluntary and non-regulated membership category. These PAs work mostly in hospitals through CA, Surgical-CA and Surgical Assistants Programs (Alberta Health Services, 2009).

The College of Physicians and Surgeons of New Brunswick (CPSNB) amended the *New Brunswick Medical Act* in 2009 to include PAs in their health care model and this allows them to be licensed if registered with the CPSNB. A Regulation was created in January 2010 to dictate their terms of practice.

PAs remain unregulated in Ontario, although the Ontario Ministry of Health and Long-Term Care and the Ontario Medical Association have cooperated on the development of a Scope of Practice Statement and a Competency Profile to help employers, PAs, educationalists, and others to understand the “how” and “what” that PAs can do.

Hague (2005) surveyed Canada’s provincial and territorial health ministries as to whether they officially recognized PAs and whether they planned to introduce PAs into their respective health systems. The eight provinces and territories that responded to the survey all indicated that the introduction or expansion of PAs was not a priority. Specifically, Nova Scotia and Saskatchewan stated they were prioritizing NPs, Newfoundland had debated introducing PAs but rejected the idea, New Brunswick, Ontario and BC had no official position nor plans to introduce PAs, the Yukon was open to the concept, and Manitoba, despite having introduced PAs, had no plans to

expand their program. Of particular interest, Ontario may have future plans to expand PAs beyond their pilot project since the Ontario Health Professionals Regulatory Advisory Council is currently reviewing an application for regulation of PAs.

Scope of Practice

In both the US and Canada, PA scope of practice and their degree of autonomy in clinical decision making, including prescribing authority, is negotiated and agreed on an individual basis with a supervising physician.

In Canada, CAPA collaborated with the Royal College of Physicians and Surgeons of Canada (RCPSC) and the College of Family Physicians of Canada (CFPC) to develop the following Canadian Scope of Practice statement, which is intended only to provide *guidance* to physicians and PAs.

The Physician Assistant is a health care provider with the knowledge, skills and attitude to undertake delegated medical services. Physician Assistants are highly skilled health care professionals educated in the medical model who work under the supervision of a registered physician in a variety of clinical team structures and settings, in accordance with the delegated medical act.

The PA is a physician extender and not an independent practitioner. They work under the direction of supervising physicians within the client/patient-centered health care team. The PA has the skills and experience to deal with everyday health care needs and various specialty practice environments.

The PA's activities may include conducting patient interviews, histories, physical examinations; performing selected diagnostic and therapeutic interventions; and counseling on preventive health care. The individual relationship between the PA and the supervising physician becomes the essential determinant of each PA's individual clinical role, within the context of the PA's competencies, the PA scope of practice, and provincial jurisdictions.

http://www.caopa.net/en/Scope_of_Practice_National_Competency_Profile_55

The individual relationship between the PA and the supervising physician is the essential determinant of each PA's individual clinical role and competencies. A PA's supervising physician is responsible to delegate work and determine the extent of direct supervision that PA requires, based on their assessment of their individual competencies, skills, and experience in a particular practice setting. The key restriction is that only work that is clearly within the physician's own scope of practice can be delegated to a PA. For example, PAs are able to provide only those medications that the supervising physician would normally prescribe, and only when the supervising physician has assessed the PA as competent to provide under their delegation.

Standards and Competencies

CAPA also developed a PA National Competency Profile (Appendix D) as a suggested national standard of practice for PAs. However, as with the Scope of Practice Statement, these are intended merely to be a *resource* for PAs, supervising physicians, educators, legislators, and other health professionals, and are not part of a regulation.

Education

While the American Academy of Physician Assistants (AAPA) (2009) report that nearly 80,000 PAs now work in the US, their introduction into the Canadian civilian health system is more modest, with only about 250 PAs now working across four provinces and the Northwest Territories (Canadian Association of Physician Assistants, 2011a).

PAs in Canada are trained at one military and three civilian PA programs, totaling about 60 seats (Appendix E). The minimal academic entry requirement is two years of a university degree program in any discipline. The Canadian Medical Association (CMA) and the CAPA offer conjoint accreditation of the training programs and the CAPA also oversees a National Certification Process through the Physician Assistant Certification Council (PACC). All PAs must write the CAPA certification exam prior to graduation.

Similarly, all US states require that PAs complete an accredited, formal education program, usually of about 24 months duration, and pass a national examination to obtain a licensure (2009). As in Canada, admission requirements vary but most require two years of college and some work experience in the health care field as prerequisites. Applicants are reported often to have prior medical experience as RNs, military medics, and in other allied health occupations.

Given that PA training is designed to complement physician training, many programs have clinical teaching affiliations with medical schools and their curriculum stresses the medical model. These programs are described as focusing largely on developing technical and procedural proficiency, i.e., the specific skills required to provide assistance to a physician, according to protocols and with clearly articulated decision points.

This type of skill development is suggested to result in PAs being particularly well suited to procedurally oriented areas of health care and where high volumes of routine procedures are required. There are numerous accounts of PAs conducting increasingly sophisticated and invasive diagnostic and treatment procedures under physician supervision, as further detailed below.

Jones and Cawley (2009) describe the growth in PA specialty training programs in the US, typically offered as formal 1-year programs following completion of entry-level PA education. These also are based largely on the graduate medical education model, but focused on specific clinical areas. Despite their proliferation in recent years, along with specialty PA associations, the US Academy of Postgraduate Physician Assistant Programs (APPAP) maintains that the PA's strong core of general medical education is sufficient to prepare PAs to be successfully integrated into any medical or surgical specialty, with the addition of adequate *on-the-job training* and with appropriate physician supervision. Consequently, it opposes state board, hospital, or other employer mandates to require postgraduate clinical training for obtaining hospital privileges or employment.

Settings and Roles

PAs are used extensively in primary and ambulatory care settings in the US, including community mental health, correctional services and college health services (Brutsche, 1986; Ellis & Krol, 2005; Linz, Way, Lopreato, Whitlock, & Stiene, 2003; Pollack, Ford, & Ferrell, 1998).

The introduction of limits on residence hours in both the UK and the US decreases the size of a number of residency programs in various major fields, such as surgery, medicine, and pediatrics. The decrease in international medical graduates entering the US is reported to have encouraged use of PAs in hospital settings over the past thirty years (Cawley, 1991; Duffy, 2003; McGill et al., 1990) and their value as stable members of the team in these settings has been widely recognized (Manber, 1985).

In the US, 75% of PAs work now in specialty areas, undertaking increasingly sophisticated, complex, and invasive procedures. For example, PAs are employed in EDs (Hooker, Klocko, & Larkin, 2011; Hooker & McCaig, 2001; Sturmann, Ehrenberg, & Salzberg, 1990) and in a wide range of specialty settings, including orthopedics (Harris & Evarts, 1990); surgery (Condit, 2002; Goldman, Occhiuto, Peterson, Zapka, & Palmer, 2004; Jones & Cawley, 2009); ophthalmology (Wilson & Murdock, 1990); organ procurement (Anderson, 2001); neonatology (Carzoli, Martinez-Cruz, Cuevas, Murphy, & Chiu, 1994; Otterbourg, 1986); occupational medicine (Hooker, 2004); cardiology (Rubenstein et al., 1995); neurology (Taft & Hooker, 1999); dermatology (Brown et al., 2009; Clark et al., 2000; Hyde et al., 2010); gastroenterology (Cash, Schoenfeld, & Ransohoff, 1999; Lieberman & Ghormley, 1992); radiology (Blackmore, Hoffer, Albrecht, & Mann, 2004; Hong et al., 2006); nephrology (Anderson, Torres, Bitter, Anderson, & Briefel, 1999; Troidle & Smith, 2005); gynecology and obstetrics (McGill et al., 1990); and as anesthetic physician practitioners (Gray et al., 2010).

Summary

- An estimated a few hundred civilian PAs currently work in Canada, primarily in four provinces and the Northwest Territories.
- PAs remain a largely unregulated health care profession, trained specifically to assist physicians and not as autonomous providers.
- Most training programs in the US and Canada are 24 months in duration, including one year of course work and one year of clinical experience.
- PA education is grounded in the medical model, with a technical and procedurally oriented approach that is largely intended to increase the efficiency and productivity of medical practitioners.
- PA scope of practice is determined not by regulation but rather through a negotiated relationship with the supervising physician.
- PAs work under the delegated function model, with the supervising physician responsible for determining the PA's capacity, the degree of training and supervision required for the specific task and role at hand, and the assessment of individual PA performance.
- This model, which allows PAs to change their clinical specialty or focus of practice and expand their clinical repertoire over the course of their career with relative ease, is seen to have facilitated the spread of PAs across a wide variety of clinical settings.
- This ability to work in many settings also is reported to provide PAs with a competitive advantage by offering their employer maximum flexibility.

2.3 Summary of NPs and PAs

Table 1 summarizes the similarities and differences between NPs and PAs using the following 13 domains: definition, legislation, licensing, autonomy, scope of practice, standards and

competencies, education, educational model, quality practice assurance, role, settings, collaborative practice, and underlying values.

Importantly, while NPs and PAs both perform complex clinical work, NPs do so under their own license and their regulated scope of practice, whereas PAs work under the delegated function model and the supervising physician’s scope of practice.

Table 1. Summary of NPs and PAs

	Nurse Practitioners	Physician Assistants
Description	<ul style="list-style-type: none"> • NPs are registered nurses with additional educational preparation and experience who possess and demonstrate the competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals, and perform specific procedures within their legislated scope of practice. • The NP role is derived from blending clinical, diagnostic, and therapeutic knowledge, skills, and abilities within a nursing framework that emphasizes holism, health promotion and partnership with individuals and families, as well as communities. • The education and experience of NPs uniquely position them to function both independently and collaboratively in a variety of settings across the continuum of care. 	<ul style="list-style-type: none"> • PAs are health care providers with the knowledge, skills, and attitude to undertake delegated medical services.
Legislation	<ul style="list-style-type: none"> • In Canada, NPs are registered nurses who are licensed in all provinces and territories as autonomous providers. • In BC, Nurses (Registered) and Nurse Practitioners Regulation are under the Health Professions Act (Appendix B). 	<ul style="list-style-type: none"> • Canadian PAs are primarily unregulated health care providers and are not directly accountable to a regulatory body. • Manitoba is the only Canadian province with specific legislation (the Medical Act) in place regarding PA practice, allowing practice under the title of Physician Assistant. • The Alberta Council of the College of Physicians and Surgeons of Alberta (CPSA) registers PAs as non-regulated members of the College, a new voluntary and non-regulated membership category, and allows PAs to operate under the responsibility of a regulated member. • The <i>New Brunswick Medical Act</i> allows PAs to be licensed, provided they register with the CPSNB, and a Regulation dictates their terms of practice. • Despite their introduction in Ontario, PAs remain unregulated.

Licensing	<ul style="list-style-type: none"> In Canada, the US, and Australia, provincial/state/territorial nursing regulatory bodies hold the responsibility for setting the requirements for competency to practice and for licensing of NPs. In BC, The College of Registered Nurses of BC holds this authority. 	<ul style="list-style-type: none"> In Canada, PAs are certified through the Physician Assistant Certification Council of Canada (PACCC) Physician Assistant Entry to practice certification examination. PAs in the US are certified by the National Commission on Certification of Physician Assistants (NCCPA) and are state-licensed.
Autonomy	<ul style="list-style-type: none"> As a regulated health care profession, NPs are autonomous professionals, legally responsible for their own practice and clinical judgment and are title protected. 	<ul style="list-style-type: none"> PAs are not autonomous providers. In the US and Canada, a PA's scope of practice and their degree of autonomy in clinical decision making, including prescribing authority, is negotiated and agreed on an individual basis with a supervising physician. CAPA collaborated with RCPSC and the CFPC to develop a Canadian Scope of Practice statement, intended only to provide guidance to physicians and PAs.
Scope of Practice	<ul style="list-style-type: none"> Scope of practice varies across jurisdictions. In BC, it is established through the Regulation defining nursing practice and is complemented by a set of Standards, Limits, and Conditions. 	
Standards & Competence	<ul style="list-style-type: none"> Nursing regulatory bodies across Canada detail standards of care that reflect their scope of practice. 	<ul style="list-style-type: none"> CAPA has developed the PA National Competency Profile (Appendix D), which establishes the national standard of practice for PAs. However, as with the Scope of Practice Statement, these are intended to be a <i>resource</i> for PAs, supervising physicians, educators, legislators, and other health professionals, and are not part of a regulation.
Education	<ul style="list-style-type: none"> In Canada, an undergraduate and graduate degree in nursing is considered essential. In BC, CNRBC approves BC educational programs. NPs generally have approximately 6 to 8 years of academic and clinical preparation. 	<ul style="list-style-type: none"> Canada currently has four PA training programs, each of which is about 24 months in duration. Three of these are civilians, totaling about 60 seats. Each has different entrance requirements but the minimal academic requirement is two years of a university degree program in any discipline. The CMA and CAPA offer conjoint accreditation of the training programs. CAPA oversees a National Certification Process through the Physician Assistant Certification Council (PACC); all PAs must write the CAPA certification exam prior to graduation. In the US, many PAs also acquire formal specialty training through postgraduate programs, typically offered as formal 1-year experience based on the graduate medical education model.

<p>Education model</p>	<ul style="list-style-type: none"> • NPs are trained in the nursing model, offering a holistic focus that addresses not only disease, but also all dimensions of the individual (physical, emotional, mental, and spiritual), including the effects of illness on the lives of the patients and their families. • It includes a strong emphasis on prevention, wellness, and provision of resources to engage patients in self-management of their health. • NPs emphasize knowledge acquisition and decision making skills, population health and prevention, and recognizes the social determinants of health, and stresses the more analytical activities associated with primary care. 	<ul style="list-style-type: none"> • PA training is grounded in the medical model, which in general emphasizes the physical and biological aspects of specific diseases and conditions, and the clinical procedures or strategies to address that defect or dysfunction. • Preparing PAs to work as assistants to physicians, rather than as independent providers, results in their training being less focused on analytical processes, and more technically oriented. • Postgraduate specialty programs in the US focus largely on developing technical and procedural proficiency, often in a relatively narrow field, with the intention of developing skills to execute specific tasks in a predetermined manner according to protocols and with clearly articulated decision points.
<p>Quality Practice Assurance</p>	<ul style="list-style-type: none"> • NPs participate in a quality assurance program that involves a practice review process beginning within the first two years after registration and every five years thereafter. • In BC, NP practice review is based on the practice review process of the BC College of Physicians and Surgeons. Provider practice is judged against the standards that the Regulation requires CRNBC to develop. 	<ul style="list-style-type: none"> • A PA’s supervising physician is responsible for delegating work and determining the extent of direct supervision required based on their assessment of the PA’s individual competencies, skills, and experience in a particular practice setting. • The key restriction is that only work clearly within the physician’s own scope of practice can be delegated to a PA. • PAs may provide only those medications that the supervising physician would normally prescribe, and only when the supervising physician has assessed the PA as competent to provide under delegation. • Physician judgment of PA performance relies largely on the traditional medical frame of variations in normal practice.
<p>Role</p>	<ul style="list-style-type: none"> • An autonomous primary care provider, academically and clinically prepared to substitute for 80% to 90% of clinical activities normally provided by a primary care physician. 	<ul style="list-style-type: none"> • CAPA’s website describes PAs as “physician extenders” and states that PAs are not independent practitioners. • Their key role is described as assisting a physician by substituting for specific activities as delegated by that physician. • The individual relationship between the PA and the supervising physician becomes the essential determinant of each PA’s individual clinical role, within the context of the PA’s competencies, the PA scope of practice, and provincial jurisdictions.

Settings	<ul style="list-style-type: none"> Primarily PHC (community-based public health, primary care, seniors care, etc., including rural and remote practice) but increasingly in secondary services such as EDs and ambulatory services for specialty patients (e.g. cardiac care clinics). 	<ul style="list-style-type: none"> Canadian civilian PAs are currently deployed primarily in EDs and family medicine. Ontario is exploring their use in hospitals, community health centers, community-based diabetes care clinics, and long-term care homes. Because PAs do not have title protection in many jurisdictions, many Canadian health care organizations have added “physician extenders” to specialty care areas of tertiary hospitals, working under the supervision of a physician. Although often referred to as PAs, the majority are international medical graduates with only a few being formally trained PAs. Since the late 1990s, the net number of PAs departing family medicine in the US has exceeded the number entering it and 75% now work in a specialty area.
Collaborative Practice	<ul style="list-style-type: none"> The nursing model encourages interprofessional collaborative practice with NPs who have autonomous practice authority; collaborative practice in teams is encouraged. 	<ul style="list-style-type: none"> PAs are trained to work primarily for physicians, although in many cases they are part of a broader health care team.
Underlying Values	<ul style="list-style-type: none"> Improved quality of patient care including: increased comprehensiveness of care, improved experiences, and increased accessibility. 	<ul style="list-style-type: none"> Improved efficiency and productivity of physician services.

2.4 Substitution versus Supplementation

Sibbald, Laurant, & Scott (2006) have suggested a framework with which to understand the different purposes, costs, and productivity implications of NPs and PAs in the health care system. These authors suggest that both providers can *substitute* for physician care or *supplement* physician services (also referred to as complement) or do both simultaneously. *Substitution* involves providing a service that a physician would otherwise provide, while *supplementation* refers to providing an added service that a physician would not otherwise offer and is intended to enhance the patient visit.

Using another profession to substitute for a physician’s activities frees up their time, allowing it to be redirected to activities that only a physician can perform. Reasons to use physician *substitutes* include increasing physician efficiency, reducing physician workload, increasing service capacity, increasing patient access, and reducing costs.

When another provider provides services that *supplement* or *complement* a physician, they are providing services *in addition* to what that physician would otherwise provide. These activities, such as patient education, health promotion, illness prevention, patient support for self-management, and system navigation are intended to provide added value and improve the overall quality and comprehensiveness of the primary care episode. Although adding these services incurs additional up-front costs, the authors report that general wisdom is that this is warranted

because better patient care is thought to lead to better outcomes and reduced long-term care costs.

Sibbald et al. suggest that a single “role revision” may combine both elements of substitution and supplementation. These authors offer the example of a NP or PA simultaneously acting as both substitute and supplement while doing routine follow-up of patients with asthma. If the physician previously conducted follow-ups, the PA is acting as a physician substitute. However, if the follow-up service provided by the PA contains additional service elements *not usually provided* by the physician (e.g. patient education and support for lifestyle change), the PA is acting as a physician supplement as well as a substitute.

Most of the research literature reviewed in Section 3 examines how NPs and PAs substitute for physicians. There is clearly overlap in the roles that NP, PAs, and physicians have in the delivery of health services. In the area of primary health care, NPs and PAs have been found to provide between 80% and 90% of services traditionally delivered by family physicians (Scheffler, Waitzman, & Hillman, 1996; Hooker, 2006). In particular, other work suggests that NPs can provide primary care that is equivalent to physicians within their scope of practice (Lenz, Munding, Kane, Hopkins, Lin, 2004; Horrocks, Anderson, & Salisbury, 2002). Only four articles focused on a solely supplemental role. Kelvin et al. (1999) examined the role of NPs and PAs in radiation oncology and noted that their roles were complementary, rather than being a replacement or a substitution; Litaker, Mion, Planavsky, Kippes, Mehta, & Frolkis (2003) studied the effectiveness of physician-NP teams in chronic disease management; Aigner, Drew, & Phipps (2004) compared nursing home resident outcomes provided by NP/physician teams compared to physician only; and Buswell, Ponte, & Shulman (2009) examined teams of physicians and NPs and PAs in oncology. Determining the impact of NPs and PAs working in supplementary roles was identified as needing more research (Birch & Gafni, 2003).

3. The Research Literature

3.1 Description of Evidence

The majority of the literature exploring NPs and/or PAs has been published in the US, with a smaller number from the UK, New Zealand, Australia, and Canada. Our search process identified 14 systematic reviews conducted between 1981 and 2011 examining the quality of care provided by NPs and PAs and their ability to substitute for physicians. Additionally, a number of recent research studies comparing NP and/or PA practice with that of physicians were also included as well as several studies identified as being particularly relevant to the implementation of NPs and PAs in BC.

3.2 Literature Reviews

The conclusions of the earliest major study comparing the role and performance of NPs with that of primary care physicians were largely substantiated by numerous systematic reviews conducted during the past 35 years, as summarized in Table 2. The Canadian Burlington Randomized Trial (Spitzer et al., 1974) concluded that, based on clinical judgment and prescribing patterns, the quality of care of NPs and physicians was similar. They reported virtually identical high rates of satisfaction amongst patients in both groups and also observed that the addition of NPs led to a 22% increase in physician practice size.

The first of the 14 systematic reviews included in this section was conducted by the US Office of Technology Assessment (Office of Technology Assessment, July 1981). This large-scale review, which examined research pertaining to the cost effectiveness of NPs, concluded that utilization of NPs as primary care providers improved access and reduced costs. Specifically, they reported that NPs could perform basic and routine medical care tasks traditionally performed by physicians and observed that that should lead to the price of health care being reduced or benefits accruing to the institutional providers or to physicians, in turn also benefiting consumers in the form of improved access to care.

The second OTA review (Office of Technology Assessment, December 1986) examined the research literature pertaining to the role and value of NPs, PAs, and certified nurse-midwives (CNMs). It reported that the weight of the evidence suggested that within their areas of competence, the quality of the care provided by each of the three providers was equivalent to that provided by physicians. In addition, NPs and CNMs were reported as more adept than physicians at providing services that depend on communication with patients and preventive actions, whereas PAs performed better than many physicians in supportive care and health promotion activities.

They also noted that patients generally were satisfied with the quality of care provided by each provider, particularly in regard to the interpersonal aspects of care. They observed that productivity studies suggested that NPs and PAs working under physicians' supervision increased total practice output by 20% to 50%, depending on the practice setting, the responsibilities delegated, the severity and stability of the patients' illnesses, and how the physicians chose to use their freed up time. The OTA commented on the fact that despite these

findings, physicians, NPs, and PAs were not being used to their fullest potential, largely due to reimbursement issues.

A meta-analysis conducted by Brown & Grimes (1995) concluded that NPs: provided more health promotion and scored higher on quality of care measures than physicians; prescribed drugs at equivalent rates; ordered more laboratory tests - although the average costs of these were lower; achieved higher scores than physicians on resolution of pathological conditions, functional status of patients, and patient satisfaction and compliance; spent more time with their patients; and had lower hospitalizations rates and lower costs per visits than physicians.

Carrino & Garfield (1995) summarized three decades of literature on the substitutability of NPs for physicians in primary care practice in the US. They reported that NPs can provide, at a lower cost, most of the medical services traditionally rendered by primary care physicians and can provide medical care in areas with needs unaddressed by physicians, practicing as physician substitutes.

UK researchers Horrocks, Anderson, & Salisbury (2002) undertook a systematic review of randomized controlled trials (RCT) and prospective observational studies. They concluded that patients were more satisfied with care by a NP, consultations with NPs were longer, NPs made more investigations than physicians, and that there were no differences between NPs and physicians in prescriptions, return consultations, or referrals.

Chapman, Zechel, Carter & Abbot (2004), also UK researchers, conducted a systematic review of the research literature evaluating the innovations undertaken in the National Health Service (NHS) that were intended to improve access to primary care. The authors reviewed four studies examining NP-led care in general practice and concluded that there was evidence that NP-led care for minor conditions was as safe and effective as care by physicians (i.e., similar clinical outcomes), although there was no data comparing the detection of rare and serious adverse health outcomes between both professional groups. They also reported that there was evidence that NPs gave longer consultations and carried out more tests. No difference was found in referral rates to secondary care. There also was consistent evidence that NP-led care achieved high patient satisfaction rates.

In a third UK study Bazian (2005) updated the earlier review by Horrocks et al. Again, it was reported that patients were more satisfied with NP care than physician care, NP consultations were significantly longer than those by physicians, they performed significantly more investigations, and they offered more information and advice than doctors about illness and self-care. There were no significant differences found between NPs and physicians in regard to prescriptions, referrals, or repeat consultations.

Carter & Chochinov (2007) undertook a systematic review of studies evaluating NPs working in emergency departments (ED). They focused on four key outcome measures: wait times, patient satisfaction, quality of care, and cost effectiveness. While admitting that some questions remained unanswered, the authors concluded that NPs reduced wait times for the ED, led to high patient satisfaction, and provided a quality of care equal to that of a mid-grade resident. Based on their review, Kleinpell, Ely, & Grabenkort (2008) concluded that the existing research supports

the use of both NPs and PAs in acute and critical care settings and reported a low level of evidence in only two of the RCTs reviewed.

