

From: [Murray, Heather HLTH:EX](#) on behalf of [Patterson, Ted HLTH:EX](#)
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Subject: FW: NP Review
Date: Tuesday, August 2, 2016 11:04:32 AM
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[1041958 IBN ADM - NP Action Plan recommendations.docx](#)
Importance: High

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Sent: Friday, May 27, 2016 10:26 AM
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Cc: Godfrey, Debbie HLTH:EX; Stevenson, Lynn HLTH:EX; Brown, Stephen R HLTH:EX; Murray, Heather HLTH:EX; Brown, Kevin HLTH:EX
Subject: NP Review
Importance: High

Martyn,

As requested, attached are a briefing note and the consultant's NP review document. We would welcome the opportunity to speak with the Minister about the BN when he has time over the next few weeks. Let me know if you need anything else before the event next week.

Thanks,

T

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From: [Murray, Heather HLTH:EX](#)
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Subject: FW: HSPRSN - Health Human Resources - Innovations for Evaluation - End of Award Notification
Date: Tuesday, August 2, 2016 11:52:40 AM
Attachments: [2016 0120 It SANGSTER re End of Award Notification.pdf](#)
[Evaluation and integration of NPs Final Report1.pdf](#)

From: Murray, Heather HLTH:EX On Behalf Of Patterson, Ted HLTH:EX
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Subject: FW: HSPRSN - Health Human Resources - Innovations for Evaluation - End of Award Notification

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Cc: Brown, Kevin HLTH:EX; Patterson, Ted HLTH:EX; Stevenson, Lynn HLTH:EX
Subject: FW: HSPRSN - Health Human Resources - Innovations for Evaluation - End of Award Notification

Good morning everyone, please find attached the final, accepted copy of our research report and the end of reward notification from the Michael Smith Foundation. Currently the report is not on the MSFHR's website but it will be there shortly. In the mean time I have permission to provide copies and I wanted all of you to have one.

Research team members thank you for all of your efforts to make this final report possible. I also want to thank Lynn, Kevin and Ted in the MOH for your support and being open to hearing our results as we progressed through the project. My hope is that this evidence will support your efforts to continue to integrate nurse practitioners into the BC healthcare system. Kindest regards to all, Esther

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Nurse Practitioner Integration Research

From: Michelle Ng [<mailto:mng@msfhr.org>]

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To: Esther Sangster-Gormley

Cc: Ceciline Goh; Cindy Soules; Sandy Bligh; AVP Research Operations - Rachael Scarth; Debra Anderson

Subject: HSPRSN - Health Human Resources - Innovations for Evaluation - End of Award Notification

Dear Dr. Sangster-Gormley,

On behalf of the Michael Smith Foundation for Health Research, I wish to inform you that the administrative activities for your Health Services and Policy Research Support Network (HSPRSN) – Health Human Resources – Innovations for Evaluation award entitled: ‘Evaluation of the Integration of Nurse Practitioners into the BC Healthcare System’ (# PJ HHR 00004 (10-1)), are now closed. Please find attached the End-of-Award Notification for your reference. MSFHR is pleased to have contributed towards your research and wishes you much success with your future endeavours.

Kind regards,

Michelle

Michelle Ng | MSc

Research Programs Coordinator (Targeted & Provincial Initiatives)

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An Evaluation of the Integration of Nurse Practitioners into the British Columbia Healthcare System

Report 2015



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Acknowledgements

The NP Integration Research (NPIR) Team would like to acknowledge the Michael Smith Foundation for Health Research for providing funding for this project. We would also like to thank all participants including NPs, managers, co-workers and patients. Without you this research would have not been possible.

We also want recognize and thank our research assistants; their support and contributions were invaluable.

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Executive Summary

The nurse practitioner (NP) role was implemented in British Columbia (BC) in 2005; however NPs have been practicing in North America for 50 years. Evidence has consistently demonstrated that NPs provide safe, cost-effective care. As well, patients are satisfied with the care, they trust NPs, and feel that NPs take their problems seriously. Researchers have consistently found that NPs provide patient-centred care, spend time with patients, and emphasize health promotion and chronic disease self-care, and when compared to physicians, the physical outcomes of care are similar.

Although there was considerable evidence of the impact of NPs elsewhere, there was a paucity of data specific to the BC context. Thus, this study was undertaken to understand the value of adding NPs to the BC healthcare system. We used a multi-phase, mixed methods design for this project that took place over three years.