Based on the conceptual model published by Sibbald & colleagues (2006), Laurent et.al (2009) examined the extent to which NPs and PAs were effective as physician *substitutes* and as physician *supplements*. Also published as a Cochrane Collaborative Review under Laurant, Reeves, Hermens, Braspenning, Grol, & Sibbald (2009), this may have been the most rigorous and exhaustive review of the literature pertaining to NPs and PAs.

Of interest is that Laurant et al. reported that their electronic searches did not find any literature reviews or controlled studies addressing PAs. Consequently, they relied on a US expert in this area to identify relevant articles. This resulted in five studies assessing the effectiveness and efficiency of role revision between physicians and PAs, including two systematic reviews (one unpublished) and three original studies (not included in the systematic reviews). Importantly, the three original studies focused on PAs working in a specific setting (e.g., family practice settings and an outpatient women's health center) and with tasks limited to a single clinical domain—diabetes in one and surgical abortion in two.

From this review of the available PA literature, Laurant et al. concluded that there were no differences in clinical outcomes between patients cared for by PAs or physicians. They noted two studies reported that PAs contributed to increased productivity, and one also showed a decrease in length of hospital stays. There was some evidence that care provided by PAs was less costly than that provided by physicians.

Overall, these authors concluded that non-physician providers working as substitutes or supplements for physicians in defined areas of care can maintain and often improve the quality of care and outcomes for patients and that the effect on health care costs is mixed, with savings dependent on the context of care and the specific nature of role revision. They also noted that the evidence base is strongest for NPs, while there is a marked paucity of research into pharmacists and PAs.

Consistent with this work, Hooker, Klocko & Larkin (2011) also observed that the evidence comparing the clinical effectiveness of PAs to mainstream management of emergency care was only fair in methodological quality. However, based on available data, they observed that PAs are now working closely with emergency physicians across the US. Ho, Pesicka, Schafer, & Maddern (2010) conducted a systematic review of studies examining PAs in surgical units, concluding that PAs have been shown to provide safe and high quality care.

Newhouse & colleagues (2011) conducted a systematic review of published literature between 1990 and 2008 on care provided by advanced practice nurses (APN) with the aim of determining if APN patient outcomes were similar to those of other providers (physicians or teams without APNs). They reported that APNs' patient outcomes of care provided by NPs and CNMs in collaboration with physicians are similar to, and, in some ways, better than care provided by physicians alone for the populations and in the settings included.

They reported that clinical nurse specialists (CNS) in acute care settings can reduce length of stay and cost of care for hospitalized patients. These results extended what has already been reported about APN outcomes from previous reviews by assessing all types of APNs over a span of 18 years, using a systematic process with intentionally broad inclusion of outcomes, patient populations, and settings.

Finally, in a recent paper released by the Center for Health Economics and Policy Analysis, Gafni, Birch, & Buckley (2011) reviewed studies of PAs working in a variety of settings. They reported finding few evaluation studies on the costs and/or effectiveness of PAs in primary care practices or hospital settings other than EDs noted that the research questions have tended to ignore what they suggests to be the most important comparison - the cost effectiveness of PAs compared to other non-physician providers such as NPs.

In summary, 14 systematic reviews provide consistent evidence that, within their scope of practice, NPs and PAs provide equivalent quality of care compared to their physician counterparts and that they are well-accepted by patients. Authors repeatedly have concluded that these providers can increase productivity of physicians, increase access to care, thereby decreasing wait times, and deliver more patient education and health promotion than physicians.

However, several authors note that more work is needed to examine the cost effectiveness of NPs, PAs, and physicians, since any variability in practice affects costs of care. As well, the majority of the work to date has focused on assessing the quality of care and cost effectiveness of NPs, with much less work conducted with PAs.

Table 2. Summary of Research Reviews

Reference	Description	Summary of Key Findings
US Office of Technology Assessment (July 1981)	A large-scale review of the literature on the cost effectiveness of NPs	<ul style="list-style-type: none"> • NPs can perform basic and routine medical care tasks that are traditionally performed by physicians. • Physicians working in concert with NPs will thus be free to focus on more serious and more complex medical care problems. • Training costs for NPs are less than for physicians. • Lower costs associated with NPs will result in lower prices for the services provided. • Improved access resulting from the addition of NPs to the health care team will increase the frequency of early detection of disease and thus reduce medical care expenditures.

Reference	Description	Summary of Key Findings
US Office of Technology Assessment (December 1986)	A large-scale review of the literature examining the research literature pertaining to the role and value of NPs, PAs, and CNMs	<ul style="list-style-type: none"> • Within their areas of competence, the quality of the care provided was equivalent to that of the care provided by physicians. • NPs and CNMs were more adept than physicians at providing services that depend on communication with patients and preventive actions. • PAs performed better than many physicians in supportive care and health promotion activities. • Patients were generally satisfied with the quality of care provided by NPs, PAs, and CNMs, particularly in regard to the interpersonal aspects of care. • In addition to improving access to care in rural areas, NPs, PAs, and CNMs increased access to primary care in a wide variety of non-geographic settings and for populations not adequately served by physicians. • Productivity studies indicated that NPs and PAs working under physicians' supervision increased total practice output by 20% to 50%, depending on the practice settings, the responsibilities delegated, the severity and stability of the patients' illnesses, and how the physicians choose to use the free time that results from delegating tasks. • The OTA concluded that the quality of care provided by these providers within their areas of competence was equivalent to the quality of comparable services provided by physicians. • Despite this supporting evidence, these practitioners were not used to their fullest potential, largely due to reimbursement issues.
Brown & Grimes (1995)	Meta-analysis of patient outcomes of NPs and Midwives in primary care	<ul style="list-style-type: none"> • Provide more health promotion and score higher on quality of care measures than physicians. • Prescribe drugs at equivalent rates. • Order more laboratory tests, although the average costs of these are lower. • Achieve higher scores than physicians on resolution of pathological conditions, functional status of patients, and patient satisfaction and compliance. • Spend more time with their patients. • Have patients who require fewer hospitalizations than those of physicians. • Have lower costs per visits than physicians.
Carrino & Garfield (1995)	Review of three decades of literature on the substitutability of NPs for physicians in primary care practice in the US	<ul style="list-style-type: none"> • The common conclusion in the literature reviewed was that NPs can provide, at a lower cost, most of the medical services that are traditionally rendered by physicians (in primary care) and/or that they can provide medical care in areas with needs unaddressed by physicians, practicing as physician <i>substitutes</i>.
Horrocks, Anderson, & Salisbury (2002)	Systematic review of randomized controlled trials and prospective observational studies	<ul style="list-style-type: none"> • Patients were more satisfied with care by a NP compared to care by physicians. • Consultations with NPs were longer and made more investigations than doctors. • There were no differences in prescriptions, return consultations, or referrals.

Reference	Description	Summary of Key Findings
Chapman, Zechel, Carter & Abbot (2004)	Systematic review of the research literature evaluating innovations in the National Health Service (NHS) that were intended to improve access to primary care	<ul style="list-style-type: none"> • There is some evidence that nurse-led care for minor conditions is as safe and effective as care by doctors, resulting in similar clinical outcomes. • No data were found comparing the detection of rare and serious adverse health outcomes between both professional groups. • There is evidence that NPs give longer consultations and carry out more tests; however, no difference has been found in referral rates to secondary care between doctors and NPs. • Findings on re-consultation rates and the proportion of cases that nurses can handle independently were inconsistent. • There was consistent evidence that nurse-led care achieves high patient satisfaction rates.
Bazian (2005)	Updated the earlier review by Horrocks et al., expanding the literature search to 2004 and examining evidence relating to the substitution of NPs for doctors as the first point of contact for patients with an undifferentiated medical problem	<ul style="list-style-type: none"> • Patients were more satisfied with NP care than doctor care. • NP consultations were significantly longer than those by physicians and performed significantly more investigations. • NPs offered more information and advice than doctors about illness and self-care. • There were no significant differences between NPs and physicians in regard to prescriptions, referrals, or repeat consultations.
Carter & Chochinov (2007)	A systematic review of studies evaluating NPs working in the ED, focused on four key outcome measures: wait times, patient satisfaction, quality of care, and cost effectiveness	<ul style="list-style-type: none"> • The findings from literature reviewed suggest that NPs can reduce wait times for the ED, lead to high patient satisfaction, and provide a quality of care equal to that of a mid-grade resident.
Kleinpell, Ely, & Grabenkort (2008)	Review of research of both NPs and PAs in acute and critical care settings	<ul style="list-style-type: none"> • The existing research supports the use of both NPs and PAs in acute and critical care settings, with a low level of evidence found with only two RCTs assessing the impact of NP care.

Reference	Description	Summary of Key Findings
Laurant, Harmsen, Wollersheim, Groel, Faber, & Sibbald (2009) (also published as a Cochrane Collaborative Review: Laurant, Reeves, Hermens, Braspenning, Groel, and Sibbald, 2009)	Rigorous literature review of research on NPs and PAs using a conceptual model first published by Sibbald, Laurant, & Scott (Sibbald et al., 2006)	<ul style="list-style-type: none"> • In general, non-physician providers working as substitutes or supplements for physicians in defined areas of care can maintain and often improve the quality of care and outcomes for patients. • The effect on health care costs is mixed, with savings dependent on the context of care and the specific nature of role revision. • The evidence base is strongest for nurses; there is a marked paucity of research into pharmacists and PAs.
Hooker, Klocko & Larkin (2011)	Review of 35 articles comparing the clinical effectiveness of PAs to mainstream management of emergency care	<ul style="list-style-type: none"> • Concluded PAs are now part of a multidisciplinary effort working closely with emergency physicians across the US due to increasing demand for emergency services in the face of a relatively flat physician replacement stock and that efficiency gains are likely due to economy of scale and division of labor. • The authors cautioned that the evidence comparing the clinical effectiveness of PAs to mainstream management of emergency care was only fair in methodological quality and suggest that prospective studies examining outcomes of care, cost benefit of care, division of labor, and organizational efficiency be conducted.
Ho, Pesicka, Schafer, & Maddern (2010)	Review of studies examining PAs in surgical units	<ul style="list-style-type: none"> • Concluded that PAs provide safe and high quality care.
Newhouse et al (2011)	A systematic review of published literature between 1990 and 2008 comparing outcomes of APNs with those of other providers (physicians or teams without APNs)	<ul style="list-style-type: none"> • Patient outcomes of care provided by NPs and CNMs in collaboration with physicians are similar to and, in some ways, better than care provided by physicians alone for the populations and in the settings included. • Use of CNS in acute care settings can reduce length of stay and cost of care for hospitalized patients. • APNs provide effective and high quality patient care, have an important role in improving the quality of patient care in the US, and can safely augment the physician supply to support reform efforts aimed at expanding access to care.
Gafni, Birch, & Buckley (2011)	A literature review of the cost effectiveness of studies on PAs working in a variety of settings	<ul style="list-style-type: none"> • Few evaluation studies conducted on the costs and/or effectiveness of PAs in primary care practices or hospital settings, other than EDs. • No comparisons between PAs and other non-physician providers such as NP. • Consequently, the cost effectiveness evidence for PAs is anecdotal and difficult to translate into Canadian (Ontario) context.

3.3 Selected Issues Relevant to NP and PA Implementation

A number of papers were selected for more detailed review based on their relevance to NP and PA implementation in BC. Those selected as having particular relevance are: comparison of NPs and PAs; the impact of NPs and PAs working in interprofessional teams on clinical outcomes; economic impact of substitution; professional liability; prescribing authority and practice; and public acceptance and patient satisfaction.

a) Comparison of NPs and PAs

No RCTs comparing the clinical outcomes of NPs and PAs were retrieved. Presumably this is because although there is some overlap in skills and activities, as a result of the differences in their training, skills, scope of practice, and level of autonomy they are usually deployed in different roles.

Where papers examined NPs and PAs simultaneously they were grouped in a single category (e.g. physician extenders, physician substitutes, mid-level providers, etc.) and compared to residents, physicians, etc. (Kelvin et al., 1999; Rudy et al., 1998). A number were descriptive in nature (Caprio, 2006; Lin, Hooker, Lenz, & Hopkins, 2002; McCaig, Hooker, Sekscenski, & Woodwell, 1998; Riportella-Muller, Libby, & Kindig, 1995) while others addressed specific issues such as workforce planning (Sargen, Hooker, & Cooper, 2011), professional liability (Hooker, 2009), physician attitudes and perceptions (Bergeron et al., 1999; Bergeson, Cash, Boulger, & Bergeron, 1997; Burgess et al., 2003), impact on wait times (Ducharme et al., 2009), educational preparation (Bednar et al., 2007), and utilization (Hooker & McCaig, 1996).

b) Impact of NPs/PAs Working in Interprofessional Teams

There were few studies examining the impact of NPs and/or PAs on clinical outcomes when working as part of an interprofessional team. Litaker, Mion, Planavsky, Kippes, Mehta, & Froliks (2003) compared selected outcomes for a chronic disease management program involving a NP-general practitioner (GP) team with those of an existing GP only. One hundred and fifty-seven patients with diabetes mellitus and hypertension were randomly assigned to the two groups. Although the one-year costs for personnel were higher in the team-treated group, participants in that group experienced significant improvements in mean HbA1C and HDL-c, received significantly more clinical time, and reported higher levels of satisfaction. However, there were no significant differences in nationally recognized treatment goals for blood pressure or total cholesterol levels.

Lenz, Munding, Kane, Hopkins, & Lin (2004) provided the results of the two-year follow-up phase of the above study and found no differences between the groups in health status, disease-specific physiological measures, satisfaction, or use of specialist, emergency room or inpatient services, although physician patients averaged more primary care visits than NP patients.

Dhuper & Choksi (2009) conducted a comparative analysis of replacing medical residents with PAs and hospitalists on patient outcomes in a community hospital. Prospective data during the PA-hospitalist service for two years was compared with two years of retrospective data of the medical resident's model. Outcome measures included mortality, adverse events, readmissions, and patient satisfaction. They reported that the quality of care provided by the PA-hospitalist

model was equivalent. All-cause and case mix index-adjusted mortality was significantly lower during the PA-hospitalist period.

Two reports by BC HAs that have implementing HA-employed NPs in traditional FFS practices were reviewed (Canadian Health Services Research Foundation, 2010; Vancouver Island Health Authority, 2009). Their model included providing the FFS practices with compensation for overhead costs, recognizing opportunity costs associated with the alternative of an additional revenue-generating physician occupying office space, and assuming the professional liability associated with the NPs. With cost barriers eliminated, these physicians were reported to have developed “mutually respectful collaborative working relationships” with NPs, who in turn have the opportunity to practice to their full scope of practice. They reported early indications of increased practice capacity (i.e., increased caseloads), improved access, reduced utilization of other services such as ED and acute care, and high levels of patient and physician satisfaction.

Russell, Dahrouge, Hogg, Geneau, Muldoon, & Tuna (2009) reported that including NPs in PHC teams in four different PHC models recently established in Ontario was associated with high quality chronic disease management.

c) Economic Impact of Substitution

The potential for PAs to lead to significant increases in physician efficiency has been well documented, as detailed above, but there has been less work on the economic impact of NPs, particularly in the Canadian context. A seminal study conducted over 25 years ago by Ontario researchers Lomas & Stoddart (1985) developed a model for assessing the economic impact of substituting NPs for GPs. They reported being purposefully conservative, basing it on 40% substitution of activities and the assumption that physicians would supervise the NPs, given they were, at that time, not recognized as autonomous practitioners.

The authors predicted that implementing this model in 1980 would have reduced demand for 20% to 30% of Ontario GPs (i.e., 1,000-1,600 GPs). Their 20-year model of gradual implementation, adjusted for age and sex compositions, (McCally, Blomquist, & Berger, 1981; Spitzer et al., 1974) was predicted to result in GP reductions in the range of 10%-16% by 1991 and 20% to 30% by 2001. The authors noted that other similar investigations (McCally et al., 1981; Spitzer et al., 1974) had previously arrived at higher levels of feasible delegation, as did the OTA (Office of Technology Assessment, December 1986), which suggested substitution rates as high as 90%.

In the US, Alpert, Fjone & Candela (2002) reported that the American Nurses Association (ANA) had compared salaries and practice ratios of NPs and physicians nearly fifteen years ago, predicting that NPs could provide the same level of service at a cost savings of \$1 billion. They noted that not only do NPs provide affordable health care, but also their education costs were one-fourth to one-fifth of medical school graduates.

In the single Canadian RCT of the impact of PAs in acute care settings, Bohn, Dunbar, Pitman, Rhule & Araneta (2010) concluded that utilizing PAs as assists in orthopedic surgery typically saved supervising physicians 50 minutes per arthroplasty patient. They also reported high satisfaction of surgeons, nurses, residents, and patients, an annual 42% increase in primary-joint volumes, and a reduction in the median wait time for surgery from 44 to 30 weeks. However,

many authors comment that the economic impact of both NPs and PAs is yet to be definitively determined. For example, in a recent literature review of the cost effectiveness of PAs, Gafni, Birch, & Buckley (2011) conclude that the comparison of PAs and other non-physician providers, such as NPs, has been ignored.

d) Professional Liability

Hooker, Nicholson & Lee (2009) examined 17 years of data from the US National Practitioners Data Bank to compare malpractice incidents, payment amounts, and other measures of liability amongst physicians, PAs, and APNs. During that time, there was one payment for every 2.7 active physicians, one for every 32.5 active PAs, and one for every 65.8 active and inactive APNs, which means that 37% of physicians, 3.1 % of PAs, and at least 1.5% of APNs would have made a malpractice payment during the study period.

The reasons for disciplinary action against PAs and APNs were reported to be similar to that of physicians. The authors concluded there were no observations or trends to suggest that PAs and APNs increase liability, and if anything, they suggested that they may decrease the rate of reporting of malpractice and adverse events.

e) Prescribing Authority and Practice

Although prescribing practice was addressed in several of the research reviews summarized above, it is important to note that because NPs in the US began to have autonomous practice only in the 1990s, research studies examining prescribing practice conducted before this time risk being confounded by the previous requirement for physician supervision. Accordingly, we reviewed only studies published following this change in legislation.

Birkholz & Viens (1999) explored prescribing patterns in New Mexico using the US Drug Utilization Review Bank data for PA, NP, and physician billed claims starting in 1993 when NPs gained independent practice and independent prescriptive authority in that state. They reported that billed service claims were found to be similar for the four types of providers, with five of the top 10 ICD-9 diagnostic categories and five of the top 10 drugs prescribed being identical across all three providers. Similarly across the three providers, penicillin was ranked as the most frequently prescribed medication and cough preparations were ranked number two for NPs and physicians, while the NP was the only provider group in which narcotic analgesics was not among the top 10 prescriptions written.

Later studies of prescribing practices (Cipher, Hooker, & Sekscenski, 2006; Hooker & Cipher, 2005; Running, Kipp, & Mercer, 2006) compared PA and NP prescribing practices to those of physicians. The results of these studies suggested that NPs and physicians prescribe similar types of drugs for common conditions in accordance with accepted medical practice. The Hooker and Cipher studies used the National Ambulatory Medical Care Survey (NAMCS) data. They reported that a PA or NP was the provider of record for 3% of the primary care visits. The three providers wrote prescriptions for 60% to 70% of all visits. PAs were more likely to prescribe a controlled substance (CS) than were physicians or NPs. In rural areas, NPs wrote more prescriptions than physicians and PAs, and PAs wrote fewer prescriptions than the other providers. However, the authors concluded that overall, PAs and NPs are prescribing in a manner similar to physicians in the type of medications used in their patient management. It was also reported that NPs working with the elderly more often rely on behavioral options rather than

psychotropic medications (Birkholz & Viens, 1999; CIPHER et al., 2006; Hooker & CIPHER, 2005; Running et al., 2006; Scudder, 2006; Seale, Anderson, & Kinnersley, 2005).

In a descriptive study of prescriptive practices of NPs in the US, Scudder (2006) summarized data collected in 2004 and 2005, the most recent iteration of reportedly the longest descriptive study of NP prescribing practice of its kind. The author reported that most notable over the nine years of data collection was the remarkable stability of NP practice patterns. Through this period of significant changes in the profession - legislatively, educationally, and in practice - NPs continued to treat the same types of patients, place the same importance on preventive issues, and use the same types of medications, although increasingly broadening their role from primary care settings to provide those same services in acute care settings, including emergency rooms, urgent care settings, and outpatient surgical centers.

In addition to these conclusions, the author raised issues in regard to data collection procedures and their potential impact on the reporting of NP and PA prescribing. She observed that the US pharmaceutical industry collects detailed information about physician prescribing practice, but prescriptions written by NPs and PAs often are ascribed to the physicians with whom they work or the providers are erroneously classified as physicians. She suggests that this serves to underestimate NP and PA prescribing while inflating that of physicians, resulting in the contribution of NPs and PAs to health care services and their untapped potential being obscured.

Courtenay (2010) reported that the benefits of nurse prescribing in the UK were found to be consistent with those predicted by government, including easier and faster access to medicines, increased choice for the prescriber, and improved use of nursing skills. Kennedy-Malone, Fleming and Penny (2008) studied the prescribing patterns of gerontological nurse practitioners (GNPs) as reported on the US Gerontological Nurse Practitioner Practice Profile. The most commonly prescribed types of medications were analgesics, anti-hypertensives, cardiovascular drugs, and diabetic medications. The prescribing patterns of these GNPs were not influenced by education, years of practice, or selected practice characteristics. Overall, self-reported prescribing of inappropriate medications among the GNPs participating in this study was low.

Kaplan, Brown, & Donahue (2010) explored Washington State NP prescribing practices after the implementation of a 2005 state law removed the requirement for a Joint Practice Agreement with a physician to prescribe Schedule II-IV drugs (controlled substances). The authors discussed the relationship between fully autonomous prescriptive authority and NPs' overall sense of autonomy, including detailing studies on prescribing patterns before and after implementation of the new laws. The authors reported that prescribing controlled substances was a part of the clinical practice of the overwhelming majority (90%) and that nearly all of the respondents eligible to prescribe these did so. In addition, the elimination of the joint practice agreement led to a significant increase in the percentage of NPs prescribing controlled substances, from only 60% of eligible NPs to 92%.

However, the authors also observed that the joint practice agreement previously required appeared to have merely served as either a formality or an arrangement for the majority of NPs, as it was generally reported that there was no subsequent contact with the physician. They observe that this was ironic given the state medical association lobbied against fully autonomous

practice despite the fact that physicians generally did not impose prescribing restrictions or provide meaningful oversight to NPs within the context of a practice agreement.

f) Public Acceptance and Patient Satisfaction

As early as 1993, a US Gallup poll found that 86% of consumers reported being willing to see a NP for primary care (Flanagan, 1998). Hooker et al. (2011) reported that women were willing to be treated by a PA without actual experience or knowledge of PAs, and furthermore, they would trade familiar physician care for that of a PA when their access was more available. On the other hand, Larkin and Hooker (2010) reported that, based on hypothetical scenarios, patients waiting in a US ED reported being unwilling to be seen by a PA, NP or resident, with nearly 80% reporting that they fully expected to see a physician, regardless of acuity or potential of cost saving. Whether this was a function of the ED being associated with a hospital and therefore leading to higher expectations for medical care than would be expected in a community clinic was not explored.

With regard to patient experience, Salisbury & Tattersell (1988) found that 97% of patients seeing a NP reported that they would choose to consult her again. Mundinger, Kane, Lenz, Totten, Tsai, Cleary, et al. (2000) reported that patients appreciate NPs' communication style and the fact that they tend to spend more time with patients than their physician colleagues. Horrocks, Anderson, & Salisbury's (2002) systematic review reported that patients who saw a NP reported higher levels of satisfaction and better quality of care in comparison to the care provided by physicians.

Forgeron & Martin-Meisner (2005) investigated the factors influencing parental intent to use the services of a pediatric NP in an ED. Based on a questionnaire for patients visiting a tertiary pediatric ED for their child's non-urgent emergency care needs, the authors reported that 83% of parents indicated their intention to access NP services for a variety of childhood symptoms. Analysis revealed that the compatibility of NP services with parents' beliefs and needs was the most statistically significant independent variable predicting parental intent to use these services.

The authors concluded that the public does not fully understand the scope of nursing practice, and this is a concern if people are to feel comfortable with expanded roles for nurses. They suggested that the public should be given information that not only describes the role of NPs, but also includes facts about the scope of practice of RNs as this may be helpful in producing a favorable attitude towards NP care.

Seale, Anderson & Kinnersley (2005) reported that NPs spent twice as long with their patients and both patients and clinicians spoke more in NP consultations. NPs talked significantly more than GPs about treatments and, within this, talked significantly more about how to apply or carry out treatments. Some of the extra time was also spent on getting physicians to approve treatment plans and sign prescriptions. They concluded that the provision of more information in the longer NP consultations may explain differences in patient satisfaction found in other studies. Based on a national survey, Copher et al (2006) reported that older American adults were generally satisfied with their medical care and did not distinguish preferences based on provider types, suggesting that NPs and PAs could substitute for physicians to expand the primary care workforce to meet the rising needs of the elderly.

In a survey examining patient satisfaction with NPs in Canadian EDs, Thrasher & Purc-Stephenson (2007) reported that participants with higher income levels experienced higher levels of satisfaction with the attentiveness they received, whereas patients with previous experience with NPs reported higher level of satisfaction with the comprehensiveness of the care they received. Hart & Mirabella (2009) reported that the majority of patients (65%) in an ED indicated a willingness to be treated by a NP, with those patients having been treated by a NP in the past more willing to be treated by a NP during the current visit.

Charlton, Dearing, Berry, & Johnson (2008) reported that patients appreciate NPs' communication style and the fact that they tend to spend more time with patients than their physician colleagues. Other studies in the UK also found high levels of patient satisfaction with NPs in a UK inner city primary care practice (Haidar, 2008) and in occupational health settings (Agosta, 2009), particularly in regard to communication, advanced assessment, and partnership in consultation.

Budzi & colleagues (2010) examined the differences in patients satisfaction with care provided by NPs, PAs and physicians in the large Veterans Administration System. Based on over two million surveys, they reported that patient satisfaction scores increased substantially more when the number of NPs was increased compared to when the number of physicians was increased; patient satisfaction scores increased slightly or stayed the same when the number of PAs was increased.

Allnut & colleagues (2010) reported that while two-thirds of patients consulting a NP rated NP-related outcomes as excellent or very good, less than half reported understanding that NPs could prescribe medication or interpret x-rays. They noted that clients in rural areas were more likely to have previously consulted a NP and preferred to see a NP rather than a physician. They concluded that despite high levels of satisfaction, expansion of the NP role requires increased visibility and more public awareness of its scope.

To better understand why NPs are rated highly by patients, several researchers have examined "caring behaviors". Beal et al (2002) reported that NPs working in a neonatal intensive care unit were perceived by parents as being present, caring, translating information, and making parents feel at ease. Similarly, Juretschke et al (2008) found that the more caring neonatal NPs were rated, the more satisfied parents were. Of interest is the fact that the caring behaviors were rated as high regardless of their gender, suggesting that they may be related to the holistic nature of NP education (Green & Davis, 2005).

Related to the notion of caring, Hayes (2007) surveyed patients of managed care clinics in the US and reported that patients were very satisfied with NP communication and with their health care visits, with most reporting that they intended to adhere to the NP-recommended plan of care. Patients reported that they trusted their NPs, valued their expertise, were confident in the NPs' care, and believed that the NPs considered their best interests. They appreciated that the NPs took time to listen to their concerns and helped them obtain health care resources.

Charlton et al. (2008) reported that the patient-centered communication incorporated into NP practice is associated with improved patient outcomes, such as improved satisfaction and

increased adherence to treatment plans, as well as improved patient health. Budzi et al. (2010) concluded that the majority of primary care patients prefer to see NPs as compared with PAs and physicians due to their greater focus on disease prevention, health education, attentiveness, and counseling.

There is some evidence that public knowledge of NPs as autonomous providers is increasing. Brown (2007) found that 90% of respondents in a large survey conducted in Seattle, Washington knew about NPs, a much larger percentage than in a previous study in 1985. They also reported that 58% of respondents had seen an NP for their care, making NPs the most utilized practitioner-alternative to physicians, and that 80% of patients seen by an NP reported being satisfied or very satisfied with the care they had received.

Finally, a 2009 Harris/Decima poll (2009) of 1,000 Canadians reported that one in five respondents had been treated by a NP and that a majority of these indicated that they would like to see the role expanded. As well, over 75% also indicated that they would be comfortable seeing one in lieu of their family physician and the large majority thought that expanding NP roles would be an effective way of managing health care costs.

3.4 Barriers to the Utilization of NPs and PAs

A number of important barriers to the successful implementation of NPs, and to a lesser extent PAs, have been well documented in the international literature. Understanding these documented barriers will enable better interpretation of barriers currently being faced by NPs in BC, and will help to identify barriers most likely to be faced by PAs should they be implemented in this jurisdiction.

a) Lack of Legislation and Policy

NPs. The public nature of the Canadian health sector means that government health policy at both the national and provincial level is a major contributor to the optimal utilization of health human resources. It is the structure, organization, and funding of the health delivery system that determines where professions are employed, how they are deployed, and how they are paid.

Although the federal, provincial, and territorial governments have recognized the potential contribution of NPs to new models of PHC delivery, the legislation, regulation and education of NPs is the responsibility of individual provinces and territories, as is the organization and funding mechanisms within their respective health systems (Canadian Nurses Association, 2005). NP participation and legitimacy in the health system is largely dependent upon a role being defined, positions being established, and resources being made available.

A significant challenge for NPs has been a lack of funded positions, given that they are dependent on becoming an employee. This is changing, as provinces have begun to make structural changes to their PHC systems. For instance, in Ontario the introduction of Family Health Teams and other new PHC service models has led to significant increase in NP positions and NP employment.

PAs. PAs remain a largely unregulated profession, working to extend the work of physicians. There was a paucity of work defining any legislative or policy barriers to implementing PAs.

b) Physician Attitudes

NPs. Fletcher and colleagues studied NPs' and physicians' perceptions of the role of NPs, the degree of collegiality between professions, and NPs' feeling of acceptance that may affect the acceptance of NPs as providers of primary care (2007). NPs saw their role as one of autonomous practice with physician back-up as needed, while the physician respondents envisioned a role akin to a physician extender. Most of the physician respondents did not think NPs could provide adequate PHC to veterans who tend to have many co-morbid conditions. Of interest was the physicians' report that they particularly valued NPs' teaching and interpersonal skills, which they perceived as leading to greater patient satisfaction, consistent with reports of higher patient satisfaction with NPs as summarized in Section 3.

Cairo observed that physicians expressed concerns related to the NP's desire for autonomous practice, described by one physician as an "adversarial posture" toward physicians (1996). Physician responses included concerns that third-party reimbursement and prescriptive authority would encourage independent practice by NPs, presumably reflecting a concern that NPs would compete with physicians for patients and income. Past studies have found that physicians perceived NPs as a threat to both their income and their role (Alpert et al., 2002; Gould, Johnstone, & Wasylkiw, 2007). Physicians who did support prescriptive authority for NPs did so under the conditions of protocols and guidelines.

Alpert et al (2002) noted that physicians tend to be overly concerned with the heterogeneous background and preparation of NPs, despite having limited understanding of what their training involves. Physicians have frequently voiced concerns regarding NP threat to patient care quality and safety, unjustified consumer costs, threat to physician professional integrity and autonomy, a loss of revenue, and the likelihood that NPs will order more tests and consultations, and be quicker to admit patients to the hospital, thereby driving up system costs (Alpert et al., 2002; Appel & Malcolm, 2002; Flanagan, 1998).

Gould et al. (2007) investigated the experience of NPs one year after they were first introduced to a mostly rural Canadian province. These NPs reported facing a lack of acceptance by both the public and physicians, resulting from limited knowledge about their role and capabilities. Physicians perceived NPs as a threat to both their income and their role. While the NPs saw themselves as being part of the wider health care team, they described the existing health care system as a hierarchy, with physicians at the top. Also noted as a barrier were the difficulties surrounding referrals to specialists; despite the NPs ability to make referrals, many specialists refused them.

A number of researchers have suggested that of the many reasons for physicians' negative attitudes, key are competition for market share, fear of lost income, and the culture of medical training, which does little to promote an appreciation of interprofessional collaboration (Arcangelo, Fitzgerald, Carroll, & Plumb, 1996; Merkeley Keith & Fraser Askin, 2008). Past work suggests that the collaborative relationship between NPs and family physicians in Canada is still in its infancy (Merkeley Keith & Fraser Askin, 2008). Despite evidence that NPs exert good judgment in determining when a patient warrants referral for medical attention, there is little evidence that physicians refer to NPs (Way, Jones, Baskerville, & Busing, 2001).

In a New Zealand study, Mackay (2003) reported that GPs were more likely to favor NPs performing functions that were traditionally associated with nursing, such as health teaching, home visiting, obtaining health history, and taking part in the evaluation of care, but were less favorable about functions that were generally associated with medicine or full scope NP practice, such as prescribing, ordering laboratory tests, and patient assessment.

On the other hand, several authors observe an emerging positive shift in physician attitudes to NPs and note that where their implementation is successful, the attitudes by physicians towards NPs are positive and NPs are valued and trusted as colleagues (Brcic, McGregor, Kaczorowski, Dharamsi, & Verma, 2012; Watson, Slade, Buske, & Tepper, 2006).

There is evidence of a steady decline in physician preference for the FFS payment model and this may serve to reduce the sense of competition for market share and fear of lost income. For example, the BC Rural Physician Programs Review noted that younger physicians place a higher priority on work-life balance than their more senior colleagues and that workload, working hours, and flexible working arrangements were important to retaining physicians, suggesting more interest in interprofessional practice and alternative remuneration models (Harbour Peaks Management Inc., 2008). The Canadian National Physician Survey (2007) reported a consistently declining percentage of physicians preferring FFS as their sole source of income; this number was less than one in four in 2007.

Similarly, in a study recently conducted in BC, newly practicing physicians reported preferring alternatives to FFS payment models, which were perceived as contributing to fewer frustrations with billing systems, improved quality of work life, and better quality of patient care (Brcic et al., 2012). Of respondents, 71% preferred non-FFS practice models and 86% identified the payment model as very or somewhat important in their choice of future practice.

Bodenheimer & Pham (2010) observed that young medical graduates are increasingly attracted to larger integrated organizations where they face less financial risks and more clinical support from an interprofessional team. Based on a survey of over 400 physicians, Running et al. (2008) reported that physicians ranked accessibility to health care and the quality of care as equally important and or more important than physician satisfaction or economic incentives as a reason to work with NPs, from which the authors concluded that collaboration between physicians and NPs is maturing as NPs move into more arenas in health care.

PAs. Physician attitudes towards PAs are reported frequently as more positive than to NPs. In a study of physician perceptions of NPs and PAs, Ford & Kish (1998) noted sharp contrasts in physician perception of these two providers and reported that it was reputation rather than experience that shaped those perceptions (1998). Both Ford & Kish (1998) and Cairo (1996) noted physician lack of trust in NPs compared to PAs (Cairo, 1996; Ford & Kish, 1998). Cairo also noted that physicians expressed more confidence in the education and physiological knowledge of PAs than NPs, despite also admitting they knew little about NP training or credentialing.

c) Organized Medicine

NPs. Past literature in this area provides evidence that this particular challenge is not new or unique to BC. In New South Wales, Appel & Malcolm (2002, p. 208) detailed the continuing

struggle to legitimize the role of NPs in the face of considerable resistance from the medical profession and commented on “scurrilous attacks” made by some medical practitioners. Jacobs (2007) suggested that engaging the public and reinforcing consumer rights to professional care and improved population health outcomes are critical steps in advancing NPs as a profession. Similarly, Diers & Goodrich (2008) observed that strong education, NP practice standards, and advertisement of these in the context of patient safety are needed.

Although there are many NPs trained and deployed in the US, they have faced numerous attempts by organized medicine to restrict their implementation. Ford (2008) reviewed barriers faced by NPs in the US and described numerous attempts to restrict NP practice, driven mainly by physician associations. For example, she reported that in Virginia, the Board of Medicine proposed a rule to prevent NPs from performing any procedure that involved the skin, including suturing, injections, and debridement. At the 2008 annual meeting of the American Medical Association (AMA), members proposed several resolutions that reflected “distaste” for the introduction of the Doctorate of Nursing Practice (DNP), including an attempt to require physician supervision for NPs who earn the DNP degree and protection of the title of doctor, resident and residency.

In the US, Carson-Smith & Minarik (2007) reported on what they referred to as “the deceptively titled Healthcare Truth and Transparency Act”. They noted that the proposed Bill pitted organized physician groups against NPs and other non-physician providers by limiting selected scopes of practice and creating a federal cause of action against non-physician health care professionals who “make any deceptive or misleading statement, or engage in any deceptive or misleading act, that deceives or misleads the public or a prospective or current patient that such person is a medical doctor, doctor of osteopathic medicine, doctor of dental surgery, or doctor of dental medicine or has the same or equivalent education, skills, or training”. They described this bill as a “bold attempt by the medical community to inappropriately initiate federal action to address state-mandated scopes of practice”.

Lebo (2007) commented on what is described as a mighty counterattack by the medical community and suggested that it had served to “shake many NPs out of complacency” (2007, p. 43). She was referring to proposals by legislators in several states in 2007 to create “super boards” of physicians to oversee or investigate NPs. Moreover, Lindeke & Thomas (2010) recently commented on the issue of continuing resistance to NP autonomy from physician groups in the US. The focus of this resistance is the Scope of Practice Partnership (SOPP), a coalition convened by the AMA in 2005 with various physician organizations that engage in tracking scope of practice legislative and regulatory efforts throughout the US. The SOPP funds investigations into the educational preparation and licensure requirements of health care providers with the goal of opposing autonomous practice of all providers except physicians. It also monitors state legislation and regulation regarding scope of practice qualifications, education, and academic requirements of non-physician clinicians and provides this information to its members as well as to media and policy makers.

The group is influential with federal and state legislators and proposed to oversee and control practice of all allied health professionals in the interest of quality patient care. Initially, state medical societies joining SOPP were from Massachusetts, Colorado, Texas, California, New

Mexico and Maine; many other state societies now also participate. In addition to the AMA and its state societies, six medical specialty organizations are also part of the SOPP, including The American Society of Anesthesiologists, American Society of Plastic Surgeons, American Academy of Otolaryngology-Head and Neck Surgery, American Academy of Orthopedic Surgeons, American Academy of Ophthalmology, and American Psychiatric Association. Each organization contributes a substantial annual sum to finance SOPP activities.

Lindeke & Thomas (2010) observed that SOPP targets all providers who are not physicians, including physical therapists, chiropractors, psychologists desiring prescriptive privileges, and pharmacists seeking to work directly with patients in medication adjustment roles. SOPP's use of the term "allied health professionals" for all providers who are not physicians and ignores the long autonomous histories of other professions, including nursing. SOPP funds studies to examine "allied health professionals" in order to create reports for legislators, and it actively campaigns against state and federal legislation addressing the practice of NPs and others.

Numerous AMA resolutions have been passed that reflect SOPP goals, such as the 2005 AMA Resolution 814 entitled "Limited Licensure Health Care Provider Training and Certification Standards" and the 2009 AMA Report 28 "Collaborative Practice Agreements Between Physicians and Advance Practice Nurses". Lindeke & Thomas (2010) suggest that SOPP's underlying values are about compensation for care, protecting what is considered physician territory, and fear of change.

The Coalition for Patients' Rights (CPR), which includes over 35 organizations under leadership of the ANA, was formed in the US to oppose AMA and SOPP efforts to limit the legal authority of qualified provider groups. The name Coalition for Patients' Rights was chosen to emphasize that patients should have the right to choose and access quality care from the many kinds of providers who are not physicians.

CPR counters the claims by medicine that all health professionals should be supervised by physicians and regulated by entities comprised of physicians and advocates for affordable, safe care using full use of the entire available workforce. It emphasizes multiple professional approaches to quality, access, affordability, and sustainability of health care relationships.

Lindeke & Thomas (2010) noted that statutory and regulatory language ensuring physician control and supervision of NP practice is apparent in some of the health care reform bills currently under consideration in the US. The Medical Home model of care, which has become established in pediatrics through state-based demonstration projects funded by the American Academy of Pediatrics and the Maternal and Child Health Bureau, is identified to be of significant concern. In states where NPs have independent practice, this exclusive focus on physician models is not seen to be in the best interests of patients or NPs. Ensuring the use of provider-inclusive language and, thus, NP roles in medical/health care homes is a goal of CPR as well as multiple NP groups. The authors suggested that leaving NPs out of demonstration projects results in outcomes that do not reflect their efforts and keeps them invisible in health care/medical home systems. It is noted that the CFPC also has recommended the introduction of the medical home concept in Canada (College of Family Physicians of Canada, 2009).

While SOPP is limited to the US, in the Canadian context, Oandasan commented on the decision of the Section of General and Family Practice of the Ontario Medical Association to advertise in major newspapers and magazines “insinuating that Ontarians might put themselves at risk if they were to receive care from NPs and pharmacists...” (2009, p. 1173).

In the US, Lindeke & Thomas (2010) commented that policy makers appear to be recognizing that NPs are a key part of the solution for workforce shortages and that as a result, physician association efforts to restrict NP practice are receiving push-back from some lawmakers in Washington and at state levels.

PAs. No literature was found that specifically targeted PAs as being unable to fill gaps in health service delivery by organized medicine.

d) Name and Role Confusion

NPs and PAs. Name and role confusion/ambiguity is recognized by a number of authors as either hindering or facilitating the implementation of both NPs and PAs. With regard to name or nomenclature, we noted differences in how both NPs and PAs are depicted across the literature.

For example, both NPs and PAs are often swept up into a common category, such as mid-level providers, non-physician clinicians, and physician extenders (Aaronson, 1991; Hong et al., 2006; Terry, 1993), paraprofessionals, or allied health advanced practitioners (Ruston, 2008) with little regard for the significant differences in training and education, orientation, scope of practice, or degree of autonomy. Harbert, Shipman, & Conrad (1994) referred to both physician extenders and mid-level providers when referring to both NPs and PAs.

Bowen, Torres, & Small (2007) use non-physician providers to refer to not only NPs and PAs, but also to radiology assistants. In its 2003 Policy Statement regarding scope of practice issues, the American Academy of Pediatrics also refers to both NPs and PAs as non-physician clinicians.

This inconsistency in terminology contributes to confusion about both NPs and PAs and their respective roles and may lead to policy makers, managers, other providers, and the public to assume that these two providers are interchangeable.

With regard to role, several authors identify a lack of understanding of the value of NPs as autonomous professionals as a key barrier to the recognition of the NP role. As early as 1982, Hayden, Davies & Clore (1982) reported that the most frequently cited barriers were resistance from other health professionals, to a large part resulting from a lack of information or understanding that, in turn, leads to potential conflict amongst providers (Arcangelo et al., 1996; Por, 2008). Several authors have reported that introducing NPs affects the physicians, nursing staff and other health professionals. Studies conducted in the UK and Canada that examined the implementation of NPs into health care settings underscore the importance of preparation, autonomy, role clarity and support by other staff members when introducing NPs into a hospital setting.

A study conducted in Canada by van Soeren & Micevski (2001) explored success indicators, barriers, and recommendations for role implementation to assist health care providers in

developing strategies for integrating NPs into teams that included physicians and staff nurses in four tertiary care hospitals. The major indicator by all groups of successful role implementation was level of preparation. Barriers included a lack of mentorship and knowledge of the role, and a perceived lack of support from administration and physicians. Also in Canada, Hurlock-Chorostecki, van Soeren, & Goodwin (2008) explored the acute care NPs in Ontario. They reported a widespread lack of understanding about the role at all levels of nursing and management, the tendency for NPs to work as CNS rather than as NPs, and a lack of understanding and support for the multiple aspects of the role beyond clinical practice.

A study carried out by the Ontario Ministry of Health and Long-Term Care (2003) evaluating the integration of PHC identified that factors associated with successful role implementation included a shared vision between NP and staff, a definition of the NP role, having good team dynamics, and having a well-prepared NP. The barriers included lack of knowledge and clarity about the NP role, perceived lack of support from administration and physicians, and physician reimbursement issues, with particular reference to the FFS model.

Tye & Ross (2000) identified five major issues involved with implementing NPs into EDs, including the following: blurring role boundaries, managing uncertainty, individual variation, quality versus quantity, and organizational context. Similarly, in a study of Canadian EDs, Thrasher & Purc-Stephenson (2007) listed three issues: organizational context, role clarity, and NP recruitment. Organizational context refers to the environment an NP enters, and involves issues related to the ED culture, physician reimbursement system and patient volume. Role clarity refers to understanding the NP's function, while recruitment issues are associated with attracting and retaining NPs to work in EDs.

These authors suggested that a clear definition of the NP role was seen as essential to successful integration and that it was easier to integrate the NP into an ED if the staff had previous experience working with an NP. RNs, in particular, were seen to be uncertain of how the NP differed from a nurse and a physician. While the authors reported little resistance from the nursing staff, they did note conflict when other nurses were asked to carry out orders on patients seen by the NP. Some nurses thought the NP should carry out his or her own orders. The authors suggested that although a written job description may be helpful to set the stage for role implementation, ongoing discussions and refinement of the NP's role are important and that advanced discussion of the role was an important step in preparing staff and building ongoing support.

e) Limits on Prescribing Authority

NPs. Prescriptive authority is generally held to be a fundamental element of professional autonomy and an essential component of providing comprehensive quality patient care (L. Kaplan et al., 2010). A number of authors identified limitations associated with prescribing authority, describing them as key barriers for NPs, regardless of which country they practice (Chaston & Seccombe, 2009; Forchuk & Kohr, 2009; L. Kaplan et al., 2010). For example, in the US, non-physician clinicians without prescribing rights must have their prescriptions signed by a physician, a practice that was suggested to interrupt service delivery, irritate both patients and physicians, and reduce health care efficiency (Louise Kaplan & Brown, 2004; Redsell, Stokes, Jackson, Hastings, & Baker, 2007). For this reason, many countries have extended

prescribing privileges to suitably qualified non-physician providers (Avery & Pringle, 2005; Department of Health, 2005; Morgenstern & Brown, 1996).

Chaston & Seccombe (2009) report that more recent legislative changes allow NPs to function more autonomously, regardless of the availability of physicians, and the smaller population results in less legislative variety for specific NP specialty area.

PAs. Prescribing authority is not a barrier to PAs since they work under a delegated function model. In their review of PA prescribing in the US, White & Davis (1999) note that although prescribing authority generally is considered within the PA scope of practice, they do not prescribe autonomously, but rather, their supervising physician is legally authorized to delegate this authority. Thus, the laws that authorize PAs prescribing in the US are actually an expansion of the *physician's* authority. However, there is great variation of what is prescribed across individual PAs since their prescribing practices are dependent on their supervising physician.

f) Payment Issues

Nearly all of the cost effectiveness and remuneration studies involving NPs and PAs have been conducted in the US. While many of the issues are similar in Canada, the dynamics often are different given the nature of the public system, a single insurer, and, to date, minimal public interest in introducing competition within the health care sector. Accordingly, caution needs to be taken when extrapolating the implications of US payment issues to the Canadian health care sector.

NPs. The question of who should pay for NPs was identified as a key issue in the 1970s and it continues to be so today (DiCenso et al., 2010; Towers, 2003). Although, the introduction of NPs in the US four decades ago was intended to improve access to PHC for underserved populations, many of the federal payment programs did not include mechanisms to reimburse for NP service. As a result, many settings were reluctant to hire NPs because of the difficulties associated with recovering their costs.

In the US, the first program to authorize payment to NPs was the Federal Employees Health Insurance Program, followed by Medicare reimbursement for NPs providing services in rural and long term care settings (Towers, 2003). In addition, a federal reimbursement mandate was passed requiring Medicaid payment to family and pediatric NPs for medical services provided to recipients in state Medicaid programs. Most states converted this requirement to payment to all NPs regardless of specialty. In 1997, the Balanced Budget Act provided for Medicare reimbursement to NPs for the provision of reimbursable services.

In a Canadian setting, Thrasher et al. (2007) described how the FFS payment system created a barrier to introducing NPs and often prevented NPs from working to their scope of practice, whereas non-FFS payment methods, such as salary or other alternate funding arrangement, did not. Gorman & Brooks (2009) observed that given physician training can take up to 15 years and that they are the most costly providers, more consideration should be given to how best to assign patients to providers according to their health needs.