Our findings indicate that NPs spend the majority of their time in direct care activities, most notably assessing, diagnosing and managing minor and major acute illnesses and chronic conditions. They order diagnostic tests, prescribe medications, and provide health education. They are geographically disbursed throughout the Province and are well represented in rural and remote communities. The majority are practicing in primary care settings and caring for high needs populations with complex health conditions and multiple social issues such as First Nations people in remote settings, homeless, frail seniors, and new immigrants.

NPs are effectively collaborating with co-workers and the structure of relationships between NPs and co-workers, including physicians appears to be supportive of NP role integration. The benefits of adding an NP to the team include having another provider to increase access for patients and the chance for other team members to learn from the NP.

Patients are satisfied with the care they receive from NPs. Access includes care that is comprehensive, continuous, and convenient. As a result of care provided by NPs, patients change how they care for themselves and manage their chronic health conditions. This is important to the healthcare system because increased access and careful management of chronic conditions, such as diabetes or hypertension, can prevent costly long-term complications.

NPs add value to the healthcare system by increasing access to healthcare for patients. The care is comprehensive and convenient, and in locations with frequent turnover of physicians the NP provides stability for patients and co-workers.

While integration is occurring, unfortunately, significant barriers continue to exist almost 10 years after the role was first introduced. These barriers will require attention by government and employers of NPs and include: (1) some administrators and physicians are inadequately knowledgeable about NP role and, thus are unsupportive, (2) legislation continues to restrict NP practice, and (3) a model of sustained funding has not been secured.

Introduction: Project Overview

The Michael Smith Foundation for Health Research's (MSFHR) request for proposals for projects investigating practice innovations created an opportunity to evaluate the integration of NPs into the BC healthcare system. Drs. Esther Sangster-Gormley and Rita Schreiber, University of Victoria's School of Nursing faculty members and Ms. Brenda Canitz, at the time from the Ministry of Health, collaborated to develop the successful proposal for an academic/practice focused study of NP integration that was submitted to the MSFHR. Our research team included NPs, university based researchers, a member of the British Columbia Nurse Practitioner Association, a family physician, an NP Lead who had been involved in implementing the NP role, a representative of the Ministry of Health and research assistants.

The nature of the project and the types of participants we planned to recruit necessitated a review and approval from the following ethics review boards: University of Victoria, University of British Columbia (UBC), Northern Health Authority, Fraser Health Authority, Vancouver Coastal Health Authority, Provincial Health Authority, Providence Health Care, Interior Health Authority, Island Health (formerly Vancouver Island Health Authority), and The Lodge at Broadmead.

Once we received ethics approval for the research, we began data collection. First, with the NP practice pattern survey and focus groups. A total of 418 people participated in the project. We used descriptive statistics to analyze quantitative data and NVivo-10 software for qualitative data collected from the focus groups, open ended survey questions, and interviews.

We triangulated findings from the surveys, focus groups and interviews to determine themes and strength of evidence for evaluating the integration of the NP role into the BC healthcare system.

Project Context and Description

Since 2005, when legislation enabling the NP role was enacted, integrating NPs into clinical practice has been a priority in BC. As of 2011 \$62.6 million had been provided to support and resource NPs; however, no evaluation of their impact on the BC health system had been conducted. At the time the proposal for this study was submitted there was strong desire by policy makers to begin to determine the changes that occur for patients and the implications to the healthcare system when NPs become part of the care process, as well as assessing the impact of adding an NP on the functioning of collaborative healthcare teams. There was also a wish to continue to monitor the practice settings and scope of practice of NPs working in BC.

Although the NP role is relatively new to BC, it has existed in other Canadian provinces and the United States for almost 50 years. The role has been studied more than any other in healthcare¹. The

Evaluation and Integration of NPs

evidence accumulated over the past 40 years has consistently demonstrated that NPs provide safe, cost-effective care^{2,3,4,5,6}. Researchers consistently find that patients are satisfied with the care received from NPs, trust NPs^{7,8} feel that NPs take their problems seriously and discuss their concerns⁹, and believe NP's have expert communication skills and are approachable¹⁰. Sidani, et al.¹¹ found that patients cared for by NPs in acute care were satisfied with their care, and had higher physical and social functioning than those cared for by other providers. Others have compared NPs to physicians. These researchers found that NPs had longer consultation times and patients received more information¹² and counseling¹³ than those patients receiving care from physicians. In addition to providing patients with more counseling, NPs placed more emphasis on health promotion and self-care management of chronic and acute conditions than did their physician colleagues^{14,15,16}. Researchers have consistently found that NPs provide patient-centred care, spend time with patients, and emphasize health promotion and chronic disease self-care and, when compared to physicians, the physical outcomes of care are similar^{3,12,14,17,18}.