PAs. In the single study examining PAs in a Canadian acute care setting, Bohn et al. (2010) reported that adding a PA to orthopedic surgery reduced the amount of time required by the

orthopedic surgeon and thereby created additional surgeon/surgical capacity, increasing surgery volumes and reducing wait times and wait lists. However, although not discussed by the authors, in the context of the Canadian publicly funded system, the costs associated with the PAs and added surgical volumes likely were borne by the hospital, while the increased efficiency of the surgeons, presumably working in a FFS environment, would have led to increased income and increased costs to the health system. It would seem that while it is clear that PAs can increase physician efficiency and create additional capacity, the value of this needs to be considered within a wider context of total costs and benefits. Unless physicians are willing to share in the costs of increasing their efficiency, they may be the main financial beneficiaries of PAs while governments absorb their increased costs.

3.5 Summary

- Numerous individual studies and systematic reviews published in both Canada and the US since the mid-1970s have substantiated that NPs are capable of substituting for 80% to 90% of the PHC routinely provided by physicians, with commensurate levels of quality and safety and often with higher levels of patient satisfaction. PAs are also capable of substitution for the majority of activities routinely provided in PHC by physicians.
- The higher level of patient satisfaction is associated with higher levels of perceived caring, a more holistic or person-centered approach, superior communication skills, and more attention to non-medical aspects of a patient's life.
- Although considerably less research was found pertaining to PAs, their ability to safely conduct an increasingly wide range of clinical diagnostic and treatment procedures under the supervision of a physician is well documented.
- In the US, PAs appear to be increasingly oriented to highly procedurally or technically oriented specialty work and are increasingly utilized in contexts where high volumes of routine work can easily be delegated to a PA specifically trained for these tasks.
- Reports from the US indicate that both PAs and NPs have lower malpractice rates than physicians and no evidence was found to suggest that the addition of NPs or PAs leads to increased physician professional liability for physicians.
- Prescribing practices of autonomous NPs are reported to generally reflect those of physicians, although it is noted that NPs have a somewhat more cautious approach and tend to use more over the counter medications. PAs are not autonomous prescribers.
- Despite evidence supporting NP utilization, they are widely reported to face numerous barriers to and in practice, including lack of government leadership, physician attitudes, role confusion, and issues associated with payment models.
- Considerably fewer reports of barriers to PAs were identified and there is some evidence that physicians prefer to work with PAs because of the delegation model, which is less challenging than the autonomy commonly associated with NPs.

4. The BC Health Policy Context

4.1 The Importance of Policy Context

Understanding the national and current BC primary health care context is critical to identifying the enablers and the barriers to full implementation of NPs and assessing the potential challenges should the BC government decide to introduce PAs.

This section summarizes the evolution of PHC renewal over the past decade, nationally and in BC, and describes two provincial policy initiatives begun in the 2000s with the intention of strengthening the BC PHC system. The first is the education and implementation of NPs and the second, the strengthening of family medicine. The implications of initiatives that strengthened family medicine on NP implementation in BC are discussed in detail.

4.2 The National PHC Renewal and NP Agendas

a) The National PHC Agenda

During the 1990s, the federal government recognized the need to strengthen Canada's PHC system as a means of ensuring the future sustainability of publicly funded health care and reducing pressure on the expensive hospital and specialty sectors. This approach was consistent with the international evidence demonstrating a clear link between the strength of a PHC system and the cost effectiveness of the whole health system and population health outcomes (WHO, 2010).

The First Ministers of Canada expressed unanimous support for the renewal of the PHC system in health care agreements in 2000, 2003 and 2004. The Government of Canada established the \$800 million Primary Health Care Transition Fund (PHCTF) in September 2000, to support provinces and territories and other stakeholders in their efforts to develop and implement transitional PHC renewal initiatives that would fundamentally change how care was delivered (Health Canada, 2002).

Importantly, a critical aspect of this new national agenda was to shift from traditional physician-led primary *medical* care services to a more comprehensive interprofessional *primary health care system*. This broader approach would include primary medical care but also recognize the social determinants of health; provide a wider range of other community delivered services; better balance health promotion and prevention with treatment; shift care and resources from institutions to community services; and more effectively utilize all health human resources, and especially physicians, registered nurses and NPs.

The PHCTF included five objectives that were considered essential to achieving the desired transformational change at the system level: 1) increase the proportion of the population having access to PHC organizations accountable for the planned provision of a defined set of comprehensive services to a defined population; 2) increase emphasis on health promotion, disease and injury prevention, and management of chronic diseases; 3) expand 24/7 access to essential services; 4) establish interprofessional PHC teams of providers, so that the most appropriate care is provided by the most appropriate provider; and 5) facilitate coordination and integration with other health services.

b) Canadian Nurse Practitioner Initiative 2006

Although NPs were introduced in the 1960s and 1970s, it has been suggested that they failed to gain traction at that time and lost more ground as the result of major cuts in health care spending during the 1980s (Kaasalainen et al., 2010). However, their potential to significantly contribute to strengthening PHC was once again recognized within the context of the new national PHC agenda and this contributed to the launch of the Canadian Nurse Practitioner Initiative (CNPI) in 2006. Consistent with the national PHC agenda, the CNPI envisioned a comprehensive PHC system in which NPs would be recognized and utilized as essential PHC providers (Canadian Nurse Practitioner Initiative, 2006).

4.3 Primary Health Care Renewal in BC

a) The Federal Health Transition Fund (1998-2001)

BC began to explore new service models and physician funding strategies in the late 1990s, supported by the federal Health Transition Fund (1998-2001)¹. A new service model was developed, Primary Health Care Organizations (PHCO), and seven sites established. As well, a new blended funding physician payment model was developed for application at these new sites.

A review undertaken of this new model in 2004 suggested that the concept of interprofessional care was not fully realized, primarily as a result of issues associated with its implementation (McEwan & Kilshaw, 2004). This lack of progress appears to have dampened interest as developmental work on both service and payment models ended with the termination of the federal funding program in 2001 and were not renewed with the next federal funding program, although the seven clinics continued to operate.

b) The Primary Health Care Transition Fund (2000-2006)

In 2000, BC received \$74 M from the federal PHCTF. The majority of funding was allocated to BC's five regional HAs, which were charged with undertaking planning and implementation of projects aligned with the PHTF objectives. They developed a diverse set of regional initiatives during the six years of the PHCTF but achieving real transformational system-level change was beyond their reach given that critical policy levers, such as interdisciplinary service models and associated physician payment mechanisms, continued to be under the control of the MoH.

c) BC's NP Initiative

Consistent with the national CNPI agenda, BC's decision to implement NPs was intended to increase the capacity of the PHC system and improve patient access (BC Ministry of Health, 2005; BC Ministry of Health Services & BC Ministry of Advanced Education, 2003). In their Resource Guide for NPs (2006), the MoH described the goal of implementing NPs as to improve client health outcomes by increasing accessibility to health care services and filling gaps that presently exist in health care delivery (MoH, 2006).

As part of this initiative, BC invested heavily in developing a new NP workforce by establishing Master's-level NP education programs at three BC universities. These programs were intentionally designed to prepare NPs for collaborative practice in the PHC sector (University of

¹ The Health Transition Fund (HTF) was a federal \$150 million 5-year funding program (1997-2001) that supported 140 projects across Canada to test and evaluate innovative ways to deliver health care services.

British Columbia School of Nursing, 2012). Since 2005, these three programs have graduated approximately 250 NPs. To support this investment in a NP workforce, BC also introduced changes to the *Health Professions Act* in 2003, replacing the *Nurses (Registered) Act* and establishing NP's scope of practice.

As NPs graduated, the MoH began to provide HAs with funding to establish new positions. Between 2005 and 2011 the six health authorities received a total of \$101.7 million and in May 2012, the MoH allocated an additional \$22.2 million (Fayerman & Fowlie, May 2012). However, as noted in Section 2, despite this funding and HA efforts, the production of NPs in BC has overwhelmed the NP job market and as many as 30% of graduates are reported to be unable to find work in their profession (Scott, 2011). How the HAs used these funds and the challenges and opportunities experienced in developing new positions and introducing NPs in BC is addressed in more detail in Section 5.

4.4 Support for Full Service Family Practice in BC

During the same time that the MoH was taking steps to develop a provincial NP workforce, BC family practice physicians were expressing significant dissatisfaction with their incomes and working lives and BC medical graduates were demonstrating dwindling interest in family practice residencies. Both the MoH and the BCMA began to voice serious concerns that BC would face future shortages of family physicians, thereby further aggravating what was already seen as inadequate access to PHC.

In response, the BCMA initiated a consultation process in late 2004 and early 2005. Known as Professional Quality Improvement Days (PQIDS), these meetings attracted over 1,000 GPs. A wide range of issues and concerns were identified, including dissatisfaction with the discrepancy between primary care and specialist fees and the absence of an appropriately respectful relationship between GPs and their specialist colleagues. Importantly, these family practitioners voiced concern that they lacked an organized voice through which to influence provincial or regional health policy (General Practice Services Committee, 2010/2011).

a) The General Practice Services Committee

The General Practice Services Committee (GPSC) was established in 2002 as a joint committee of the MoH, BCMA, and the Society of General Practitioners of BC and was included in a Subsidiary Agreement for General Practitioners negotiated between government and the BCMA. Its mandate was to find solutions to support and sustain full service family practice in BC. It adopted a commitment to consensus decision-making, which became important to its later influence within the health system, as discussed in more detail below.

GPSC was renewed under both the 2004 and 2006 BCMA Working Agreements and in 2007 received \$382 Million as part of the four-year Physician Master Agreement. These funds were intended to help support quality improvements in physician care in eight priority areas, as follows: chronic disease management, maternity care, care of the frail elderly, and patients requiring end-of-life care; patients with complex care needs; prevention; mental health; recruitment and retention of full-service family practitioners; and multidisciplinary care between general practitioners and health care providers.

This significant funding and clarity of purpose was seen as an important response to the concerns that had been raised during the PQIDS and appears to have firmly established GPSC's role and profile within family practice. In 2009, GPSC received an additional \$64 million, bringing the total funding received between 2004/05 and 2011/12 to \$809 million (British Columbia Medical Association, 2011).

GPSC's mandate was described by Cavers² et al. (2010) as follows:

The GPSC is a joint committee of the BC MoH and the BCMA, including the Society of General Practitioners of BC. Representatives of BC's health authorities also attend as guests. The GPSC engages in numerous activities to support GPs. Its operational mandate and funding are based on a formal working agreement between the provincial government and the BCMA. The GPSC has the mandate of finding solutions to support and sustain full service family practice in BC. Unlike other jurisdictions, which have opted for structural changes in how PHC is delivered (e.g. the adoption of community health centers with salaried family physicians), the BC approach has been to address an operational problem (i.e., the decline in family practice) with an operational response, by improving the existing system rather than changing the system by adopting new structural changes. (Page 1319)

Within this mandate, GPSC has developed and implemented a wide range of projects and initiatives intended to support family physicians, which are included on their website and have been widely reported on (Cavers et al., 2010; General Practice Services Committee, 2010/2011; Tregillus & Cavers, 2011). The back bone of GPSC's agenda is the Full Service Family Practice Incentive Program³, which provides participating family physicians with a variety of financial incentives to adopt clinical guidelines, most of which are focused on chronic disease management (Cavers et al., 2010; General Practice Services Committee, 2010/2011). GPSC launched the Practice Support Program in 2007 with two objectives: to improve care for patients throughout the province and to increase job satisfaction among general practitioners. The program offers focused training sessions for physicians and their medical office assistants to help improve practice efficiency and to support enhanced delivery of patient care.

GPSC also developed a number of programs aimed to improve service integration, such as linking HA community health providers to participating medical practices (Integrated Health Networks) and piloting a chronic disease management improvement program that placed HA-employed registered nurses in FFS physician offices to support patients with chronic disease.

In 2010/11, GPSC developed the Divisions of Family Practice Initiative (Divisions) and is supporting their implementation in communities across the province. GPSC has indicated that these Divisions are intended to increase PHC capacity by developing and implementing programs and services to positively support family physicians and their patients, improve patient care, increase family physicians' influence on health care delivery and policy, and provide professional satisfaction for physicians (General Practice Services Committee, 2010/2011). Divisions are formally established as non-profit societies, which provides them with the

² Dr. W. Cavers has served as co-chair of the GPSC, representing the BCMA, since its inception.

³ (http://www.primaryhealthcarebc.ca/gpsc_incentive.html)

opportunity to use funding from BCMA or other sources to develop programs and employ staff (General Practice Services Committee, 2010/2011).

GPSC also worked with HAs to establish Collaborative Services Committees (CSC), which are co-chaired by an individual Division and a senior official from the local HA. These CSCs are intended as a collective forum within which common issues and problems can be identified and addressed.

b) Implications of GPSC for Provincial PHC Policy

GPSC is widely recognized to have replaced the traditionally adversarial relationship between the government and the BCMA with a more positive and productive approach and has successfully shifted attention from solely budget matters to issues associated with improving the quality of patient care (General Practice Services Committee, 2010/2011). A number of evaluations completed for GPSC by Hollander Analytical Services Ltd. report positive findings on a wide range of topics, as summarized in Appendix F.

Importantly, GPSC also created an opportunity to address what earlier had been described as a lack of an organized voice with which to influence on public health care policy. The establishment of Divisions and CSCs now are creating a similar opportunity for physicians at the local community level.

GPSC also appears to have had remarkable success in using its influence to guide the provincial PHC agenda. Cavers et al. suggests that what was initially a mandate internal to the medical profession (i.e. to improve the quality of physician care, improve the working lives of family physicians, and encourage more graduates to enter family practice) became the “BC approach”.

As detailed in their description of GPSC’s mandate, this approach was intended to address an operational problem (i.e. the decline in family practice) with an operational response (i.e. improving the existing system rather than changing the system by adopting new structural changes). In this way the national transformational change agenda was replaced in BC in the mid-2000s with a primary care agenda aimed at strengthening the existing physician-led system.

Tregillus and Cavers (2011)⁴ suggest that GPSC’s approach has been successful in improving BC’s health care system – without structural change:

“...a program of gradual operational solutions can achieve meaningful and lasting systemic change without the need to impose large structural reform.” (Page 1).

“BC’s experience shows that by modifying and enhancing the FFS system and by working with GPs in solo and small-group practices to support them in providing quality patient care and increasing job satisfaction, it is possible to change an entire province’s healthcare system for the better (Page 5).”

A number of factors have contributed to GPSC becoming such an influential force within BC’s

⁴ Valerie Tregillus retired from the BC Ministry of Health and Co Chair of the GPSC in 2011 and the current Assistant Deputy Minister of Health, Medical Services Division, assumed that role.

PHC sector. First, with respect to resources, the \$809 Million that came under GPSC control between 2004/05 and 2011/12 was the only new funding program to support PHC during that period of time. The federal government did not repeat the PHCTF nor did the provincial government fund the continuation of BC PHCTF activities following its termination.

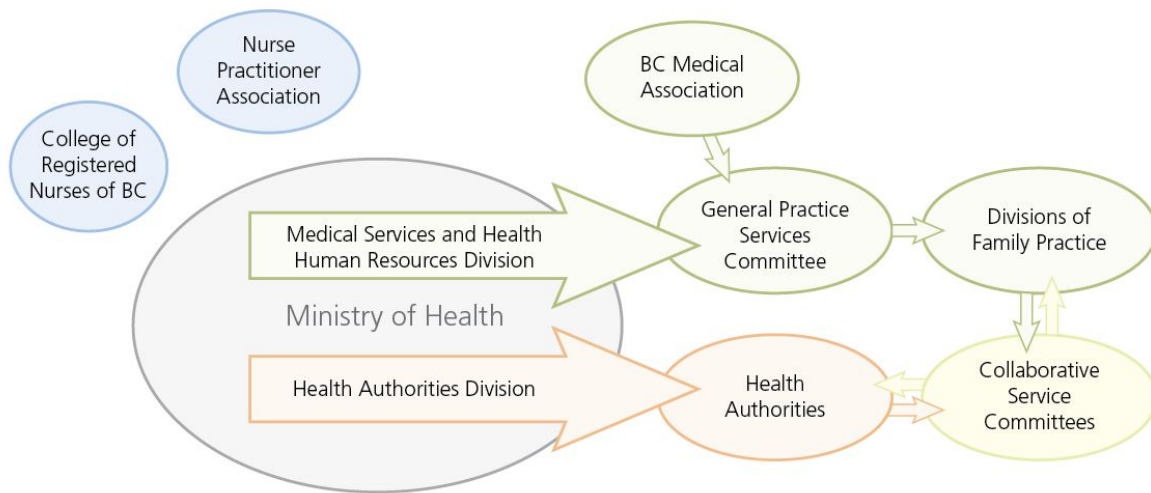
Second, establishing GPSC within the context of a negotiated settlement with organized medicine not only provided it with clear direction and significant profile, it also limited its substantial resources to a single purpose, the benefit of BCMA members. These funds have not been available to meet PHC priorities that might involve other professions. This was confirmed during interviews with key stakeholders and is discussed in more detail in the next Section.

Third, GPSC's membership provided organized medicine in BC with regular and unique access to senior government officials and in doing so has provided its representatives with the opportunity to influence public policy matters pertaining to PHC.

Although associations such as the CRNBC, BC Nurses Union, and BC Nurse Practitioner Association (BCNPA) also participate on various committees, giving their representatives access to the MoH and HA leadership, none have the same dedicated opportunity of funds that GPSC offers BCMA, as illustrated in Figure 2. It was noted during the interviews that individual representatives of the MoH and HAs may bring another professional perspective to GPSC or to Divisions and CSC tables but this is not perceived as equivalent to the direct representation afforded to the BCMA. Other professional associations simply do not have the same regular opportunity to communicate their needs and interests directly to senior government officials, leaving the BCMA with a great deal of influence on system issues that are beyond the direct mandate of any single profession.

Finally, GPSC's commitment to consensus decision-making and its focus on "relationships and trust" amongst members, as described by the first GPSC co-chairs (Tregillus & Cavers, 2011), also effectively provides organized medicine with a "veto power" on all public policy decision that may be tabled at that Committee, (i.e. only decisions that are consistent with the lens of organized medicine are likely to be agreed upon). While the practice of consensus decision-making between government and the medical profession may be useful in matters limited to that profession, it also may lead to unintentional consequences where health *system* issues, such as structure and organization, service models, and accountability are involved, as discussed in more detail below.

Figure 2. Relationships between Stakeholders



c) Implications of BC’s PHC policy for NP Implementation

As detailed earlier, BC universities prepare NPs to work in the primary health care sector. However, at the time of writing, BC has only 16 community-based interprofessional clinics, most of which were established either in the 1970s or in the early 2000s as part of the PHCO initiative described above. All or most of these sites already employ NPs; thus, the publicly funded PHC job market in BC is almost saturated. Although HAs have been provided with funds to develop new NP positions, in the absence of additional interprofessional clinics *in the PHC sector* they have nowhere to establish these positions. It is the face of these limited opportunities that several HAs have chosen to deploy NPs to the hospital and specialty sectors, as discussed in more detail in Section 5.

Physicians in private practice and remunerated on the FFS model have no financial incentive nor means to employ NPs. Many are reported to perceive NPs as economic competition, as discussed in more detail in the next Section. As noted previously, a handful of NPs have been successfully located in FFS physician practices in Interior Health but this has been at no cost to the participating practice, which receives both salary and overhead costs from their local HA. During the interview process we learnt that the MoH had considered a FFS option for NPs, which if implemented presumably would have allowed NPs to establish their own practice or work within a FFS physician practice. However, we were advised that this notion has not been further pursued and from interviews we learned that it would not be an option favored by HAs.

The BCMA’s recent Position Statement on Nurse Practitioners (2012) recognizes this structural barrier:

“There is currently no structural mechanism under which a NP can integrate into a multidisciplinary team in primary care. In BC, either a physician would have to pay out of pocket or funding would have to come from another dedicated funding source. The

HAs have been the primary employers of NPs since their introduction to the Province, but there are limitations on the number of potential NP positions available.”

HAs could choose to independently establish new interprofessional clinics and in fact Vancouver Island Health Authority is in the process of doing so with the introduction of the Oceanside Clinic. However, as we have noted above, introducing new PHC service models is neither GPSC’s mandate nor that of local Divisions. This suggests that HAs are unlikely to get much traction for this direction within their CSCs, despite the report that these committees were becoming the major focus of planning for community-based service integration. We also heard through the interview process that the time, energy and resources being devoted to the CSC process limits the capacity of HAs to take on additional service innovation outside of this process and without dedicated funding.

HAs noted that although an average of at least \$100 million in new funding has been injected by GPSC into the primary care system every year since 2006, because these funds are part of the negotiated settlement with the medical association they are not available to support the development of the structural options needed to ensure appropriate utilization of NPs in PHC roles. It was noted that the 2007 Working Agreement, Article 5.3 (d), included \$16.5 million over three years for HAs wanting to develop contracts with GPs to work with other health care providers, provide multidisciplinary care, and serve targeted populations, but a later amendment to that Agreement transferred these funds to GPSC control.

Consequently, the only major funding program since 2006 dedicated to PHC renewal outside of physician services has been the previously mentioned NP implementation funds, a total of \$122 million since 2005.

BC’s decision not to establish new or additional interprofessional PHC clinics stands in contrast to at least two other provinces. Although there is significant variation across Canada, Alberta and Ontario have or are in the process of introducing new physician remuneration systems and service models and piloting new providers (Cavers et al., 2010; Hutchison, Levesque, Strumpf, & Coyle, 2011; Stevenson Rowan, Hogg, & Huston, 2007). Both Ontario’s Family Health Teams and Alberta’s Primary Care Networks include family physicians, NPs, RNs, counselors, and others working together in interprofessional team practices. Alberta currently is piloting a new Family Care Clinic model that is built on a multidisciplinary team model that includes NPs.

4.5 Summary

This review and analysis of the national and current BC PHC context and of two major health human resource policy strategies in BC during the past decade suggests that the critical barrier facing NP implementation in BC has been result of inconsistency between these two important government agendas.

These two major health human resource initiatives have been underway simultaneously since the early 2000s. On one hand, government committed to major investment in a long-term agenda to develop and implement a NP workforce with the aim of strengthening multidisciplinary primary care as part of a national PHC renewal strategy. On the other hand, government also shifted away from the national PHC renewal agenda that had promised major structural change within the

PHC sector, such as new interprofessional service models, and in the mid-2000s committed to major investment in a long-term agenda to strengthen traditional family medicine. Although many of the strategies focused on supporting family physicians and providing professional satisfaction for physicians (Cavers et al. 2010), the establishment of GPSC as a formal joint committee was government's intentional response to organized medicine's demands to increase family physicians' influence on health care delivery and policy.

The mandate of GPSC – *to support and sustain full service family practice in BC with an operational response that did not include structural change* –has significantly influenced provincial PHC policy direction, which now can be seen as largely inconsistent with government's other provincial health human resource agenda of implementing a NP workforce to strengthen and improve public access to PHC services.

Although GPSC initially was focused on issues internal to the medical profession, their influence and the practice of consensus decision-making shifted the broader provincial PHC agenda away from a structural change agenda and instead BC PHC policy became focused nearly exclusively on strategies to strengthen the existing primary care system.

This was accomplished largely by the majority of new funding made available for PHC being controlled by organized medicine through the GPSC and therefore not available to support other government agendas, such the implementation of NPs. Whereas GPSC is seen to have been very successful in meeting the specific aims of the family medicine agenda, it also created a significant barrier to fully implementing NPs and diversifying the PHC workforce.

We note that relevant observations on the role of organized medicine in public policy have recently been made in other jurisdictions. For example, in Ontario, the Commission on the Reform of Ontario's Public Service (Drummond, 2012) recommended that the province move critical health policy decisions out of the context of negotiations with the Ontario Medical Association and into a forum that includes broader stakeholder consultation. The report recommended that doctors be *consulted* on policy issues, but no more.

More recently, in a review of Alberta's Primary Care Initiative (2012) the Alberta Office of the Auditor General (OAG) observed that the reliance on consensus decision-making in the previous eight-year tripartite agreement between the government, health authorities and Alberta Medical Association had led to challenges in aligning the parties' interests, achieving common objectives, and measuring success. In fact, the OAG referred to "sacrifices" having being made around system design, controls and performance measurement and concluded that these sacrifices had contributed to missed opportunities to support and improve the program and poor compliance oversight for the program overall.