Although there is considerable evidence of the impact of NPs elsewhere, there was a paucity of data specific to the BC context. What little published BC data that existed could not adequately answer the project's research questions. Thus, we wanted to understand whether or not: the value of adding NPs to the BC healthcare system matched what had been demonstrated over the last 40 years, that is, were NPs having a positive impact on collaborative teams, and were they functioning within the Province as expected^{19,20}?

At the time this study began (2011) there were 198 registered NPs practicing in BC²¹. Early expectations for the role included increasing access to healthcare, expanding healthcare options, and filling gaps in the provincial healthcare system²². It was envisioned that these expectations would be accomplished by NPs collaborating and partnering with physicians and other healthcare providers to manage common acute and chronic illnesses²³. As well, NPs were expected to provide safe, competent, acceptable patient care, and appropriately consult and refer to family physicians, medical specialists and other health professionals as indicated²¹.

Hence this study was undertaken to answer the following broad questions:

1. What were the practice settings and scope of practice of NPs working in BC?
2. What was the impact of adding NPs on the functioning of collaborative healthcare teams?
3. What changes resulted for patients and what were the implications for the healthcare system when NPs became part of the care process?

In this study we evaluated a practice innovation, the integration of NPs into the BC healthcare system. The study supported the Ministry of Health's strategic focus on primary and community

care, clinical care management and patient safety, inter-professional practice, and optimization of health human resources. Because the evaluation involved evaluating a complex change in the health care system, the introduction of a new role, the researchers used a mixed methods design carried out over three years (February 2011-February 2014).

Research Activities

In this section we provide a brief description of the research activities conducted throughout the study. The work was aimed at gaining an understanding of NP practice, patients' use of NPs as health care providers, and co-workers' interactions with this new health professional.

Encounter Reporting

At the beginning of the study we planned to use three methods to obtain NP practice pattern data. One was encounter records, another was the NP practice pattern survey, and the final method was through focus groups. At the beginning of the study there were scant government or other data sources on NPs' contribution to healthcare in BC, and no ongoing tracking of NP practice patterns. In 2005 when the NP role was implemented, there was an expectation that NPs would submit encounter records to document their services²⁴. When submitted to the Medical Services Plan (MSP), the encounter records could provide a means of: tracking patient data for administrative purposes; assisting in evaluating practice patterns; and allowing for payment to specialists, GPs, and for diagnostic services. Considerable effort went into developing and revising NP encounter codes, which were intended to be equivalent to medical billing claims without a dollar value attached.

We were aware that an unknown number of NPs had been submitting encounter records to the MSP, but according to the MOH, it had not been examined. For that reason, our plan was to obtain MOH data sets of NP encounter records to explore what information might be gleaned from the data.

An offshoot of our attempts to obtain NP encounter records was the NP Encounter Code Working Group initiated by the MOH in 2012. The Working Group's mandate was to revise the encounter codes and set in place a reporting mechanism all NPs would use to submit encounter records to MSP. The Working Group was co-chaired by ESG, PI and KB co-I on behalf of the MOH. After several meetings, the Working Group submitted a revised list of encounter codes more reflective of NP practice and updated resources for NPs on the MSP website. The MOH currently expects all NPs to submit encounter records to MSP. Taken together these changes will streamline processes for obtaining and analysing encounter data in the future.

Practice Pattern Survey

We surveyed NPs in BC using the NP Practice Pattern Survey²⁵ twice, once in Year 1 (2011) and again in Year 3 (2013). The purpose of the survey was to provide evidence of how NPs in BC were practicing. We were interested in learning about the populations for whom NPs provide care, the health conditions they most frequently diagnose and treat, and their collaborative relationships, as well as their job satisfaction and other general aspects of their practice activities. With permission from Martin-Misener et al., we modified the survey to include questions about chronic disease management and EMR usage (Appendix A). A copy of the *Survey of Nurse Practitioner Practice Patterns in BC* submitted to the MOH in 2014 is found in Appendix B. In addition to the practice pattern survey, we used focus groups with NPs, provincial chief nursing officers, and NP Leads to discuss the types of NP data collected by health authorities, such as encounter codes, ICD9 codes, and if any practice pattern data were submitted to the MOH.

Patient Perspectives

The research team developed a patient survey (Appendix C) to learn more about patients and their experiences with NPs providing their care. The survey included; questions related to patients' perceptions of their health, three different scales, and open ended questions. Scales incorporated into the survey included: 1) the *Patient Satisfaction with Nurse Practitioner Care Scale*²⁶, 2) The *Medical Outcomes Study [MOS SF-12]*²⁷, and 3) the *Sense of Coherence Scale – short form, SOC -13*²⁸. The validated Patient Satisfaction Scale measures three areas of patient satisfaction: comprehensiveness (6 items), inattentiveness (6 items), and caring (3 items)²⁶. Findings from the MOS SF-12 or the SOC-13 were inconclusive and could not be attributed to NP care, for that reason they are not included in this report.

Co-worker Collaboration

Along with learning from patients and NPs, we wanted to obtain co-workers' perspectives on collaborating with NPs. We used two methods of data collection to accomplish this, the co-worker survey and interviews conducted during case studies. We obtained permission and adapted the Primary Care Physician Survey—Role of Nurse Practitioners, used in the evaluation of NP role integration in Ontario²⁹ to survey co-workers of NPs. The Co-worker Survey included questions related to physician-NP and co-worker-NP relationships, facilitators and barriers to integration, and co-worker satisfaction in collaborating with an NP (Appendix D).

Methods

In this section we provide a brief overview of how this multi-phase, mixed methods study unfolded, including the types of participants involved and the research methods used. A more detailed description of the study has been previously published³⁰.

Participants

Participants included NPs, patients, co-workers (including physician, nurses, social workers, and NP leads) as well as their managers (chief nursing officers). The phases of the study, data collection methods and participants (n=418) are displayed in Table 1 (below).

Table 1. Data Collection Methods and Participations

Phase (Year)	Data Collection	Participants (number)	Total Participants
1	PP* Survey	NPs	31
	3 Focus Groups	NPs (9) Chief Nursing Officers (7) NP leads (4)	20
2	Patient Survey	Patients of NPs	148
	1 Focus Group	NPs	13
	Co-worker Survey	Coworkers of NPs: · Administrator (3) (e.g. director, manager) · **MOA (9) · ***Nurses (8) · Non-regulated professional (4) (e.g. care worker, child and youth worker) · Other health professionals (5) (social workers, pharmacists, other NPs)	38
	Interviews (EMR)	NPs	15
3	Patient Interviews	Patients of NPs	20
	PP Survey	NPs (96)	96
	3 Case Studies (one rural and two urban settings)	NPs (3) Patients of NPs (4) Coworkers of NPs (30): · Physician (4) · MOA (5) · Nurses (4) · Other health professionals (7) · Non-regulated professional (3) · Administrator (7)	37
	Total participants for project		418

*PP Survey = Practice Patterns Survey; **MOA = Medical Office Assistant; NP = Nurse Practitioner

***Nurse = Registered Nurse and Licenced Practical Nurse

[Adapted from Murphy et al., 2014³¹]

Research Design

A multi-phase, mixed methods design places equal priority on quantitative and qualitative methods, both sequential and concurrent timing of the various methods, and the option of integrating the different methods throughout the study³². We selected this design because; it has been used effectively in multi-year studies with many objectives and program evaluation³². Similarly, our research took place over a three year period and involved investigating the complexities associated with integrating a new role and evaluating the integration of that role into the BC healthcare system. As a result, the design proved to be both robust and flexible in answering the research questions associated with this work³⁰.

Data Collection Methods

Qualitative methods employed included interviews, focus groups and case studies. Quantitative methods included surveys and secondary analysis of provincial data. We conducted qualitative interviews with patients and NPs. We asked patients about their experiences with an NP as a healthcare provider. We asked NP's about their use of electronic health records in the context of their practice. Focus groups were conducted with NP's, NP Leads¹, and Chief Nursing Officers. NP focus groups were aimed at learning more about how NP's practiced and recorded their practice. Focus groups with Chief Nursing Officers and NP Leads collected data about how the NP role was being integrated in their respective regional health authorities and NP data submitted to the MOH. Case study data provided insights into how the NP role was integrated into the healthcare system.