5. The Perceptions of Key Stakeholders

5.1 Key Findings

The interview findings are organized into the following two main themes: 1) opportunities for implementing NPs and PAs in BC, and 2) barriers to further implementation of NPs and PAs in BC. Within the first theme, tensions between respondents are evident as they discuss their experiences in implementing NPs and what it might be like to implement PAs. Within the second theme, barriers to further implementation of NPs mirror themes identified in the research literature summarized in Section 3.

1a) Opportunities for Implementation of Nurse Practitioners in BC

HA respondents were very positive about the NPs they have introduced into their health care systems. Respondents indicated they would readily accept more, despite the implementation process being labor intensive, the need for the development of new NP-specific support infrastructure, and resistance from some physicians:

“You know, I think the HAs are poised to hire more NPs. I think lots of places are poised to hire NPs based on the emails we get for people looking for NPs and wanting to know how to write a proposal and who they send it to and, you know, I think there’s a great willingness to hire NPs.” (Respondent 17-Health Authority)

However, another respondent expressed the opposite view, that the introduction of NPs has not been successful and also suggested that the medical association, within the context of GPSC activities and the emerging Divisions, should assume the responsibility for implementation of both NPs and PAs, rather than the HAs. Comments implying that NPs had been intended to work as primary care providers similar to GPs and presumably on a FFS basis also suggested that the HAs and organized medicine were not unified in their approach for NP implementation. For example:

“Respondent: you have NPs being trained, really in primary care. It’s odd that they’re being employed by HAs, in a sense... if you’re trying to train primary care practitioners, you know, it doesn’t seem that, you know, most HAs you’re dealing with, their healthcare issues. So it seems odd, that there’s a mismatch...”

Interviewer: ... I’m not quite sure if I understand why there’s a sense that the HAs would not be the employer - is there a sense that the HAs are not responsible for primary health care?

Respondent: No...it’s not that at all. I mean I think there is – and they’re growing sort of you know, roles for the HA in primary care, that’s for sure. But what we had heard – and this is when we had talked to [organization] was when they [NPs] were done, they were going to practice being in the community as primary care practitioners, similar to the GPs... I mean obviously there’s no pot of money for NPs back in the community.” (Respondent 16-Other Category)

Communities of Practice

Several HA respondents spoke to the challenges of developing appropriate infrastructure for this new profession, such as a community of practice, peer and mentored experiences, practice quality, and appropriate continuing education opportunities. It was observed that NPs are neither physicians nor nurses, and thus do not really fit into existing professional support systems. For example, one respondent noted that nursing-focused professional development activities were not appropriate for NPs, whose needs could be better met by continuing medical education events. However, they reported having faced resistance from administration to paying the much higher costs of sending NPs to these events. The respondent suggested that this incident helped to illustrate the lack of real understanding about the NP profession, its role and scope of practice, or the type of support required.

Some HAs also faced internal challenges, such as which department should lead in developing a NP community of practice, where NPs should report in terms of their practice versus operations, and if NPs should be included in medical advisory committees.

Although developing necessary infrastructure was observed to be expensive and time consuming, HAs appear to clearly recognize it as essential to successful implementation of NPs and are taking steps to do so. For example:

“So we have what we call a community of practice where all the NPs come together, once a month... and it’s a little bit of a business meeting... we look at budget... we developed an orientation manual... we look at...process issues with financing non-residences of BC, so it’s a bit of a business meeting- about two hours with that many people. And then they meet on the odd month for education- kind of a journal club meeting and then go for dinner afterwards.” (Respondent 9-Health Authority)

“We set up an NP community of practice where they meet regularly. They talk about their practice, they support each other, they have a formal and informal network of support and mentoring ... and when we have had practice concerns, we have a process where...one of our NPs will review the practice of another NP.” (Respondent 10-Health Authority)

These quotes also illustrate the commitment by the NPs and the HAs to facilitate successful implementation through shared learning about practice, working in an interprofessional environment, and administrative types of issues.

Finding the Best Fit

The importance of ensuring that each individual NP placement would be a positive experience for that NP and for their immediate colleagues and team was recognized, as was the time and resource commitment this required. One HA described not only orienting individual NPs but also the communities they were to work in, including providing information about NP practice to local physicians, specialists, and community pharmacists. Another HA respondent observed that it took up to six months of orientation on a specialty unit for a NP to be competent, even if that individual had previously worked in that specialty as a RN. This was largely attributed to the

PHC focus of BC NP training programs, also recognizing the reality that the NP scope of practice is very different than that of RNs.

It was noted that at least in the hospital and specialty sectors, being matched with a physician mentor was instrumental in encouraging the collaboration and gaining the physician acceptance that was critical to successful NP implementation. One respondent noted that pairing NPs with physician mentors provided this type of needed support:

“We’re setting them up even when they’re first hired. There’s an identified physician mentor ‘cause you still need someone to go to say, you know, got a difficult case, or, you know treatment... is not working. So that collaboration, I think, is just working better and better... so the transition... was more around relationships.” (Respondent 9-Health Authority)

Several comments were made about working hard to “find the best [interpersonal] fit” between a physician and a NP and avoiding placing an NP where there was potential competition with a physician, particularly in regard to income. One HA described their quick response to physician concerns that a NP placement in an ED threatened their fee-for-service (FFS) income, noting that they terminated that position and moved the NP elsewhere:

“...we tried a NP in an ED and it failed dismally... because of the physician – it wasn’t a need, like our problem in the emergency department isn’t lack of physicians. You now, I’m sure there are days it’s busy and patients are a little bit waiting ‘cause the docs’ are stacked, but generally, we have a presence 24/7. So, the docs really wouldn’t give the NPs any business to do within the emergency department. Then [NP] went to fast track, but the docs didn’t like that ‘cause all the docs, all our emergency departments are fee-for-service.” (Respondent 9-Health Authority)

In the case of the few HA-employed NPs working in FFS physician practices, HA respondents reported taking significant care to ensure that the participating physician practices were involved in the recruitment of the NP. They also eliminated any possibility of a negative financial impact associated with accepting the NP into the practice by not only paying their full salary and benefits but also providing an overhead stipend to recognize the opportunity cost of office space being taken up by a NP rather than an additional physician who would have generated additional revenue for that practice. For example, one respondent reported:

“Our commitment to the physician in these practices is that it would, at the very least, be cost neutral, so without expecting them to be paid out-of-pocket. I think what we found in all of our practitioners... that actually they made money because of course, they bring in more volume.” (Respondent 7-Health Authority)

Settings and Roles

We heard that NPs working in the BC PHC sector are mainly employed in the 16 PHCOs, community health centers and community clinics across the province that are operated by or funded by HAs, as well as in Diagnostic and Treatment Centres in smaller and rural communities. A few have been placed with Home and Community Care and Mental Health

programs and two HAs have placed salaried NPs in FFS practices, but on a small scale (limited to about 5-6 NPs). We were advised that despite the reported positive experiences of participating physicians, GPSC has not expressed interest in using the multidisciplinary funding made available in the BCMA's 2006-2012 Working Agreement to further expand this model. However, it was reported that at least three Divisions now employ a NP and that a few physician practices also have independently hired a NP, but little was known about these arrangements.

Where NPs are working in PHC roles, there were some reports of initial push- back from local specialists wary of their ability to appropriately refer patients. However respondents reported that these NPs now work to their full scope of practice, including prescribing, ordering of diagnostics, and referring to specialists.

HAs that introduced NPs into their hospital and specialty sectors reported that this decision resulted largely from the reality of limited existing employment opportunities and their inability to "create" more jobs in PHC, consistent with the discussion in Section 4.

NPs were reported to be working in, for example, ambulatory care (e.g., cardio and renal dialysis clinics) and acute inpatient units (e.g. thoracic surgery, cardiology, orthopedics, pain management, neurosurgery, respiratory medicine). One respondent reported developing a NP position to fill in a care gap created by itinerant surgeons coming in from other communities and therefore not available to look after their patients over weekends:

"So at [hospital], we do have NPs in acute settings, so we've got NPs – two in orthopedics at [hospital], um, and that was to support the ... program out there because we were having itinerant surgeons coming from... or... and we had to come up with the idea of "Okay, if the surgeon's going to be there for a week, who's actually going to look after his patients, especially if they're down on the Friday over the weekend into the next Monday?" (Respondent 6-Health Authority)

HAs who have deployed NPs in settings other than PHC report that these NPs have been well accepted and that there is significant interest in their further expansion to other specialty units and programs.

For example, NPs now provide full post-surgical care on some surgical units, including managing medications and arranging discharge and follow-up care (although the *Hospital Act* prohibits NPs from formally discharging patients from hospital), cardiothoracic, and renal. It was suggested that the success NPs have had in moving into these specialty areas demonstrates the confidence that academic specialists have developed in NPs. Some of these specialists have indicated that based on these positive experiences, they are now are willing to actively recruit NPs into their practice:

"In most of those cases, it was the docs wanting them, so for example, in neurosurgery, we had a challenge in hiring a neurosurgeon, so they were willing- for the first couple of years - to give out money in their clinical academic service agreement... to fund the NP... so every time that we potentially get wind of new money, we certainly hear from the docs

that they would like [NPs], but that's coming more so from the academic environment than the community environment.” (Respondent 6-Health Authority)

Another respondent described how initially it had been “like pulling teeth” to get physician support to place a NP in an acute care specialty area, but now they have “all kinds of specialties clamoring for an NP.”

NPs were also being utilized in shared-care arrangements and to fill gaps in service delivery. As this respondent reports, NPs are providing services where they are not necessarily the primary care provider but may be the most commonly seen provider for people living in residential care facilities or needing palliative care:

“Okay, so in [city]... we have the one that is in the residential care - and very successful. That's only been in that role for just a little over a year. And the other one is in the palliative care setting, and that one, no more than two years... So we currently do not have them in acute care... Across [name of HA], I believe we have 19, but I may be wrong. We definitely have no more than 30... Those ones, many of them - they're in all settings, you know... like there's this one that's now in residential. She just came from [name of hospital] and she was the orthopedic NP. And so, she came from acute care setting, but her part is really in residential care. But, you know, right across, we have them in all settings.” (Respondent 18-other category)

The more recently formed Divisions also are reported to be utilizing NPs:

“[Division in Northern Health Authority] has used NPs in their patient clinic since 2008 to support patient attachment. The NP is the clinical lead. [This Division] is moving to becoming a full service, primary care clinic, and, as such, is looking to increase NP support. [Division in Fraser Health Authority] initially introduced NPs into their team to provide post access care and attachment. NPs now support primary health care access. [Division in Vancouver Island Health Authority] NPs are supporting attachment, mental health, and primary health care support.” (Respondent 13-Government)

Although these reports clearly indicate that NPs are well accepted in acute care and specialty settings, some respondents expressed concerns whether these settings are appropriate to their education background and an optimal use of this resource. As discussed in Section 4, BC NPs are trained specially for PHC and delivering care in the community. However, only about 60% of NPs in BC employed in their profession are working in the PHC, with the remainder being deployed to hospital and specialty sectors.

Ib) Opportunities for Implementing Physicians Assistants in BC

Although PAs currently do not practice in BC, some respondents were aware that PA students from Washington State and from the Canadian Armed Forces have from time to time been accepted into clinical practicums in some BC hospitals.

The BCMA’s Policy Statement on Physician Assistants (2009) reflects the medical profession’s interest and support for the establishment of PAs in BC. This policy statement suggests placing PAs in anesthesia, surgery/OR assists, EDs and primary care (i.e., GP offices) as a first step. It

also states that “PAs may play a role in providing care in a community where no physician is available”, and that “although physicians must be willing to exercise continuous supervision over the PA, this does not necessarily require the continuous presence of the supervising physicians at the time and place the services are rendered.” The BCMA also notes that Manitoba has established regulations describing how a physician is expected to supervise a PA remotely.

We were advised that individual physicians have expressed interest to some HAs about implementing PAs within the acute care system to provide first-call for their inpatients and other physician-support functions and also within communities to support primary care practices, including in communities experiencing physician recruitment problems. One respondent explains the physician desire for PAs:

“But, there was a concerted effort, I think, from physicians to look at PAs and there had been a bit of a road show down to Washington State. I think what they were looking at was the support they saw for physicians, especially in acute settings... for supporting that first call.” (Respondent 6-Health Authority)

Interest in PAs is based largely on the evidence discussed in Section 3 that demonstrates that PAs can increase physician efficiency and increase volume and throughput (Kleinpell et al., 2008). As summarized in Section 3, this is well documented in the US literature but not in the Canadian context, where only one RCT was located (Bohn et al., 2010). Although few respondents had direct experience with PAs, most were aware of the differences in training, skills, and autonomy between NPs and PAs and recognized that they were not interchangeable. A number of respondents expressed concern that it was premature to introduce PAs without fully working out issues of regulation, education, and payment.

In general, respondents did not see PAs and NPs as being in competition given that the NP’s holistic education model, their status as autonomous professionals, and the roles in which they therefore are deployed clearly differentiates them from PAs. It was suggested that should PAs be introduced to BC, the most appropriate setting may be acute care given the ready opportunity for supervision and for procedural and technical work. One respondent explained how the unique strengths of each profession warrant their implementation in two different settings:

“When we look at our system of care in BC, NPs- if we’re going to use those two types of care providers in our system, NPs and PAs, the most effective place for each of them to capitalize on their potential scopes and areas of practice and strengths. Clearly, the NP strength is in PHC, and clearly, the PA’s strength is in the acute care sector.” (Respondent 10-Health Authority)

Some respondents expressed concern that should PAs be implemented, HAs may be expected to not only absorb their direct costs, but also the costs of increased service utilization/volumes made possible through associated increased physician efficiencies. While the benefit of utilizing PAs is higher volumes and potentially shorter wait times for some procedures, this will need to be considered within the context of higher hospital costs, increased utilization of selected physician services which will place increased demands on the BCMA’s negotiated available amount⁵, and

⁵ The Available Amount refers to the amount of funding set by the MSC for allocation under section 25 of the

a greater proportion of health spending being devoted to physician and hospital services at a time when efforts are being made to better balance spending across the PHC and hospital sectors. Further work also is needed to examine whether higher throughput and potential health care costs lead to at least commensurate levels of quality and outcomes.

The MoH confirmed that they have committed to the BCMA to explore introducing PAs once NPs have been fully implemented. We anticipate that this will require clarifying the purpose for introducing PAs into BC's health system, determining how they will be trained, developing a regulatory framework to ensure their accountability, identifying funding sources and payment models, and determining what roles and settings to which they would be best deployed. These considerations are beyond the scope of this paper, as they will require significant deliberation by government, HAs and the medical profession.

However, the investment required to establish a PA workforce may outweigh the benefits associated with increased physician efficiency unless organized medicine is willing to adopt innovative payment strategies and models that recognize the cost and revenue impact of the PA.

We also note that although there is good evidence that deploying PAs can lead to practice efficiencies, this potential needs also to be balanced with consideration of other ways to achieve these, such as deploying existing RNs and LPNs in different ways.

2) Key Barriers to Further Implementation of NPs and PAs in BC

Dedicated Funding

One of the most significant barriers to the expansion of NPs in BC has been the lack of dedicated funding to develop new NP positions and this presumably would be the case for PAs as well. Additional funds were also needed to provide necessary supports for NP practice, such as extensive orientation for NPs moving into specialty areas, work with other health professionals on clarifying the role of NPs, and development of communities of practice and professional development.

Some respondents reported reallocating internal funding or using industry or research money to develop additional NP positions. However, for the most part, HA respondents noted that internal reallocation for NPs must compete with numerous urgent funding priorities from across the health system. On the other hand, reluctance around reallocation was also expressed, such as the following:

“...competing pressures on those funds too, so you know... we're heading into the negotiations, collaborative gains, you know, there's all sorts of pressures on any types of things that are in the system... I think as long as there is a sense that the Ministry may throw money at the system, there will be a reluctance to go full scale into reallocating funds.” (Respondent 1-Government)

Medicare Protection Act for the payment of Insured Medical Services provided by physicians on a fee for service basis during that Fiscal Year, as negotiated between the BCMA and government.

Fee for Service

Several respondents commented on the predominance of the FFS model of physician remuneration as a barrier to the expansion of NPs in PHC. Consistent with the literature summarized in Section 3, it is widely perceived as establishing real or perceived competition between NPs and physicians.

One HA explained why a NP position was removed from an emergency room setting in response to push-back from FFS physicians who considered the NP as potential competition. Another respondent reported choosing not to place a NP in an emergency room setting in anticipation of creating similar concerns:

“ Now, when I look at [the] emergency room, we’ve actually not put any NPs in [the] emergency room because all of our ER doctors are basically – their income is tied to how many patients they see... We all know the FFS model is not in the best interests of patients – it’s in the best interests of politics and physician-remuneration.” (Respondent 10-Health Authority)

In some cases NPs were reported to have faced similar resistance in a small community once either the local or newly arriving physicians realized that the NP was likely reducing the number of patient visits and thus their income.

Other financial deterrents to including NPs in FFS practices were identified. For example, a FFS practice gains revenue with the addition of a physician who will contribute a proportion of their MSP revenue to the practice. This is not necessarily the case with an NP. NPs working in a FFS practice and assuming responsibly for a proportion of the caseload could reduce the opportunity for physicians to bill several of the incentive fees that have served to significantly increase physician income (General Practice Services Committee, 2010/2011). Finally, while physicians can bill MSP for tray supplies associated with any procedural fee item, a NP in the practice could not, thus reducing another potential source of revenue for the practice

At the time of these interviews, the MoH advised us that there had been some early discussions regarding payment model options for NPs, including consideration of allowing NPs to bill a percentage of existing Medical Service Plan (MSP) fee schedule rates and an alternative payment model similar to that used for some physicians (e.g., service agreements and sessional payments). These explorations were reported to have been in response to requests by GPs to hire NPs to provide “revenue opportunities” within FFS medical practices and also in response to the BCNPA, which was exploring ways to increase employment opportunities for their members. As one respondent explains, there was some thinking that FFS billing could be an opportunity to have more NPs work in the system:

Respondent: We’ve been looking at different opportunities to get NPs in the system. We’ve had discussions with both BCMA as well as the BCNPA about could we go to FFS... and we’ve had feedback, you know, from one extreme to the other... it’s not necessarily a preferred option, but it is one that we might revisit in the future.

Interviewer: Okay. What would the advantages of the FFS model seem to be?

Respondent: It was where you've got Divisions that want to directly recruit a NP into their practice, but um, if funding wouldn't allow it. It became a funding opportunity for physicians.

Interviewer: I see, so it would allow the physician to employ the, the NP and then have them bill the MSP?

Respondent: Um, they would, they would bill through the physician themselves – so they're some mechanical pieces that we needed to do, but it was, it was seen as a potential opportunity to get more NPs working within the system. We didn't think there'd be any large take-up on it, but it's been all about opportunities to get more NPs into the system.” (Respondent I-Government)

However, HA respondents expressed a strong preference to hire NPs on a salary rather than with a FFS model. It was suggested that introducing a FFS system would restrict the HA's ability to deploy NPs where they could best support HA priorities, while at the same time incentivize independent rather than collaborative practice. Moreover, the volume-dependent FFS payment model was seen to be inconsistent with the key strengths of NPs, including their communication skills and holistic approach to care, and could deter NPs from providing the broader PHC care that they are trained to deliver.

Competing Health Policy Agendas

As discussed in Section 4, a significant barrier to full implementation of NPs is the lack of new interprofessional clinics in the BC PHC sector where new and appropriate salaried positions could be established. This absence is largely a result of BC's provincial policy direction for family practice, which relies on the private practice model and the traditional FFS payment model. Despite the strong support nationally for a NP workforce, implementing NPs is dependent upon a role being defined, appropriate positions being established, and resources made available to ensure their support, as described above. These decisions regarding system structure, organization, and funding mechanisms are the responsibility of each provincial and territorial jurisdiction.

Although we heard many reports of positive NP experiences with individual physicians, including strong support from physicians and specialists in acute care facilities currently working with NPs, we also heard significant frustration with what was referred to by one respondent as GPSC's "stranglehold" over the provincial PHC agenda and resources. One interviewee explained the function of GPSC and its role in the BC PHC system as follows:

“The GPSC does not set primary care policy in the province – instead it has aligned its work to support the BC PHC Charter and other Provincial priorities such as the Key Results Area 3, Integration [of] Primary and Community Care. This has included development of fees, and professional development through its Practice Support Program, to better support family physicians in the provision of chronic disease management, frail elderly care, end of life, maternity care, and care for people living with mental health and substance use issues. The GPSC is also supporting provincial

health care integration through its Divisions and their CSCs; CSCs serve as a mechanism by which to identify local priority health issues and care gaps, and allowing family physicians and their HA to co-determine and test solutions using a quality improvement model.”(Respondent 13-Government)

This quote illustrates the strong presence of organized medicine through GPSC and local CSCs and their ability to influence the PHC policy agenda. However, as discussed earlier in this report, this influence is solely through a medical lens given that no other health profession, including NPs, has the opportunity to directly or regularly participate in these forums.

Another respondent observed that the complexity of funding NPs within the current BC context reflects the priority government has placed on strengthening physicians and their influence in the PHC sector and the resulting inability of GPSC to fund options that deviate from their mandate. As one respondent explains:

“...they’ve (BCMA and MoH) kind of been at loggerheads through the whole process...but what affected [past implementation of] NPs...was the fact that their money was locked up for physicians only. Even though there were millions and millions of dollars in talks all over the ministry, we couldn’t access any of that unless it was for [using] physicians.” (Respondent 3-Government)

A number of respondents stated that provincial PHC policy is to maintain the current PHC system, as evidenced by the significant role of GPSC and the amount of funding dedicated to supporting family practice and observed that this has reduced the funding, energy and commitment needed to develop alternative interprofessional service options that could accommodate salaried positions for NPs.

It was also noted that the introduction of GPSC incentive payments and other financial benefits has made FFS practice more financially rewarding for individual physicians and in doing so may have reduced their interest in adopting alternative forms of payment. As well, it was suggested that some FFS physicians are now reluctant to accept NPs into their practice for fear they will absorb what was referred to as the “easy practice”.

A respondent explains how incentive payments reward physicians for tasks that may have been previously undesirable due to complexity and amount of time required:

“We’ve been able to significantly change behavior to treating those kinds of patients. So it’s something that I don’t think anyone really sort of always anticipated, that – the idea that, you know, FFS could be quite so flexible. But then, in setting up the, the sort of incentive payments as one component of it... now those difficult patients actually are the desirable ones, right? ... so where physicians may have said they’re (NPs) going to take away... all the easy stuff and all they’d be left with is hard stuff, right? So now what’s happening now is the hard stuff is sort of – that’s sort of gone because the hard stuff doesn’t represent, you know, an hour of work for 10 minutes of pay.” (Respondent 16-Other category)

Limits on Admission and Discharge Privileges (NPs)

As noted previously, HA respondents identified that the Hospital Act limits an NP's authority to admit and discharge, creating a barrier to their full utilization within acute and specialty care sector. However, it is understood that the regulatory amendments necessary to address this concern will be tabled shortly.

Limits on Prescribing and Ordering (NPs)

The federal Controlled Drugs and Substances Act, which restricts NP prescribing of controlled substances, was also identified as a barrier to achieving full scope of practice, especially in the case of NPs working in rural areas and in settings such as community-based palliative care where physician access is not readily available. It was observed that this sometimes results in patients needing pain control experiencing lengthy delays when cared for by an NP, even while in many cases a physician would not be willing or available to do outreach work need to care for that individual.

Legislation (PAs)

In the case of PAs, a key barrier to their introduction to BC is the absence of a regulatory framework. As noted above, PAs are not a designated health profession under the *Health Professions Act* and a MoH respondent advised us that there are no plans to change this. Current government policy does not consider "assistant" groups for designation. Moreover, PAs would need to clear the "in the public interest" criteria that would be applied in considering whether designation would be granted, and that work has not yet been undertaken.

5.2 Summary

The majority of respondents were positive about the success of the NPs that have been introduced to the BC health care system to date. However, the implementation process was described as having been onerous, largely due to lack of ready opportunities for NPs in the PHC sector, given the government's policy agenda for family medicine. Despite these challenges, most respondents, especially those with operational responsibilities, were enthusiastic about further expansion of the NP workforce, with the important caveat that NPs be paid on salary rather than FFS.

We heard conflicting views as to whether NPs should be limited to the PHC sector or also deployed to hospitals and specialty services. On one hand, some respondents observed that considerable investment has been made into training NPs specifically for PHC practice and that they offer a real opportunity to strengthen and improve patient access in that sector. On the other hand, those HAs that responded to the limited opportunities to develop new NP positions in PHC by introducing them to the hospital and specialty sector now recognize their value in these roles and reported significant interest in further expansion in these areas. This interest was despite recognition of the significant investment required to orient these new NP grads to such clinical areas. Lack of the time and resources needed to establish unique infrastructure to support NPs (e.g. clinical governance, professional development, etc.) was also noted as a barrier to full NP implementation.