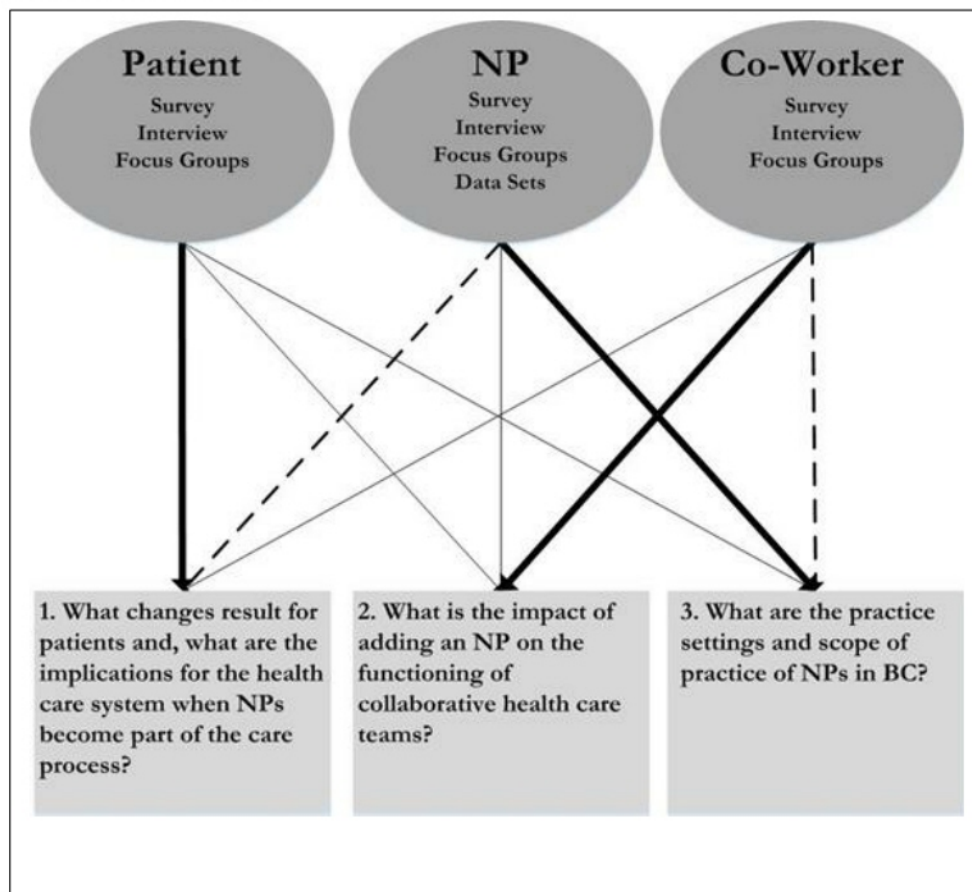
Quantitative data, namely survey data gathered from NP's, co-workers and patients, and provincial NP encounter records provided additional insights into the integration of the NP role into the healthcare system. NP, co-worker and patient surveys illuminated many aspects of NP practice and provided information about the types of activities NPs engaged in and the impact of these activities from co-workers' and patients' perspectives. The focus of the analyses of provincial data was on the types of patients that were managed by NP's. For more information about the outcomes of the analyses of this work see the results section.

After completing the collection of the research data in Year 3 of the study, we interpreted the results in terms of the overall study questions and then triangulated the data. This process involved "combinations and comparisons of multiple data sources, data collection and analysis procedures, research methods, investigators, and/or inferences that occur at the end of a study"³³ (p. 717). Figure 2 represents our use of data triangulation to answer the research questions. At the top of the Figure, the three participant perspectives and data collections methods are presented: the patient,

¹ The people in each health authority responsible for NP implementation and support.

NP, and co-worker. The lines connecting the perspectives to the research questions have varying weights, depending on their strength in addressing a research question.

Figure 1. Data Triangulation.



Weight of role in answering research question:

- Minor
- - - - - Moderate
- Major

The weight of each line corresponds to the extent to which a perspective addresses the research questions. For example, the NP perspective moderately addressed research question 1, depicted by the “moderate” weighted line.

Figure derived from Sangster-Gormley et al., 2015³⁰. Reprinted with permission.

In summary we applied a multi-phase, mixed methods approach to this 3-year research project. The researchers employed both fixed and emergent research methods to address the research questions. Finally, after the research was completed the data were triangulated³⁰. Next we discuss the study’s results.