Several respondents also identified the province's continuing reliance on the volume-driven FFS

system as contributing to real or perceived economic competition between family physicians and NPs. This is consistent with the research literature discussed in Section 3.

With respect to introducing PAs in BC, the BCMA has publicly expressed interest in implementing PAs in both PHC and hospital settings, based largely on the US evidence that PAs can increase physician efficiency and increase volume and throughput. We heard that a number of individual physicians have also approached HAs with the same interest. The key barrier to moving forward on this agenda appears to be the need to develop a regulatory framework, which would also entail addressing a number of related issues, such as clarity of purpose, supervision, and funding source and payment mechanisms.

6. Summary and Advice

6.1 Advice

This section answers the specific questions asked by the NRAC and details our advice in regard to further implementation of NPs and the potential for future implementation of PAs in BC. Our advice is substantiated by the findings presented in Sections 2 through 5 of this report.

Question 1:

What are the varying scopes of practice and practice autonomy for both roles?

Nurse Practitioners

Section 2 details the scope of practice and degree of practice autonomy for both NPs and PAs. In summary, the CNA defines a NP as a RN with additional educational preparation and experience who possesses and demonstrates the competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals, and perform specific procedures within their legislated scope of practice.

They suggest that the NP role is derived from blending clinical, diagnostic, and therapeutic knowledge, skills, and abilities within a nursing framework that emphasizes holism, health promotion and partnership with individuals and families, as well as communities.

The education and experience of NPs positions them to function both independently and collaboratively in a variety of settings across the continuum of care. As a regulated health care profession, NPs are autonomous professionals, legally responsible for their own practice and clinical judgments.

In Canada, provincial and territorial nursing regulatory bodies hold the responsibility for setting the competency requirements for practice and licensing, definition of scope, standards of practice and approving NP education programs. In BC, all nurses are governed by the *Nurses (Registered) and Nurse Practitioners Regulation* under the *Health Professions Act*. Their scope of practice is established through the Health Professions Act and is supported by a set of Standards, Limits and Conditions.

The BC Regulation identifies a number of exceptions for NPs, including that they provide care only within their authorized scope of practice and in the designated practice stream in which they are registered (e.g., family, adult, child and pediatric), except in life-threatening emergencies and where a formal delegation process is in place. To date, no activities for NPs have been approved for delegation in BC. The CRNBC's *Scope of Practice for Nurse Practitioners: Standards, Limits and Conditions* details standards of care reflecting this scope of practice.

Physician Assistants

The CAPA website describes PAs as “physician extenders” and states that they are not independent practitioners. Similarly, the AAPA describes PAs as “health care professionals who are authorized by the state to practice medicine as part of a team with physicians”.

Unlike the NP, the PA is not an autonomous professional but a trained health care provider with the knowledge, skills, and attitude to undertake such delegated medical services. They are educated in the medical model and work under the supervision of a registered physician. In Canada they remain largely unregulated, with Manitoba being the only Canadian province with specific legislation in place regarding PA practice.

In both the US and Canada, the PA scope of practice and degree of autonomy in clinical decision making, including prescribing authority, is negotiated and agreed upon on an individual basis with the supervising physician. In Canada, CAPA collaborated with RCPSC and CFPC to develop the Canadian Scope of Practice statement, which is intended only to provide *guidance* to physicians and PAs (See Appendix D).

CAPA also developed a National Competency Profile to establish a national standard of practice for PAs. However, as with the Scope of Practice Statement, this is intended merely to be a *resource* for PAs, supervising physicians, educators, legislators and other health professionals, and is not part of a regulation.

The individual relationship between a PA and their supervising physician is the essential determinant of their clinical role, scope, and competencies. Based on a supervising physician’s assessment of a PAs individual competencies, skills, and experience in a particular practice setting, he/she is responsible for delegating work and determining the extent of direct supervision required of the PA. A key restriction is that the physician may delegate only work that is clearly within the physician’s own scope of practice.

Question 2:

What population health needs are best served by which role?

Nurse Practitioners

- NPs can play a unique role in the BC health care system by expanding the capacity and access to PHC, thereby increasing the proportion of patients with a regular primary care provider.
- Their combination of education, orientation, and practice style results in the NP being well prepared for generalist PHC practice and also provides them with the skills and knowledge to address the complex health needs of people with multiple chronic conditions and those vulnerable to multiple intersecting social determinants of health (e.g., lack of stable housing and poverty). NPs are well equipped to provide extensive information and support, broader counseling, and navigation support across health and community services.

- NPs are also emerging as important additions to EDs that are increasingly the source of PHC for those who are unable to access community-based services or are in need of an urgent response.
- NPs have also demonstrated their value in the BC acute and specialty sector. We note that the NP's more holistic approach, as described above, may be of special benefit in improving the historically poor interface between community-based services and inpatient care, especially for those aged 65 years and older and for patients identified as Alternative Level of Care (ALC) due to lack of community or transition supports.

Physician Assistants

- PAs practice in tandem with a supervising physician. Their practice reflects that of the supervising physician. Accordingly, PAs would serve the same population health needs as their supervising physician. PAs would increase physician efficiency but also, in a complementary role, provide some services that a physician may otherwise not offer, such as patient education and system navigation.

Question 3:

What are the strengths or exemplar contributions of each role?

Nurse Practitioners

- Over 40 years of research has substantiated that NPs can substitute in the *role* of a family physician. They can provide 80% to 90% of the PHC activities traditionally provided by family physicians, with commensurate levels of quality and safety, better communication skills, and higher levels of patient satisfaction.
- We found no evidence that NPs work beyond their scope of practice. Rather they are reported to have good judgment in determining when a patient requires medical care.
- We found no evidence to suggest that NPs (or PAs) increase physician professional liability and US data indicate that both PAs and NPs have lower malpractice rates than that of physicians.
- NP education takes into account not only disease but also the effects of illness on the lives of the patients and their families. Prevention, wellness, and patient education about health and healthy living are also key components, as is the importance of the individual as the primary leader in their own care and well-being.
- NP education also emphasizes knowledge acquisition, analytic activities, and decision making skills, which are considered critical skills for autonomous practice and identified as key in the provision of PHC.
- NP practice stresses communication, education, and independent decision-making. Studies have demonstrated that NPs tend to spend more time with patients compared to their physician counterparts and provide timely access to health information and a wide range of treatment options.
- Compared to family physicians, NPs are reported to have more conservative prescribing practices. They spend more time discussing medication use with patients, which has been associated with increased patient adherence to medication regimes. NPs working with

those 65 years and older are reported to rely on behavioural treatment options more often than on psychotropic medications, compared to physicians.

- Importantly, NP training encourages interprofessional collaborative practice rather than independent or solo practice.

Physician Assistants

- While there is ample evidence that PAs can substitute for a wide range of physician activities, with similar levels of quality and safety, PAs cannot substitute in the *role* of primary care provider. Their training and credentialing limits them to substituting on specific tasks that must be delegated and supervised by a physician.
- Numerous reports suggest that PAs working under physician supervision can increase a practice's efficiency and productivity by as much as 20% to 50%, depending upon the practice setting, responsibilities delegated, severity and stability of the patients' illnesses, and how the physicians choose to use the free time that results from delegating tasks.
- PAs provide care that does not require the knowledge or experience of a physician; PA-supervising physician teams are reported to provide much more comprehensive and efficient care than a physician practicing alone, with excellent outcomes and satisfaction scores.
- In the hospital setting, PAs offer stability and continuity in areas that traditionally experience a constant rotation of residents, interns, and medical staff and provide important educational and administrative resources to other members of the health care team.
- In the US, the majority of PAs now work in highly specialized settings, such as internal medicine, orthopedic surgery, cardiac care, general surgery, emergency medicine, nephrology, oncology, dermatology, radiology, and ophthalmology.
- PAs conduct an increasing range of sophisticated and invasive diagnostic and treatment procedures, assuming many of the time-consuming tasks and procedures previously the responsibility of specialists and residents.
- Most PAs have additional postgraduate training from a PA specialty program. The focus of this training is on developing technical and procedural proficiency, often in a relatively narrow field, with the intention of developing the required skills to execute specific tasks in a predetermined manner, consistent with clinical protocols, and with clearly articulated decision points.
- AAPA data indicates that since the late 1990s, the net number of PAs departing family medicine has exceeded the number entering it, with the drivers to acute and specialty practice being identified as increased income and technical orientation.

Question 4:

Is there an opportunity to utilize both roles effectively?

Nurse Practitioners

- Our interviews indicated that NPs are effectively utilized in PHC, hospital and specialty settings across BC. Their numbers are relatively small.
- HAs employ NPs primarily in community health centres, clinics, and diagnostic and treatment centres and in some home and community care and mental health settings where they meet the needs of some hard to reach populations. A few have been deployed to FFS physician practices.
- The NPs in these settings were reported to be working to their full scope of practice, meeting the aim of increasing BC's primary care capacity.
- There are reports that a few family practices and at least three Divisions of General Practice have hired NPs but little is known about their role and practice in these settings.
- A number of NPs have been deployed to hospital and specialty settings where they have assumed a wide range of responsibilities for patient care, from providing post-surgical care to arranging discharge and follow-up care.

Physician Assistants

- Should PAs be introduced in BC, the most likely purpose would be to improve physician efficiency, consistent with their role in other jurisdictions. However, their scope of practice limits them to substituting for specific activities as delegated and supervised by a physician.
- PA training focuses largely on technical and procedurally-oriented tasks suggesting that PAs may be best deployed in hospital settings where high volumes of routine procedures are required.
- In the US, PAs have been reported to increase physician efficiency by reducing time per procedure, thereby increasing volumes and reducing wait times.
- PAs can change their clinical specialty or focus of practice and expand their clinical repertoire over the course of their career with relative ease and usually without additional formal training. This is largely a result of working in a delegated supervisory model, which allows them to adjust their scope of practice to meet the needs of the supervising physician. This is in contrast to the highly regulated NP scope of practice.
- This ability to easily adapt to new tasks and work settings has led PAs to be described in the US literature as a highly utilitarian provider and this is viewed as a major advantage in hospital settings where PAs can be quickly redeployed as workload or work focus changes.

Questions 5 and 6:

What are the requirements *and* barriers for the successful implementation (singly or simultaneously) of both roles in general and as they pertain to BC specifically?

Nurse Practitioners

- Interviews with senior executives and policy leaders within the BC health sector suggest that lack of need or interest are not the major barriers to fully implementing NPs. Rather, major barriers to implementing NPs include a lack of sufficient funding to establish positions for all new NP graduates and to develop needed infrastructure supports for this new workforce. Additionally, the limited number of interprofessional PHC clinics across the province that could offer appropriate employment opportunities is also a barrier to more fully implementing NPs.
- It was observed that the current PHC NP market in BC is close to saturation and without a strong provincial strategy to expand or develop new interprofessional service capacity outside of the current private practice environment, HAs have few opportunities to establish new NP positions in the PHC sector.
- Several legislative barriers to NP practice in BC were recently addressed, but the *Hospital Act* continues to restrict NPs from admitting or discharging patients to/from hospital, limiting their role in hospital and specialty settings, and the *Controlled Drugs and Substances Act* still restricts NP prescribing of controlled substances.
- It was recognized that the public, senior health managers, and other providers have limited knowledge about the roles and responsibilities of NPs. More attention is needed to communicate their value both within the health care system and to the public.

Physician Assistants

- PAs are not a designated health profession under the *Health Professions Act* and we were advised that there are currently no plans to include this provider group under this legislation, primarily because government policy does not consider “assistant” groups for designation.
- Determining the intended purpose and role of PAs within the BC health system, developing an appropriate funding source and strategy, and establishing a training scheme will be important prerequisites to making a case for their introduction.

Question 7:

Are there barriers to implementing both roles simultaneously?

- Based on the information provided in Section 2 and the findings of the literature review provided in Section 3, we conclude that, contrary to many studies that include NPs and PAs in a single category (e.g., midlevel providers, physician extenders, etc.), these two providers are not interchangeable, although they can share many tasks and settings.
- Table 1 in Section 2 summarizes key NP and PA similarities and differences on 13 domains. In brief, NP and PA educational programs use different models (nursing versus medical), have different goals (autonomous practice versus assistance to a physician) and different processes by which their respective scopes of practice are defined and

maintained. These factors sufficiently differentiate NPs and PAs and as a result, the roles in which they are deployed are different.

- The answer to the question *should* they be implemented simultaneously requires a different response. We note that BC has made a considerable financial investment over nearly a decade to establishing a NP workforce and yet continues to struggle with its full implementation. New employment opportunities are not keeping pace with the numbers of new graduates.
- Despite the clarity of purpose of the NP policy agenda (i.e. to create a NP workforce that would improve client health outcomes by increasing accessibility to health care services and filling gaps that presently exist in health care delivery), a number of barriers have been identified to utilizing the growing NP workforce appropriately, as mentioned above.
- Given that considerable investments in the NP agenda are not being maximized, it would seem prudent to address the identified barriers prior to using scarce health care resources to further invest in the production of a PA workforce. Despite some public commitments to using PAs, major considerations such as their purpose, role, funding, regulation and training have not been publicly explored to date.
- We also note that opportunities to better use the skills and scopes of practice of existing health care providers, such as RNs, LPNs, and pharmacists, to improve physician efficiency could be explored prior to committing to the costs of developing a new provider workforce.
- Consequently, while in no way intended to disregard the strong evidence that PAs can very effectively substitute for many physician activities and increase the productivity and efficiency of both PHC providers and specialists, from a pragmatic perspective, the simultaneous implementation of NPs and PAs in BC would not be useful or advisable *at the current time*.

Question 8

Can both roles effectively support the BC health care system and, if so, how?

Nurse Practitioners

- As discussed in Section 3, NPs are autonomous PHC providers and as such can add significant capacity to the PHC sector. A number of studies have demonstrated their competence and safety in delivering PHC and when substituting for family physicians.
- There also is emerging evidence, although not yet conclusive, that the comprehensive care provided by NPs may lead to reduced health system costs by reducing avoidable visits to EDs, acute care admissions, and delayed admission to residential facilities.
- With respect to the acute/specialty sector, the interview process provided consistently positive reports of effective utilization of NPs in these settings BC.

Physician Assistants

- As described in Section 3, PAs are most likely to be introduced with the purpose of increasing the efficiency and capacity of selected physicians.
- PAs are recognized as a flexible provider, easily adapting to different tasks and settings, which makes them useful in hospital environments.
- Similarly, their technical training and procedural focus prepares them for settings where high volumes of routine procedures are required.

Question 9:

What is required to make these roles successful over time?

Based on the common themes identified across the research evidence, BC policy context, and content analysis from the interviews, the following advice is provided to BC decision makers:

Nurse Practitioners:

- The role and responsibility of NPs is not widely understood in BC. Clearer and more consistent endorsement of NPs with the public and other providers could increase their acceptance.
- A more inclusive and consultative process for the development of the provincial PHC agenda, preferably independent of the constraints associated with funding and collective agreements and not limited to a single profession, may better ensure that the health care needs of the population and skills and abilities of all PHC stakeholders are considered in the formation of relevant government policy.
- The development of new/alternative physician remuneration models that are not volume-sensitive may assist in reducing the real or perceived sense of economic competition between NPs and physicians.
- Further implementation of NPs requires structural change within the PHC sector, including expansion of existing interprofessional PHC service models and/or the development of new models.
- HAs expressed a strong preference for salaries rather than FFS as the payment model for NPs.
- Given that NPs are a new professional in BC, HAs need to develop customized infrastructure supports, such as clinical governance and dedicated professional education.
- Amendments to the *Hospital Act* to enable NPs to admit and discharge from hospital and changes to the federal legislation to enable NPs to prescribe controlled substances will be important if NPs are to fully assume clinical responsibilities commensurate with their scope of practice.

Physician Assistants:

- Careful consideration should be given to whether the significant costs associated with the needed infrastructure to introduce PAs to BC are warranted.
- Given the already large number of professions and the potential overlap of skills of PAs with other professions, increased clarity is needed to understand the purpose and anticipated benefits of introducing PAs. If the primary aim is to increase the efficiency of physicians, it

may be prudent to explore how existing professions might be better deployed to meet these and the needs of the health system prior to introducing PAs.

- Should a decision be made to implement PAs in BC, a comprehensive regulatory framework will need to be developed which includes issues related to supervision and accountability.
- Funding sources and mechanisms will need to be identified and developed that take into consideration both the direct and indirect costs of PAs. This may require changes to the physician fee schedule to ensure that the impact of PAs on physician efficiency and income is taken into consideration, as well as provision for necessary PA supervision.

References

- Aaronson, W. E. (1991). The Use of Physician Extenders in Nursing Homes: A Review. *Medical Care Research and Review*, 48(4), 411-447.
- Agosta, L. J. (2009). Psychometric evaluation of the Nurse Practitioner Satisfaction Survey (NPSS). *Journal of nursing measurement*, 17(2), 114-133.
- Aigner, M. J., Drew, S., & Phipps, J. (2004). A comparative study of nursing home resident outcomes between care provided by nurse practitioners/physicians versus physicians only. *Journal of the American Medical Directors Association*, 5(1), 16-23.
- Alberta Health Services. (2009). Calgary health region. Consolidated financial statements. . Calgary, Alberta
- Alberta Office of the Auditor General. (2012). Report of the Auditor General of Alberta. Alberta, Canada.
- Allnutt, J., Allnutt, N., McMaster, R., O'Connell, J., Middleton, S., Hillege, S., . . . Gardner, A. (2010). Clients' understanding of the role of nurse practitioners. *Australian Health Review*, 34(1), 59-65.
- Alpert, P. T., Fjone, A., & Candela, L. (2002). Nurse practitioner: reflecting on the future. *Nursing administration quarterly*, 26(5), 79-89.
- American Academy of Physician Assistants. (2009). Retrieved June 26, 2012, from <http://www.aapa.org/>
- Anderson, J. E., Torres, J. R., Bitter, D. C., Anderson, S. C., & Briefel, G. R. (1999). Role of physician assistants in dialysis units and nephrology. *American Journal of Kidney Diseases*, 33(4), 647-651.
- Anderson, M. E. (2001). A role for physician assistants in organ procurement. *Progress in Transplantation*, 11(4), 245-248.
- Anderson, R. (1997). Managed care: increased opportunities for acute-care nurse practitioners. *AACN Clinical Issues: Advanced Practice in Acute & Critical Care*, 8(1), 101-107.
- Appel, A. L., & Malcolm, P. (2002). The triumph and continuing struggle of nurse practitioners in New South Wales, Australia. *Clinical nurse specialist CNS*, 16(4), 203-210.
- Arcangelo, V., Fitzgerald, M., Carroll, D., & Plumb, J. D. (1996). Collaborative care between nurse practitioners and primary care physicians. *Primary care*, 23(1), 103-113.
- Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, 8, 19-32.
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19-32.
- Asubonteng, P., McCleary, K. F., & Munchus, G. (1995). Nurse practitioners in the USA--their past, present and future: Some implications for the health management delivery system. *Health Manpower Management*, 21(3), 3-10.
- Avery, A. J., & Pringle, M. (2005). Extended prescribing by UK nurses and pharmacists. *BMJ (Clinical research ed.)*, 331, 1154-1155.
- Bahouth, M., Esposito-Herr, M. B., & Babineau, T. J. (2007). The Expanding Role of the Nurse Practitioner in an Academic Medical Center and its Impact on Graduate Medical Education. *Journal of Surgical Education*, 64(5), 282-288.
- Baldwin, K. A., Sisk, R. J., Watts, P., McCubbin, J., Brockschmidt, B., & Marion, L. N. (1998). Acceptance of Nurse Practitioners and Physician Assistants in Meeting the Perceived Needs of Rural Communities. *Public Health Nursing*, 15(6), 389-397.

- Ballard-Hernandez, J. M. (2010). Nurse practitioners improving the transition from hospital to home and reducing acute care readmission rates in heart failure patients. *Heart & Lung: The Journal of Acute and Critical Care* 39(4), 365-366.
- Bazian, L. (2005). Do nurse practitioners provide equivalent care to doctors as a first point of contact for patients with undifferentiated medical problems? . *Evidence-based Healthcare & Public Health* 9(3), 179-191.
- BC Ministry of Health. (2005). Amendment reflects role of nurse practitioners [Press release]. Retrieved June 30, 2012, from http://www2.news.gov.bc.ca/news_releases_2005-2009/2005HEALTH0028-000966.htm
- BC Ministry of Health. (2006). Resource manual for nurse practitioners. Retrieved June 30, 2012, from http://www.health.gov.bc.ca/msp/infoprac/np/msp_resource_np.pdf
- BC Ministry of Health Services, & BC Ministry of Advanced Education. (2003). New nurse practitioner seats to improve patient care [Press release]. Retrieved June 30, 2012, from http://www2.news.gov.bc.ca/nrm_news_releases/2003HLTH0013-000486.htm
- Beachler, M., Holloman, C., & Herman, J. (2003). Southern Rural Access Program: An Overview. *The Journal of Rural Health*, 19, 301-307.
- Beal, J. A., & Quinn, M. (2002). The nurse practitioner role in the NICU as perceived by parents. *MCN. The American journal of maternal child nursing*, 27(3), 183-188.
- Bednar, S., Atwater, A., & Keough, V. (2007). Educational Preparation of Nurse Practitioners and Physician Assistants: An Exploratory Review. *Advanced Emergency Nursing Journal*, 29(2), 158-171.
- Bergeron, J., Neuman, K., & Kinsey, J. (1999). Rural Health Research: Do Advanced Practice Nurses and Physician Assistants Benefit Small Rural Hospitals? *The Journal of Rural Health*, 15(2), 219-232.
- Bergeson, J., Cash, R., Boulger, J., & Bergeron, D. (1997). The Attitudes of Rural Minnesota Family Physicians Toward Nurse Practitioners and Physician Assistants. *The Journal of Rural Health*, 13(3), 196-205.
- Birch, S., & Gafni, A. (2003). Economics and the evaluation of health care programmes: Generalisability of methods and implications for generalisability of results. *Health Policy*, 64(2), 207-219.
- Birkholz, G., & Viens, D. C. (1999). Medicaid Claims Data Comparisons for Nurse Practitioners, Physician Assistants, and Primary Care Physicians in New Mexico. *Journal of the American Academy of Nurse Practitioners*, 11(1), 3-10.
- Blackmore, C. C., Hoffer, E. K., Albrecht, E., & Mann, F. A. (2004). Physician assistants in academic radiology: the harborview experience. *Journal of the American College of Radiology*, 1(6), 410-414.
- Bodenheimer, T., & Pham, H. H. (2010). Primary care: Current problems and proposed solutions. *Health Affairs*, 29(5), 799-805.
- Bohn, E. R., Dunbar, M., Pitman, D., Rhule, C., & Araneta, J. (2010). Experience with physician assistants in a Canadian arthroplasty program *Canadian Journal of Surgery* 53(2), 103-108.
- Boville, D., Saran, M., Salem, J. K., Clough, L., Jones, R. R., Radwany, S. M., & Sweet, D. B. (2007). An innovative role for nurse practitioners in managing chronic disease. *Nursing Economics*, 25(6), 359-364.
- Bowen, M. A., Torres, W. E., & Small, W. C. (2007). Nonphysician providers in radiology: The Emory University experience 1. *Radiology*, 245(1), 3-6.