Results

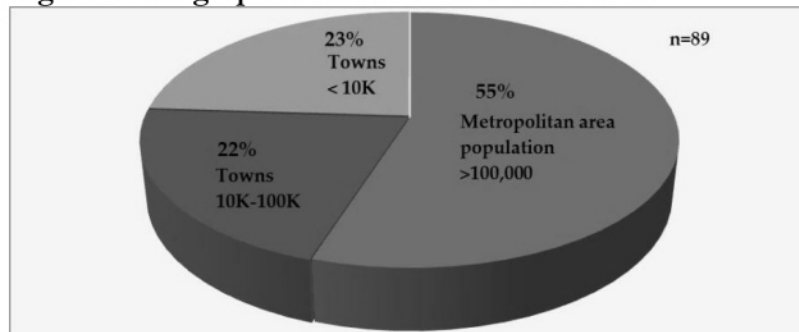
We present the results of our study in three sections. First we describe the practice pattern and activities of NPs, next we elaborate on the impact of adding an NP to healthcare teams, and finally we state the changes for patients and the healthcare system as a result of hiring an NP.

Practice Settings and Activities of NPs

In this section we provide an overview of our findings from the 2013 practice pattern survey and compare the 2013 findings to those of 2011. The complete report was submitted to the Ministry of Health in January 2014 and is found in Appendix B. Data were collected from June 2013 through November 2013. A total of 96 NPs returned the survey, 90 were practicing in BC and 6 were not currently practicing as NPs in BC. Our sample represented 38% of NPs registered in BC in 2014, providing a three-fold increase in the number of participants from 2011, when just 37 NPs responded. Ten surveys were incomplete, however we were able to use some of the data, and the six NPs not practicing in BC completed only demographic information and questions related to why they were not practicing in BC. Not all NPs responded to all of the questions on the survey.

All participants held a Masters of Nursing degree, the majority were female, and their average age was 46. Participants had practiced as a registered nurse an average of 20 years before becoming an NP, the mean length of time as an NP was five years. The majority of NPs were employed full-time by one of the regional health authorities. NP participants were geographically dispersed in the Province as illustrated in Figure 3, below.

Figure 2. Geographic Distribution of NPs in BC



We compared the geographic distribution of NPs to the population distribution of British Columbians, because we expected that NPs would be uniformly distributed and represented in the same percentages as the rest of the population. However, according to the 2011 BC Stats population estimates, 72% of British Columbians live in metropolitan areas with populations more than 100,000; 15% live in towns between 10,000 and 100,000; and 13% live in towns of less than 10,000. Therefore, it appears that the percentage of NPs working outside of major metropolitan areas is

17% larger than expected. Furthermore, the number of NPs practicing in large urban areas (more than 100,000) decreased from 65% in 2011 to 55% in 2013. The percentage of NPs practicing in rural and remote areas increased by 10% since 2011, when 35% of NPs worked outside of large metropolitan centers. This shift is an indication that more NPs are being hired into smaller, more rural/remote communities, which is what was hoped for in 2005 when implementation began.

Practice Settings

The majority of NP participants practiced in community based settings, as shown in Table 2. This is consistent with findings from the 2011 practice pattern survey. In most settings, there was only one NP.

Table 2. Practice Settings

Practice Settings*	2013 n=	2011 n=
Community/Primary Health Care Centre	50	15
Ambulatory Clinic/Outpatient Department	13	9
Physician Office	10	7
Aboriginal Health Centre	10	2
Hospital in-patient	10	3
Long-term Care Facility/Residential Care	7	5
Emergency Department	5	0
Public Health	5	1
Home Care	3	2
Outpost Nursing Health Centre	3	1
Other	19	8

*Multiple responses allowed

“Other” settings included outreach clinics, travel medicine, mental health and addictions rehabilitation centres, refugee clinics and hospital out-patient clinics.

NPs cared for frail seniors in their homes or residential care facilities and practiced in youth clinics and homeless shelters, and were caring for a variety of populations such as First Nations, homeless, frail seniors, and new immigrants. The results of the 2013 survey indicate that, when compared to the 2011 survey, more NPs were working with First Nations or Inuit (35 vs. 5), homeless (28 vs. 6), seniors (20 vs. 4), and new immigrants (18 vs. 3). This is congruent with groups identified by the MOH as high needs populations. These are also populations with complex health conditions and multiple social issues that affect their health. The patient populations served by NPs in practice are summarized in Table 3, below.