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Brcic, V., McGregor, M. J., Kaczorowski, J., Dharamsi, S., & Verma, S. (2012). Practice and payment preferences of newly practising family physicians in British Columbia. *Canadian Family Physician* 58(5), 275-281.
- British Columbia Medical Association. (2012, April 2012). Nurse practitioners. *Policy Statement*. Retrieved June 30, 2012, from <https://www.bcma.org/files/4%201%201%20NP%20Policy%20Statement.pdf>
- British Columbia Medical Association. (2009, November 2009). Physician assistants. *Policy Statement*. Retrieved June 30, 2012, from https://www.bcma.org/files/Physician_Assistants.pdf
- British Columbia Medical Association. (2011). Multidisciplinary primary care. . *Policy Statement*., from https://www.bcma.org/files/Multidisciplinary_care.pdf
- Brown, D. J. (2007). Consumer perspectives on nurse practitioners and independent practice. *Journal of the American Academy of Nurse Practitioners*, 19(10), 523-529.
- Brown, J. B., Lewis, L., Ellis, K., Stewart, M., Freeman, T. R., & Kasperski, M. J. (2009). Mechanisms for communicating within primary health care teams. *Canada Family Physician* 55(12), 1216-1222.
- Brown, S. A., & Grimes, D. E. (1995). A meta-analysis of nurse practitioners and nurse midwives in primary care. *Nursing Research*, 44(6), 332-339.
- Brutsche, R. L. (1986). Utilization of PAs in federal correctional institutions. *Physician Assistant*, 10(9), 60-66.
- Bryant-Lukosius, D., Green, E., Fitch, M., Macartney, G., Robb-Blenderman, L., McFarlane, S., . . . Milne, H. (2007). A survey of oncology advanced practice nurses in Ontario: profile and predictors of job satisfaction. *Nursing Leadership* 20(2), 50-68.
- Budzi, D., Lurie, S., Singh, K., & Hooker, R. (2010). Veterans' perceptions of care by nurse practitioners, physician assistants, and physicians: A comparison from satisfaction surveys. *Journal of the American Academy of Nurse Practitioners*, 22(3), 170-176.
- Bungard, T. J., Smigorowsky, M. J., Lalonde, L. D., Hogan, T., Doliszny, K. M., Gebreyesus, G., . . . Archer, S. L. (2009). Cardiac EASE (Ensuring Access and Speedy Evaluation) - The impact of a single-point-of-entry multidisciplinary outpatient cardiology consultation program on wait times in Canada. *Canadian Journal of Cardiology*, 25(12), 697-702.
- Burgess, S. E., Pruitt, R. H., Maybee, P., Metz, A. E., & Leuner, J. (2003). Rural and Urban Physicians' Perceptions Regarding the Role and Practice of the Nurse Practitioner, Physician Assistant, and Certified Nurse Midwife. *The Journal of Rural Health*, 19, 321-328.
- Buswell, L. A., Ponte, P. R., & Shulman, L. N. (2009). Provider practice models in ambulatory oncology practice: Analysis of productivity, revenue, and provider and patient satisfaction. *Journal of Oncology Practice*, 5(4), 188-192.
- Cairo, M. J. (1996). Emergency Physicians' Attitudes Toward the Emergency Nurse Practitioner Role: Validation Versus Rejection. *Journal of the American Academy of Nurse Practitioners*, 8(9), 411-417. doi: 10.1111/j.1745-7599.1996.tb00686.x
- Canadian Association of Physician Assistants. (2011a). Retrieved June 30, 2012, from http://capa-acam.ca/en/Definition_51
- Canadian Association of Physician Assistants. (2011b). Retrieved June 26, 2012, from <http://capa-acam.ca/>

- Canadian Health Services Research Foundation. (2010). Nurse practitioners and physicians collaborate for improved patient care at B.C.'s Interior Health Authority
- Canadian Institute for Health Information. (2010). Regulated nurses: Canadian trends, 2004-2008. Retrieved June 30, 2012, from https://secure.cihi.ca/free_products/regulated_nurses_2004_2008_en.pdf
- Canadian Nurse Practitioner Initiative. (2006). Nurse Practitioners: The Time is Now: A Solution to Improving Access and Reducing Wait Times in Canada. Ottawa, ON.
- Canadian Nurses Association. (2005). Canadian nurse practitioner core competency framework. Retrieved June 30, 2012, from http://www.rnntnu.ca/Portals/0/Documents/Registration%202007/NP%20Application/CNPE_Core_Competency_Framework_e.pdf
- Canadian Nurses Association. (2006). Canadian nurse practitioner initiative: Final report urges consistency in licensing nurse practitioners. *Canadian Nurse*, 102(7), 17.
- Canadian Nurses Association. (2009). Position statement: The nurse practitioner. Retrieved June 30, 2012, from http://www2.cna-aiic.ca/CNA/documents/pdf/publications/PS_Nurse_Practitioner_e.pdf
- Canadian Nurses Association. (2010, May 2010). Canadian nurse practitioner core competency framework. Retrieved June 30, 2012, from http://rnntnu.ca/Portals/0/Competency_Framework_2010_e.pdf
- Caprio, T. V. (2006). Physician practice in the nursing home: collaboration with nurse practitioners and physician assistants. *Annals of Long Term Care*, 14(3), 17-24.
- Carrino, G. E., & Garfield, R. (1995). The substitutability of nurse practitioners for physicians: A literature review *Nursing Leadership Forum*, 1(3), 76-83.
- Carson-Smith, W. Y., & Minarik, P. A. (2007). Advanced practice nurses: a new skirmish in the continuing battle over scope of practice. *Clinical nurse specialist CNS*, 21(1), 52-54.
- Carter, A. J. E., & Chochinov, A. H. (2007). A systematic review of the impact of nurse practitioners on cost, quality of care, satisfaction and wait times in the emergency department. *CJEM: The Journal of the Canadian Association of Emergency Physicians*, 9(4), 286-295.
- Carzoli, R. P., Martinez-Cruz, M., Cuevas, L. L., Murphy, S., & Chiu, T. (1994). Comparison of Neonatal Nurse Practitioners, Physician Assistants, and Residents in the Neonatal Intensive Care Unit. *Archives of Pediatrics Adolescent Medicine*, 148(12), 1271-1276.
- Cash, B. D., Schoenfeld, P. S., & Ransohoff, D. F. (1999). Licensure, use, and training of paramedical personnel to perform screening flexible sigmoidoscopy. *Gastrointestinal Endoscopy*, 49(2), 163-169.
- Cavers, W. J., Tregillus, V. H., Micco, A., & Hollander, M. J. (2010). Transforming family practice in British Columbia: the General Practice Services Committee. *Canadian Family Physician*, 56(12), 1318-1321.
- Cawley, J. F. (1991). Hospital physicians' assistants: Past, present and future. (Cover story). *Hospital topics*, 69(3), 14.
- Centre for Reviews and Dissemination. (2001). Undertaking systematic reviews of research on effectiveness: CRD's guidance for carrying out or commissioning reviews. *CRD Report 4 (2nd Edition)*. York, UK: University of York.
- Chapman, J. L., Zechel, A., Carter, Y. H., & Abbott, S. (2004). Systematic review of recent innovations in service provision to improve access to primary care. *British Journal of General Practice*, 54(502), 374-381.

- Charlton, C. R., Dearing, K. S., Berry, J. A., & Johnson, M. J. (2008). Nurse practitioners' communication styles and their impact on patient outcomes: An integrated literature review. *Journal of the American Academy of Nurse Practitioners*, 20(7), 382-388. doi: 10.1111/j.1745-7599.2008.00336.x
- Chaston, D., & Seccombe, J. (2009). Mental health nurse prescribing in New Zealand and the United Kingdom: Comparing the pathways. *Perspectives in psychiatric care*, 45(1), 17-23.
- Cipher, D. J., Hooker, R. S., & Sekscenski, E. (2006). Are older patients satisfied with physician assistants and nurse practitioners? *JAAPA : official journal of the American Academy of Physician Assistants*, 19(1), 36.
- Clark, A. R., Monroe, J. R., Feldman, S. R., Fleischer, A. B., Jr., Hauser, D. A., & Hinds, M. A. (2000). The emerging role of physician assistants in the delivery of dermatologic health care. *Dermatologic Clinics*, 18(2), 297-302.
- College of Family Physicians of Canada. (2009). Patient-centered primary care in Canada: Bring it on home. Retrieved June 30, 2012, from http://www.cfpc.ca/uploadedFiles/Resources/Resource_Items/Bring20it20on20Home20FINAL20ENGLISH.pdf
- Condit, D. (2002). Opportunities--and challenges--in the surgical subspecialties. *JAAPA : official journal of the American Academy of Physician Assistants*, 15(10), 40-42.
- Courtenay, M. (2010). Nurse prescribing and community practitioners. *The Journal of Family Health Care*, 20(3), 78-80.
- Cummings, G. G., Fraser, K., & Tarlier, D. S. (2003). Implementing advanced nurse practitioner roles in acute care: an evaluation of organizational change. *The Journal of nursing administration*, 33(3), 139-145.
- de Guzman, A., Ciliska, D., & DiCenso, A. (2010). Nurse practitioner role implementation in Ontario public health units. *Canadian Journal of Public Health*, 101(4), 309-313.
- Department of Health. (2005). Anaesthesia Practitioner Curriculum Framework. Retrieved June 30, 2012, from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4116429.pdf
- Dhuper, S., & Choksi, S. (2009). Replacing an Academic Internal Medicine Residency Program With a Physician Assistant-Hospitalist Model: A Comparative Analysis Study. *American Journal of Medical Quality*, 24(2), 132-139.
- DiCenso, A. (1998). The neonatal nurse practitioner. *Current Opinion in Pediatrics*, 10(2), 151-155. doi: 10.1097/00008480-199804000-00006
- DiCenso, A., Auffrey, L., Bryant-Lukosius, D., Donald, F., Martin-Misener, R., Matthews, S., & Opsteen, J. (2007). Primary health care nurse practitioners in Canada *Contemporary Nurse* (Vol. 26, pp. 104(112)).
- DiCenso, A., & Bryant-Lukosius, D. (2010). Clinical nurse specialists and nurse practitioners in Canada: A decision support synthesis. Ottawa, ON: Canadian Health Services Research Foundation.
- DiCenso, A., Bryant-Lukosius, D., Martin-Misener, R., Donald, F., Abelson, J., Bourgeault, I., . . . Harbman, P. (2010). Factors enabling advanced practice nursing role integration in Canada. *Nursing Leadership*, 23 (Special Issue), 211-238.
- Diers, D., & Goodrich, A. W. (2008). "Noses and eyes": Nurse practitioners in New Zealand. *Nursing Praxis in New Zealand inc*, 24(1), 4.

- Donald, F., Mohide, E. A., DiCenso, A., Brazil, K., Stephenson, M., & Akhtar-Danesh, N. (2009). Nurse practitioner and physician collaboration in long-term care homes: Survey results. *Canadian Journal on Aging, 28*(1), 77-87.
- Drummond, A. (2007). Nurse practitioners in Canadian emergency departments: An idea worthy of attention or diverting our attention? *Canadian Journal of Emergency Medicine, 9*(4), 297-299.
- Drummond, D. (2012). Commission on the reform of Ontario's public health services. Public services for Ontarians: A path to sustainability and excellence (pp. 1-562). ON, Canada.
- Ducharme, J., Alder, R. J., Pelletier, C., Murray, D., & Tepper, J. (2009). The impact on patient flow after the integration of nurse practitioners and physician assistants in 6 ontario emergency departments. *Canadian Journal of Emergency Medical Care, 11*(5), 455-461.
- Duffy, K. (2003). Physician assistants: filling the gap in patient care in academic hospitals. *Perspective on Physician Assistant Education, 14*(3), 158-167.
- Ekwo, E. E., Dusdieker, L. B., Bean, J. A., & Daniels, M. A. (1980). How lengths of office visits vary when primary care practices employ physician assistants. *Inquiry, 17*(2), 145-154.
- Ellis, M., & Krol, E. (2005). A case study on the use of physician assistants in college health. *Pediatric Clinics of North America 52*(1), 1-8.
- Fayerman, P., & Fowlie, J. (May 2012). B.C. to open nearly 200 new jobs for nurse practitioners, *Vancouver Sun*. Retrieved from <http://www.vancouversun.com/business/2035/open+nearly+jobs+nurse+practitioners/6707779/story.html>
- Flanagan, L. (1998). Nursing practitioners: growing competition for family physicians? *Family practice management, 5*(9), 34-36, 41-43.
- Fletcher, C. E., Baker, S. J., Copeland, L. A., Reeves, P. J., & Lowery, J. C. (2007). Nurse Practitioners' and Physicians' Views of NPs as Providers of Primary Care to Veterans. *Journal of Nursing Scholarship, 39*(4), 358-362.
- Forchuk, C., & Kohr, R. (2009). Prescriptive authority for nurses: The Canadian perspective. *Perspectives in psychiatric care, 45*(1), 3-8.
- Ford, J. (2008). 2008 in review: More growing pains. twings as the NP role expands. *Advance for Nurse Practitioners, 16*(12), 56-57.
- Ford, V. H., & Kish, C. P. (1998). What's happening. Family physician perceptions of nurse practitioners and physician assistants in a family practice setting. *Journal of the American Academy of Nurse Practitioners, 10*(4), 167-171.
- Forgeron, P., & Martin-Misener, R. (2005). Parents' intentions to use paediatric nurse practitioner services in an emergency department. *Journal of advanced nursing, 52*(3), 231-238.
- Gafni, A., Birch, S., & Buckley, G. (2011). Economic analysis of physician assistants in Ontario: Literature review and feasibility study. *CHEPA working paper series*
- General Practice Services Committee. (2010/2011). General Practice Services Committee Annual Report 2010/2011. Retrieved June 30, 2012, from http://www.gpsc.bc.ca/system/files/GPSC_AR2011-FINAL.pdf
- Goldman, J., Meuser, J., Rogers, J., Lawrie, L., & Reeves, S. (2010). Interprofessional collaboration in family health teams: An Ontario-based study. *Canadian Family Physician, 56*(10), e368-374.

- Goldman, M. B., Occhiuto, J. S., Peterson, L. E., Zapka, J. G., & Palmer, R. H. (2004). Physician Assistants as Providers of Surgically Induced Abortion Services. *American Journal of Public Health, 94*(8), 1352-1357.
- Gorman, D. F., & Brooks, P. M. (2009). On solutions to the shortages of doctors in Australia and New Zealand. *Medical Journal of Australia, 190*(3), 152-156.
- Gould, O. N., Johnstone, D., & Wasylikiw, L. (2007). Nurse practitioners in Canada: Beginnings, benefits, and barriers. *Journal of the American Academy of Nurse Practitioners, 19*(4), 165-171.
- Gray, M., Smith, F., McKeown, D., Donaldson, J., Hendry, S., Page, L., & Scholes, J. (2010). Integrating physician assistants into the practice setting. *Nursing Management 17*(7), 23-27.
- Green, A., & Davis, S. (2005). Toward a predictive model of patient satisfaction with nurse practitioner care. *Journal of the American Academy of Nurse Practitioners, 17*(4), 139-148.
- Hague, B. (2005). The utilization of physician assistants in Canada: An environmental scan. Retrieved June 30, 2012, from http://www.winnipeghealthregion.ca/careers/careersinhealth/files/PA_HealthCanadaPaper.pdf
- Haidar, E. (2008). Evaluating patient satisfaction with nurse practitioners. *Nursing times, 104*(26), 32.
- Harbert, K., A., S. R., & Conrad, W. (1994). The utilization of physician extenders. mid-level providers in a large group practice within a tertiary health care setting. *Medical Group Management Journal, 41*(6), 26.
- Harbour Peaks Management Inc. (2008). British Columbia Rural Physician Programs Review British Columbia.
- Harris, C. M., & Evarts, C. M. (1990). The relationship of physician assistants to an orthopedic residency program. *Clinical Orthopaedics and Related Research*(252), 252-261.
- Harris/Decima. (2009). Canadians very comfortable with expanded role for nurse practitioners Retrieved August 13, 2009, from http://www.rorrrhs-ohhrrn.ca/index.php?option=com_content&view=article&id=14%3Acanadians-very-comfortable-with-expanded-role-for-nurse-practitioners&catid=10&Itemid=8&lang=en
- Hart, L., & Mirabella, J. (2009). A Patient Survey on Emergency Department Use of Nurse Practitioners. *Advanced Emergency Nursing Journal, 31*(3), 228-235.
- Hayden, M. L., Davies, L. R., & Clore, E. R. (1982). Facilitators and inhibitors of the emergency nurse practitioner role. *Nursing research, 31*(5), 294-299.
- Hayes, E. (2007). Nurse practitioners and managed care: Patient satisfaction and intention to adhere to nurse practitioner plan of care. *Journal of the American Academy of Nurse Practitioners, 19*(8), 418-426.
- Health Canada. (2002). Primary Health Care Transition Fund. Retrieved June 30, 2012, from <http://www.hc-sc.gc.ca/hcs-sss/prim/phctf-fassp/index-eng.php>
- Ho, P., Pesicka, D., Schafer, A., & Maddern, G. (2010). Physician assistants: Trialling a new surgical health professional in Australia. *ANZ Journal of Surgery, 80*(6), 430-437.
- Hong, K., Georgiades, C. S., Hebert, J., Wahlin, T., Mitchell, S. E., & Geschwind, J.-F. H. (2006). Incorporating Physician Assistants and Physician Extenders in the Contemporary Interventional Oncology Practice. *Management of Oncologic Patients, 9*(3), 96-100.

- Hooke, E., Bennett, L., Dwyer, R., van Beek, I., & Martin, C. (2001). Nurse practitioners: an evaluation of the extended role of nurses at the Kirketon Road Centre in Sydney, Australia. *The Australian Journal of Advanced Nursing : A Quarterly Publication of the Royal Australian Nursing Federation*, 18(3), 20-28.
- Hooker, R. S. (2004). Physician assistants in occupational medicine: how do they compare to occupational physicians? *Occupational Medicine*, 54(3), 153-158.
- Hooker, R. S. (2009). Do physician assistants provide a "social good" for America?#EDITORIAL##Editorial# *JAAPA-Journal of the American Academy of Physicians Assistants* (Vol. 22, pp. 12#11#).
- Hooker, R. S., & Ciper, D. J. (2005). Physician Assistant and Nurse Practitioner Prescribing: 1997-2002. *The Journal of Rural Health*, 21(4), 355-360.
- Hooker, R. S., Klocko, D. J., & Larkin, G. L. (2011). Physician assistants in emergency medicine: The impact of their role. *Academic Emergency Medicine*, 18, 72-77.
- Hooker, R. S., & McCaig, L. (1996). Emergency department uses of physician assistants and nurse practitioners: A national survey. *The American Journal of Emergency Medicine*, 14(3), 245-249.
- Hooker, R. S., & McCaig, L. F. (2001). Use of physician assistants and nurse practitioners in primary care, 1995-1999. *Health Affairs*, 20(4), 231-238.
- Hooker, R. S., Nicholson, J. G., & Le, T. (2009). Does the employment of physician assistants and nurse practitioners increase liability. *Journal of Medical Licensure and Discipline*, 95(2), 6-16.
- Horrocks, S., Anderson, E., & Salisbury, C. (2002). Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ*, 324(7341), 819-823.
- Humbert, J., Legault, F., Dahrouge, S., Halabisky, B., Boyce, G., Hogg, W., & Amos, S. (2007). Integration of nurse practitioners into a family health network. *Canadian Nurse*, 103(9), 30-34.
- Hurlock-Chorostecki, C., van Soeren, M., & Goodwin, S. (2008). The acute care nurse practitioner in Ontario: a workforce study. *Nursing leadership (Toronto, Ont.)*, 21(4), 100-116.
- Hutchison, B., Levesque, J.-F., Strumpf, E., & Coyle, N. (2011). Primary health care in Canada: Systems in motion. *Milbank Quarterly*, 89(2), 256-288.
- Hyde, M. A., Hadley, M. L., Roberson, C., Jacobson, A., Pappas, L., & Bowen, G. M. (2010). Use of physician assistants in mohs micrographic surgery: A survey of fellowship-trained mohs micrographic surgeons. *Dermatologic Surgery*, 36(11), 1700-1703.
- Jacobs, S. (2007). The pivotal role of politics in advancing nursing practice. *Nursing New Zealand (Wellington, N.Z.: 1995)*, 13(11), 14-16.
- Jensen, L., & Scherr, K. (2004). Impact of the nurse practitioner role in cardiothoracic surgery. *Dynamics (Pembroke, Ont.)*, 15(3), 14-19.
- Jones, P. E., & Cawley, J. F. (2009). Workweek Restrictions and Specialty-Trained Physician Assistants: Potential Opportunities. *Journal of Surgical Education*, 66(3), 152-157.
- Juretschke, L. J., Penckofer, S., Paskiewicz, L., & Velsor-Friedrich, B. (2008). Predictors of parent satisfaction with neonatal nurse practitioners. *Advances in Neonatal Care (Elsevier Science)*, 8(2), 133-133.

- Kaasalainen, S., Martin-Misener, R., Kilpatrick, K., Harbman, P., Bryant-Lukosius, D., Donald, F., . . . DiCenso, A. (2010). A historical overview of the development of advanced practice nursing roles in Canada. *Nursing Leadership*, 23 (Special No 2010), 35-60.
- Kaplan, L., & Brown, M.-A. (2004). Prescriptive authority and barriers to NP practice. *The Nurse practitioner*, 29(3), 28-35. doi: 10.1097/00006205-200403000-00004
- Kaplan, L., Brown, M. A., & Donahue, J. S. (2010). Prescribing controlled substances: How NPs in Washington are making a difference. *The Nurse Practitioner*, 35(5), 47-53.
- Kelley, C. G., Daly, B. J., Anthony, M. K., Zauszniewski, J. A., & Stange, K. C. (2002). Nurse practitioners and preventive screening in the hospital. *Clinical nursing research*, 11(4), 433-449.
- Kelvin, J. F., Moore-Higgs, G. J., Maher, K. E., Dubey, A. K., Austin-Seymour, M. M., Daly, N. R., . . . Kuehn, E. F. (1999). Non-physician practitioners in radiation oncology: Advanced practice nurses and physician assistants. *International Journal of Radiation Oncology*Biological*Physics*, 45(2), 255-263.
- Kennedy-Malone, L., Fleming, M. E., & Penny, J. (2008). Prescribing patterns of gerontological nurse practitioners in the United States. *Journal of the American Academy of Nurse Practitioners*, 20(1), 28-34.
- Kilpatrick, K. (2008). Praxis and the role development of the acute care nurse practitioner. *Nursing Inquiry*, 15(2), 116-126.
- Kippenbrock, T., Stacy, A., Tester, K., & Richey, R. (2002). Nurse practitioners providing health care to rural and underserved areas in four Mississippi Delta states. *Journal of Professional Nursing*, 18(4), 230-237.
- Kleinpell, R. M., Ely, E. W., & Grabenkort, R. (2008). Nurse practitioners and physician assistants in the intensive care unit: an evidence-based review. *Critical care medicine*, 36(10), 2888-2897.
- Kleinpell, R. M., Faut-Callahan, M., Lauer, K., Kremer, M. J., Murphy, M., & Sperhac, A. (2002). Collaborative practice in advanced practice nursing in acute care. *Critical care nursing clinics of North America*, 14(3), 307-313.
- Kleinpell, R. M., & Goolsby, M. J. (2006). 2004 American Academy of Nurse Practitioners National Nurse Practitioner Sample Survey: Focus on acute care. *Journal of the American Academy of Nurse Practitioners*, 18(9), 393-394.
- Knaus, V. L., Felten, S., Burton, S., Fobes, P., & Davis, K. (1997). The use of nurse practitioners in the acute care setting. *Journal of Nursing Administration*, 27(2), 20-27.
- Koren, I., Mian, O., & Rukholm, E. (2010). Integration of nurse practitioners into ontario's primary health care system: Variations across practice settings. *The Canadian Journal of Nursing Research*, 42(2), 48-69.
- Krein, S. L. (1997). The Employment and Use of Nurse Practitioners and Physician Assistants by Rural Hospitals. *The Journal of Rural Health*, 13(1), 45-58.
- Larkin, G. L., & Hooker, R. S. (2010). Patient willingness to be seen by physician assistants, nurse practitioners, and residents in the emergency department: Does the presumption of assent have an empirical basis? *American Journal of Bioethics*, 10(8), 1-10.
- Lauder, W., Sharkey, S., & Reel, S. (2003). The development of family health nurses and family nurse practitioners in remote and rural australia. *Australian Family Physician*, 32(9), 750-752.