Table 3. Patient Populations Served

Population*	2013 n=	2011 n=
All ages across the lifespan	36	9
First Nations or Inuit	35	5
Homeless/street involved patients	28	6
Mainly adults	23	13
Patients with one specific condition	22	7
Mainly seniors	20	4
Newcomers (immigrants) to Canada	18	3
Mainly Women	10	2
Mainly children or youth	8	3
Other	16	6

*Multiple responses allowed

Practice Activities

NP participants were spending the majority of their time in direct care activities, most notably assessing, diagnosing and managing acute and chronic illnesses and mental health issues. They were ordering diagnostic tests, prescribing medications, providing health education and promoting preventive health practices. They were also engaged in community outreach such as making home visits, providing youth and outreach clinics, and providing care in local shelters. When not providing direct patient care, NP's non-clinical activities included educating others, such as NP and medical students, professional development and community outreach. Outreach activities included advocating for marginalized or underserved populations, building relationships with community resource groups, and developing specialized programs/clinics for patients (see Appendix B for details).

We linked data from the NP encounter records to findings from the practice pattern survey. Encounter code data indicated that NPs cared for patients of all ages, however the majority of patients were 60 years of age and older; provided care in an office setting; and the most common health problems included hypertension, diabetes, upper respiratory infections and mental health issues. During patient encounters NPs provided education and assisted patients to manage their chronic physical and mental health conditions. A more detailed explanation of the results obtained from encounter records has been published and may be referred to for additional information ³⁴.

Resources and Supports for NP Practice

NPs were asked to rate their satisfaction with resources and supports provided by their employer on a scale of 1 to 6, where 1 represented very dissatisfied and 6 very satisfied. NPs were satisfied with the support they received from physician colleagues, their direct supervisor, and clinical examination space. They were most satisfied with support from other health care providers. They were least satisfied with data management support and limitations imposed by MOH, such as inability to complete forms, legislation, and encounter reporting. Their dissatisfaction could be because most indicated they had experienced problems carrying out their practice responsibilities as a result of restrictive legislation. This issue was identified as problematic by both NPs and patients, as is discussed below.

Eighty percent (n=70) of NP participants in 2013, compared to 97% (n=30) in 2011, indicated they experienced problems providing patient care as a result of restrictive legislation that did not recognize NPs as authorized providers or allow them to complete and sign various governmental forms. These forms include such things as driver's license physicals, Worksafe BC, ICBC, various Revenue Canada forms, do-not-resuscitate forms, disability forms and insurance claims. NP participants indicated that their inability to prescribe controlled drugs and substances for patients experiencing pain and some mental health conditions was a barrier to practice. Similarly, patients, when surveyed, identified the same issues as problematic. In spite of the enactment of Bill 10, the Nurse Practitioners Statutes Amendment Act, in August 2012, legislative changes that would allow NPs to complete various forms and practice to their full, legislated scope of practice remain pending.

To summarize, NPs are geographically disbursed throughout the Province and are well represented in rural and remote communities. The majority are practicing in community based settings, again aligning with the MOH's expectation that NPs' practice be based in primary care. They are caring for groups identified by the MOH as high needs populations with complex health conditions and multiple social issues such as First Nations people in remote settings, homeless, frail seniors, and new immigrants. Finally, with the exception data management and legislation, NPs are satisfied with their practice supports and resources. This is significant because a supportive environment impacts an NP's ability to provide safe and effective patient care ³⁵.

Impact of Adding an NP on the Functioning of Collaborative Healthcare Teams

We primarily used data from case studies and the co-worker survey to learn how co-workers perceived the impact of adding an NP to the functioning of their healthcare team.

For the purpose of this study co-workers were anyone who worked directly with an NP. In total, 68 co-workers representing five health authorities in BC participated in the survey and case study portion of this research. Participants had worked with an NP for a mean of 2.6 years (range 3 weeks to 8 years). Categories of co-workers are displayed in Table 4. The number of potential participants for the surveys and case studies was not collected, thus a response rate is not possible and there is a possibility some participants completed the survey and were interviewed.