- Laurant, M., Harmsen, M., Wollersheim, H., Grol, R., Faber, M., & Sibbald, B. (2009). The impact of nonphysician clinicians. *Medical Care Research and Review*, 66(6 suppl), 36S-89S.
- Laurant, M., Reeves, D., Hermens, R., Braspenning, J., Grol, R., & Sibbald, B. (2009). Substitution of doctors by nurses in primary care. *Cochrane Database of Systematic Reviews*, 1.
- Lebo, S. (2007). Taking charge. NPs strategize in the face of opposition. *Advance for Nurse Practitioners*, 15(12), 43-44.
- Lemelin, J., Hogg, W. E., Dahrouge, S., Armstrong, C. D., Martin, C. M., Zhang, W., . . . Viner, G. (2007). Patient, informal caregiver and care provider acceptance of a hospital in the home program in Ontario, Canada. *BMC health services research*, 7, 130.
- Lenz, E. R., Mundinger, M. O., Kane, R. L., Hopkins, S. C., & Lin, S. X. (2004). Primary care outcomes in patients treated by nurse practitioners or physicians: two-year follow-up. *Medical Care Research & Review*, 61(3), 332-351.
- Lieberman, D. A., & Ghormley, J. M. (1992). Physician assistants in gastroenterology: Should they perform endoscopy? *American Journal of Gastroenterology*, 87(8), 940-943.
- Lin, S. X., Hooker, R. S., Lenz, E. R., & Hopkins, S. C. (2002). Nurse Practitioners and Physician Assistants in Hospital Outpatient Departments, 1997-1999. *Nursing economic\$, 20(4)*, 174.
- Lindeke, L., & Thomas, K. (2010). Professional issues. The SOPP and the Coalition for Patients' Rights: Implications of continuing interprofessional tension for PNPs. *Journal of Pediatric Healthcare*, 24(1), 62-65.
- Lindeke, L. L., & Thomas, K. (2010). The SOPP and the Coalition for Patients' Rights: Implications of continuing interprofessional tension for PNPs. *Journal of Pediatric Health Care*, 24(1), 62-65.
- Linz, D. H., Way, C. R., Lopreato, P. D., Whitlock, R. G., & Stiene, H. A. (2003). Physician assistant practice guidelines in occupational medicine: a program based on an analysis of the scope of practice. *Physician assistant*, 27(9), 31-37.
- Litaker, D., Mion, L., Planavsky, L., Kippes, C., Mehta, N., & Frolkis, J. (2003). Physician - nurse practitioner teams in chronic disease management: the impact on costs, clinical effectiveness, and patients' perception of care. *Journal of interprofessional care*, 17(3), 223-237.
- Lomas, J., & Stoddart, G. L. (1985). Estimates of the potential impact of nurse practitioners on future requirements for physicians in office-based general practice. *Canadian Journal of Public Health*, 76(2), 119-123.
- MacDonald, M., & Roots, A. (2008). *Exploring influences on the implementation of the Nurse Practitioner role in British Columbia*. BC Ministry of Health.
- Mackay, B. (2003). General practitioners' perceptions of the nurse practitioner role: an exploratory study. *The New Zealand medical journal*, 116(1170), U356-U356.
- Manber, M. M. (1985). NPS, MDS, and PAS: Meshing their changing roles. *Medical World News* 26(18), 53-54, 59-62, 66-57.
- Martin-Misener, R. (2010). Will nurse practitioners achieve full integration into the canadian health-care system? *Canadian Journal of Nursing Research*, 42(2), 9-16.
- McCaig, L. F., Hooker, R. S., Sekscenski, E. S., & Woodwell, D. A. (1998). Physician assistants and nurse practitioners in hospital outpatient departments, 1993-1994. *Public Health Reports*, 113(1), 75-82.

- McCally, M., Blomquist, R. H., & Berger, B. D. (1981). Staffing primary care in 1990: Level of delegation. *Springer Series on Health Care and Society* 6, 17-36.
- McEwan, K., & Kilshaw, M. (2004). *A retrospective review of BC's primary care demonstration projects*. BC Ministry of Health.
- McGill, F., Kleiner, G. J., Vanderbilt, C., Nieves, J., Keith, D., & Greston, W. M. (1990). Postgraduate internship in gynecology and obstetrics for physician assistants: A 4-year experience. *Obstetrics & Gynecology*, 76(6), 1135-1139.
- Mentink, J., Trolinger, J., & O'HaraDevereaux, M. (1980). Nurse Practitioners in Primary Care. *Family & community health*, 3(2), 35-48.
- Merkeley Keith, K., & Fraser Askin, D. (2008). Effective collaboration: the key to better healthcare. *Nursing leadership (Toronto, Ont.)*, 21(2), 51-61.
- Mitchell-DiCenso, A., Guyatt, G., Marrin, M., Goeree, R., Willan, A., Southwell, D., . . . Baumann, A. (1996). A controlled trial of nurse practitioners in neonatal intensive care. *Pediatrics*, 98(6), 1143-1148.
- Morgenstern, D., & Brown, M. A. (1996). *Washington state ARNPs attitudes about expanding their prescriptive authority to include schedule two-four medications*. Unpublished master's project. University of Washington, Seattle.
- Morneault, L. (2002). La pratique avancee en neonatologie. *Infirmiere du Quebec* 10(2), 51-55.
- Mundinger, M. O., Kane, R. L., Lenz, E. R., Totten, A. M., Tsai, W., Cleary, P. D., . . . Shelanski, M. L. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians. *JAMA : the journal of the American Medical Association*, 283(1), 59-68.
- National Health Service Center for Reviews and Dissemination. (2001). Undertaking systematic reviews of research on effectiveness: CRD's guidance for those carrying out or commissioning reviews. York, UK: University of York.
- National Physician Survey. (2007). 2007 National Physician Survey, from <http://nationalphysiciansurvey.ca/surveys/2007-survey/>
- Newhouse, R. P., Stanik-Hutt, J., White, K. M., Johantgen, M., Bass, E. B., Zangaro, G., . . . Weiner, J. P. (2011). Advanced practice nurse outcomes 1990-2008: A systematic review. [Article]. *Nursing Economic\$,* 29(5), 230-251.
- O'Malley, L., & Croucher, K. (2005). Housing and dementia care: a scoping review of the literature. *Health and Social Care in the Community*, 13, 570-577.
- Oandasan, I. F. (2009). The way we do things around here: Advancing an interprofessional care culture within primary care. *Canadian Family Physician*, 55(12), 1173-1174.
- Office of Technology Assessment. (December 1986). *Nurse practitioners, physician assistants, and certified nurse-midwives: A policy analysis*. (Health technology case study 37). Washington DC: U.S. Government Printing Office. Retrieved from <http://www.fas.org/ota/reports/8615.pdf>.
- Office of Technology Assessment. (July 1981). *The Costs and Effectiveness of Nurse Practitioners*. (Health technology case study 16). Washington, DC: U.S. Government Printing Office. Retrieved from <http://www.fas.org/ota/reports/8131.pdf>.
- Ontario Ministry of Health and Long-Term Care. (2003). Report on the integration of primary healthcare nurse practitioners into the province of Ontario. Toronto, ON.
- Otterbourg, E. J. (1986). The expanding role of physician assistants in neonatology. *Physician Assistant*, 10(4), 116-118, 121.
- Pollack, D. A., Ford, S. M., & Ferrell, R. B. (1998). Is there a role for physician assistants in community mental health? / Response. *Community mental health journal*, 34(2), 209.

- Por, J. (2008). A critical engagement with the concept of advancing nursing practice. *Journal of nursing management*, 16(1), 84-90.
- Rashotte, J., & Jensen, L. (2010). The transformational journey of nurse practitioners in acute-care settings. *Canadian Journal of Nursing Research*, 42(2), 70-91.
- Redsell, S., Stokes, T., Jackson, C., Hastings, A., & Baker, R. (2007). Patients' accounts of the differences in nurses' and general practitioners' roles in primary care. *Journal of Advanced Nursing*, 57(2), 172-180.
- Riportella-Muller, R., Libby, D., & Kindig, D. (1995). The substitution of physician assistants and nurse practitioners for physician residents in teaching hospitals. *Health affairs*, 14(2), 181-191.
- Roland, M., McDonald, E., Sibbald, B., Boyd, A., Fotaki, M., & Gravelle, H. (2006). Outpatient services and primary care: A scoping review of research into strategies for improving outpatient effectiveness and efficiency. Manchester, UK: National Primary Care Research and Development Centre.
- Rubenstein, E. B., Fender, A., Rolston, K. V., Elting, L. S., Prasco, P., Palmer, J., . . . Laurence, D. (1995). Vascular access by physician assistants: Evaluation of an implantable peripheral port system in cancer patients. *Journal of Clinical Oncology* 13(6), 1513-1519.
- Rudy, E. B., Davidson, L. J., Daly, B., Clochesy, J. M., Sereika, S., Baldisseri, M., . . . Ryan, C. (1998). Care activities and outcomes of patients cared for by acute care nurse practitioners, physician assistants, and resident physicians: a comparison. *American Journal of Critical Care*, 7(4), 267-281.
- Running, A., Hoffman, L., & Mercer, V. (2008). Physician perceptions of nurse practitioners: A replication study. *Journal of the American Academy of Nurse Practitioners*, 20(8), 429-433.
- Running, A., Kipp, C., & Mercer, V. (2006). Prescriptive patterns of nurse practitioners and physicians. *Journal of the American Academy of Nurse Practitioners*, 18(5), 228-233.
- Russell, G. M., Dahrouge, S., Hogg, W., Geneau, R., Muldoon, L., & Tuna, M. (2009). Managing chronic disease in ontario primary care: the impact of organizational factors. *Annals of family medicine*, 7(4), 309-318. doi: 10.1370/afm.982
- Ruston, S. A. (2008). Extended scope practitioners and clinical specialists: A place in rural health? *Australian Journal of Rural Health*, 16(3), 120-123.
- Salisbury, C. J., & Tetersell, M. J. (1988). Comparison of the work of a nurse practitioner with that of a general practitioner. *The Journal of the Royal College of General Practitioners*, 38(312), 314-316.
- Sargen, M., Hooker, R. S., & Cooper, R. A. (2011). Gaps in the supply of physicians, advance practice nurses, and physician assistants. *Journal of the American College of Surgeons*, 212(6), 991-999.
- Scott, L. (2011). NP integration in BC - Funding innovation needed. *BCNPA Briefing Note*, from http://www.bcnpa.org/tiny_mce/plugins/filemanager/files/BCNPA_material/Brief_NP_Integration.Funding.Final.pdf
- Scudder, L. (2006). Prescribing patterns of nurse practitioners. *Journal for Nurse Practitioners*, 2(2), 98-106.
- Seale, C., Anderson, E., & Kinnersley, P. (2005). Comparison of GP and nurse practitioner consultations: An observational study. *The British Journal of General Practice*, 55(521), 938-943.

- Shi, L., Samuels, M. E., Konrad, T. R., Ricketts, T. C., Stoskopf, C. H., & Richter, D. L. (1993). The Determinants of Utilization of Nonphysician Providers in Rural Community and Migrant Health Centers. *The Journal of Rural Health, 9*(1), 27-39.
- Sibbald, B., Laurant, M., & Scott, T. (2006). Changing task profiles. . In A. B. Saltman, A. Rico & W. G. W. Boerma (Eds.), *Primary care in the driver's seat? Organizational reform in European primary care* (pp. 149-164). Berkshire, UK: Open University Press.
- Spitzer, W. O., Sackett, D. L., Sibley, J. C., Roberts, R. S., Gent, M., Kergin, D. J., . . . Olynich, A. (1974). The Burlington randomized trial of the nurse practitioner. *The New England Journal of Medicine, 290*(5), 251-256.
- Stevenson Rowan, M., Hogg, W., & Huston, P. (2007). Integrating public health and primary care. *Healthcare Policy, 3*(1), e160-e181.
- Sturmann, K. M., Ehrenberg, K., & Salzberg, M. R. (1990). Physician assistants in emergency medicine. *Annals of Emergency Medicine, 19*(3), 304-308.
- Taft, J. M., & Hooker, R. S. (1999). Physician assistants in neurology practice. *Neurology, 52*(7), 1513.
- Terry, K. (1993). How "physician extenders" can strengthen your practice. *Medical Economics 70*(22), 57-60.
- Thrasher, C., & Purc-Stephenson, R. (2008). Patient satisfaction with nurse practitioner care in emergency departments in Canada. *Journal of the American Academy of Nurse Practitioners, 20*(5), 231-237.
- Thrasher, C., & Purc-Stephenson, R. J. (2007). Integrating nurse practitioners into Canadian emergency departments: a qualitative study of barriers and recommendations. *CJEM: The Journal of the Canadian Association of Emergency Physicians, 9*(4), 275-281.
- Towers, J. (2003). Where are we now? The status of nurse practitioner practice in statute and regulation December of 2002. *Journal of the American Academy of Nurse Practitioners, 15*(2), 50-55.
- Tregillus, V., & Cavers, W. (2011). General Practice Services Committee: Improving primary care for BC Physicians and Patients *Healthcare Quarterly 14*(Special Issue), 1-6.
- Troidle, L., & Smith, G. O. (2005). Can physician assistants fill the gaps in the nephrology workforce? *Nephrology news & issues, 19*(4), 65.
- Tye, C. C., & Ross, F. M. (2000). Blurring boundaries: professional perspectives of the emergency nurse practitioner role in a major accident and emergency department. *Journal of Advanced Nursing, 31*(5), 1089-1096. doi: 10.1046/j.1365-2648.2000.01380.x
- University of British Columbia School of Nursing. (2012). Retrieved June 30, 2012, from <http://www.nursing.ubc.ca/graduate/mnnp.aspx>
- van Soeren, M. H., & Micevski, V. (2001). Success indicators and barriers to acute nurse practitioner role implementation in four Ontario hospitals. *AACN Clinical Issues, 12*(3), 424-437. doi: 10.1097/00044067-200108000-00010
- Vancouver Island Health Authority. (2009). Nurse practitioners demonstration project: Phase one evaluation report
- Watson, D. E., Slade, S., Buske, L., & Tepper, J. (2006). Intergenerational differences in workloads among primary care physicians: A ten-year, population-based study. *Health Affairs, 25*(6), 1620-1628. doi: 10.1377/hlthaff.25.6.1620
- Watts, S. A., Gee, J., O'Day, M. E., Schaub, K., Lawrence, R., Aron, D., & Kirsh, S. (2009). Nurse practitioner-led multidisciplinary teams to improve chronic illness care: the unique

- strengths of nurse practitioners applied to shared medical appointments/group visits. *Journal of the American Academy of Nurse Practitioners*, 21(3), 167-172.
- Way, D., Jones, L., Baskerville, B., & Busing, N. (2001). Primary health care services provided by nurse practitioners and family physicians in shared practice. *CMAJ: Canadian Medical Association Journal*, 165(9), 1210.
- White, G. L., Jr. , & Davis, A. M. (1999). Physician assistants as partners in physician-directed care. *Southern Medical Journal* 92(10), 956-960.
- Williams, D., & Sidani, S. (2001). An analysis of the nurse practitioner role in palliative care. *Canadian journal of nursing leadership*, 14(4), 13-19.
- Wilson, W. M. W. G. L., Jr., & Murdock, R. T. (1990). Physician assistants in ophthalmology: A national survey. *Physician Assistant*, 14(1), 57-59.
- World Health Organization. (2010). Framework for action on interprofessional education and collaborative practice. Retrieved June 30, 2012, from http://whqlibdoc.who.int/hq/2010/WHO_HRH_HP_N_10.3_eng.pdf

Appendix A: Advisory Committee Members

Name	Affiliation	Position
<i>Dr. Alba DiCenso</i>	McMaster University School of Nursing and Clinical Epidemiology and Biostatistics	Professor
	Advanced Practice Nursing	Nursing Chair
	Ontario Training Centre in Health Services and Policy Research	Director
<i>Ms. Brenda Canitz</i>	<i>Previously:</i> BC Ministry of Health Services, Corporate Clinical Care & Professional Practice-Victoria Division	Chief Nurse Executive & Executive Director
	<i>Currently:</i> University of Victoria School of Nursing	Adjunct Professor
<i>Ms. Celia Evanson</i>	Northern Health Authority	Nurse Practitioner
<i>Mr. David Butcher</i>	<i>Previously:</i> Northern Health Authority	<i>Previously:</i> Vice President, Medicine and Clinical Programs
<i>Dr. Garey Mazowita</i>	Providence Health Authority Government Appointed Representative to General Practice Service Committee	Department Chair, Department of Family and Community Medicine
<i>Dr. Linda Sawchenko</i>	Interior Health	Regional Practice Leader, Advanced and Interprofessional Practice
	UBC Okanagan School of Nursing	Adjunct Professor
<i>Dr. Lynn Stevenson</i>	Vancouver Island Health Authority	Executive Vice President, People, Organizational Development, Practice and Chief Nurse
	UBC and University of Victoria School of Nursing	Adjunct Professor

Name	Affiliation	Position
<i>Dr. Morris Barer</i>	Centre for Health Services and Policy Research	Director
	UBC School of Population and Public Health	Professor
	UBC Division of Health Care Services and Systems, School of Population and Public Health	Division Co-Chair
<i>Dr. Roderick Hooker</i>	The Lewin Group	Senior Director
	The George Washington University, School of Public Health	Adjunct Professor
	Ontario and New Brunswick Ministry of Health	Consultant
<i>Ms. Sharon Stewart</i>	BC Ministry of Health Services, Health and Human Resources Planning, Nursing and Allied Health	Executive Director

Appendix B: Nurses (Registered) and Nurse Practitioners Regulation

The Nurses (Registered) and Nurse Practitioners Regulation of the Health Professions Act can be found at the following link:

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/23_284_2008

Appendix C: CRNBC Scope of Practice for Nurse Practitioners

The College of Registered Nurses of BC's Scope of Practice for Nurse Practitioners document came into force on October 1, 2011 in accordance with the College's duty under the Health Professions Act to serve and protect the public.

The Scope of Practice for Nurse Practitioners: Standards, Limits and Conditions can be found at the following link:

<https://www.crnbc.ca/Standards/Lists/StandardResources/688ScopeforNPs.pdf>

Appendix D: CAPA Scope of Practice and National Competency Profile for PAs

The Canadian Association of Physician Assistants has set out a Scope of Practice and National Competency Profile to communicate to the public and members of the PA profession the set of standards that all PAs are expected to acquire for entry to practice.

The CAPA Scope of Practice and National Competency Profile can be found at the following link:

http://capa-acam.ca/user_files/users/25/Media/Scope%20of%20practice%20and%20national%20competency%20profile/NCP_en_sept2009.pdf

Appendix E: PA Education Programs in Canada

School/Program	Description
Canadian Forces Medical Services School	<ul style="list-style-type: none"> • The Canadian Forces Medical Services School (CFMSS) in Borden, Ontario graduated its first class of PAs in 1984. • In 2002, the CFMSS launched a redesigned program, the Canadian Physician Assistant Program (CPAP). • The course curriculum includes 47 weeks of didactic course work and 47 weeks of supervised clinical competency rotations within a wide variety of selected civilian medical facilities throughout Canada. • Students are drawn from existing paramedical personnel within the Canadian Forces Medical Branch and are selected by merit by a military selection board. They will have previously attended several formal paramedical courses and have completed a significant number of on the job clinical training hours to maintain medical competency in their related medical fields.
McMaster University	<ul style="list-style-type: none"> • The first civilian undergraduate PA program began in 2008 at McMaster University. • Applicants must have completed two years of a university program, but there are no prerequisite courses. • The Program is a two-year course of study delivered over a 24 month period, which includes 12 months of clinical science courses and 12 months of clinical training delivered in the consecutive 12 month period. • The program has 20 seats.
University of Toronto (U of T)	<ul style="list-style-type: none"> • The U of T Faculty of Medicine's Department of Family and Community Medicine launched a PA program in 2009 in partnership with the Michener Institute for Applied Health Sciences and the Northern Ontario Medical School. • The Physician Assistant Professional Degree Program (BscPA) is a distance education program that runs for 24 months. • Students are taught in a variety of environments in northern and southern Ontario. • Applicants need a minimum equivalent to two years of university (10 full courses), at least one year's equivalent of professional health care experience, a cumulative average GPA of at least 3.0 on the Ontario Medical Schools Application Service 4.0 scale, and prerequisites of one course at the post-secondary level in each of human anatomy, chemistry and physiology. • The program has 22 seats.

School/Program	Description
University of Manitoba	<ul style="list-style-type: none"> • Admission to this two-year program requires a four year Bachelor's degree, preferably in a health sciences field, from a college or university recognized by the University of Manitoba and a minimum GPA of 3.0 in the last two full years (60 credit hours) of study. • Undergraduate courses (three credit hours each) in Human Anatomy, Human Physiology, and Biochemistry are required if they were not taken in the Bachelor's degree. Applicants must possess the cognitive, communication, sensory, motor, and social skills necessary to interview, examine, and counsel patients. • The first year is primarily a classroom environment while year two is a clinical rotation.

Appendix F: GPSC's External Evaluation of the Full Service Family Practice Incentive Program & the Practice Support Program (from the GPSC Annual report, 2010/11)

Through a competitive request for proposals process, the external consulting company Hollander Analytical Services (Victoria, BC) was awarded a \$500,000 contract to evaluate the Full Service Family Practice Incentive Program and the Practice Support Program. The evaluation was completed on June 30, 2009. Per the conditions of the original request for proposal for evaluation services, the evaluation contract was extended to March 31, 2011 in order to address specific evaluation questions in greater depth. The contract extension also totaled \$500,000.

Key Findings of the Full Service Family Practice Incentive Program (June 30, 2010)

The Practice Support Program (PSP)

- The time to get a regular appointment was reduced from 5.8 days to 2.4 days for GPs who completed the advanced access learning module.
- 89% of GPs who completed the chronic disease management learning module agreed that it had enabled them to take better care of their patients with chronic diseases.
- 93% of GPs who completed the patient self-management learning module agreed that they were comfortable helping patients to adopt self-managed care.
- 87% of GPs who completed the group medical visits learning module agreed that they were comfortable conducting group visits.

Incentive Payments

- It appears that GPs who actively use incentive payments increase their proportion of majority source of care (MSOC) patients over time. A MSOC patient is one who receives at least three services in one year, and who receives at least 50% of their services from one GP. Thus, incentive payments may serve to increase the proportion of people who have a high attachment to practice, over time.
- Data extrapolation for complex, high-need patients with diabetes and congestive heart failure for fiscal year 2007/08 indicated that an overall increase in attachment of unattached patients to a GP of just 5% could potentially result in cost avoidance of approximately \$85 million.
- As of 2007/08, the overall uptake of incentive payments for GPs with at least 50 MSOC patients was 92%. The uptake for chronic disease management incentives was 87.5%. For diabetes, congestive heart failure, and hypertension patients with higher care needs, annual costs, standardized by age and gender, were lower for patients who had received incentive-based care than those whose GP had not participated in the incentive payments.
- For the obstetric bonuses, the evaluation indicated that even though the number of general practitioners providing normal deliveries continues to decline, those general practitioners with obstetrical privileges are providing more services per practitioner.

Key Findings from the Evaluation Interviews and Surveys

- The chronic disease management incentive payments have encouraged physicians to take on patients with complicated conditions and provide better and more proactive care.
- The complex care incentive payments have encouraged physicians to be more proactive, to pay more attention to how often they see patients with certain types of conditions, to pay more attention to why and how frequently they order various tests, to look at lab results more closely, and to identify more patients who fit the billing criteria.
- The mental health incentive payments may have encouraged some physicians to take on mental health patients, and some physicians may be spending more time doing planned care.
- The maternity care incentive payments have encouraged many family physicians to stay in obstetrics. The payments may have more of an impact in urban settings than in rural or remote settings.

Key Findings from GP Surveys

GPs were divided into high, medium, and low billers of incentive payments. High billers generally responded that incentives had:

- Increased their income
- Improved the quality of care they could provide.
- Increased their professional satisfaction.

Key Findings from Patient Surveys

Patients were generally satisfied with the care they received from their GP. Barriers to access noted by patients included:

- Long wait times to see their GP
- Travel distance (in rural areas)
- Out-of-pocket costs (for chronic disease management and complex care patients).

Mental health patients generally rated most aspects of their office visits lower than other patients.

Key Findings from a Survey of Family Practice Residents

- Seventy percent of residents indicated that they were planning to go into full-service family practice.
- One-third of the surveyed residents indicated that they were not familiar with the work of the GPSC. However, residents were interested in learning more about GPSC.

Key Findings from 2009 BCMA Survey of General Practitioners

The BCMA hired Ipsos Reid to conduct a survey on its overall performance and included questions about GPSC initiatives. Survey results indicated that:

- 95% of GP respondents support the activities of GPSC, with 71% strongly supportive.
- 79% of respondents used GPSC initiatives.
- 80% indicated that GPSC initiatives have improved their professional satisfaction; this improvement is up 14% from two years ago.
- 61% had participated in the Practice Support Program; 69% indicated their experience with the Practice Support Program was positive.
- 86% of respondents supported the continuation of the Practice Support Program.