Table 4. Co-worker Participants

Method	Category of Co-worker					
	Administrator	Nurses+	Physician	MOA++	Non-regulated professional*	Other Health Professional**
Survey (n=38)	3	8	9	9	4	5
Case Studies (n=30)	7	4	4	5	3	7
Total	10	12	13	14	7	12

+ RNs and LPNs; ++ medical office assistant; *care worker, child and youth worker **social worker, pharmacist, other NP

Combining the results of the co-worker survey and interviews we identified four themes: expectations for the role, facilitators and barriers to role integration, interdisciplinary collaboration, and appropriateness of NP practice. We connected these findings with data from the NP practice pattern survey.

Expectations of NPs

Using the survey we asked co-worker participants to describe their expectations of the NP role. Prior to NPs beginning work all co-workers expected NPs to be a member of the healthcare team. Administrators expected NPs to increase access to care for underserved populations and be a resource person for nurses and other health professional staff. Nurses and MOAs expected NPs to care for patients, most notably in First Nations communities. Physicians expected NPs to practice independently in a GP-like role, and initiate and assume responsibility for their own practice.

As a follow-up to the question about expectations of NPs', participants were asked whether NPs were performing, and the majority answered "yes." One physician commented that the NP was exceeding expectations by helping to manage the office setting.

All co-workers reported that collaboration with NPs was very effective and team members accepted the NPs. Details of co-workers' expectations of NPs may be found in Sangster-Gormley et al., 2015³⁶. In addition to commenting on expectations, co-workers were asked to identify facilitators and barriers to NP integration.

Facilitators and Barriers to Role Integration

Facilitators. All co-workers listed understanding and acceptance of the role within or outside of the practice setting, including patient acceptance, as facilitative. With the exception of physicians, all co-workers indicated the structure of the working relationship between physicians and/or co-workers as a facilitator of role integration. Other health professionals and physicians included the NP's knowledge and abilities as additional facilitators.

Equally important, in the practice pattern survey, NP participants identified support from collaborating physicians as a facilitator. They also identified support from their employer and the local community as facilitative. Several NP participants mentioned the success and hard work of other NPs in their practice environments and across the province as being directly instrumental to their success. Finally, NP participants identified that personal attributes, passion, and hard work by the NP him/herself facilitated the implementation of their roles.

Taken together all participants identified acceptance/support from physicians, employers and patients/community as essential to NP role integration. While physician support and acceptance was seen as a facilitator, lack of support was identified as a barrier.

Barriers. All co-workers identified the structure of the working relationship between NPs and physicians, and acceptance of the role by others within and outside of the practice, as barriers to effective integration. In addition, adequate space, on-going funding for the position and NPs' practice styles were indicated as additional barriers.

Data from the NP practice pattern survey identified inadequate knowledge or understanding of the NP role by managers, physicians, and other staff as a barrier to practice. NP participants also identified lack of managerial and physician support, legislative barriers, and funding issues as other barriers to role implementation. Unfortunately NPs identified similar barriers in our 2011 survey, indicating that issues relating to support, funding and legislation continue to encumber NPs and their ability to care for patients. Because barriers to practice are often the opposite of facilitators, in the right environment, support, adequate funding, and non-restrictive legislation facilitate NP practice.

Interestingly, most co-workers identified understanding and acceptance of the role as either facilitators or barriers. When asked how well the role was understood and accepted by others, only

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administrators indicated that the role was poorly understood and not well accepted in their practice setting. One administrator commented:

There are a few nurses and physicians that do not think the NP role is needed or are resistant to the NP role because they think only MDs should practice medicine.

Others commented that the NP's knowledge, approachability and willingness to discuss the role with other team members contributed to co-workers' understanding and acceptance of the role. NP participants who identified personal attributes and hard work resulted in successful implementation of their roles repeated these comments.

The facilitators and barriers to NP integration identified in this study are similar to those determined previously^{36,37}. As well, lack of understanding of the role results in confusion and uncertainty of how the NP contributes to patient care. It also impedes the NP's ability to contribute to the team or patient care delivery³⁸. Collectively, our findings emphasize the importance of acceptance and understanding of the role by others, and equally important, the structure of the NP-physician working relationship. Consequently, working together collaboratively is vital.

Interdisciplinary Collaboration

Inter-professional, or interdisciplinary, collaboration is recognized as an important means of improving patient care. Health professionals working collegially as a team in a trusting, respectful environment in which open communications occur naturally indicates collaboration³⁹. In collaborative environments everyone shares their knowledge and expertise freely thus allowing problem solving and decision making to occur naturally³⁹. When co-workers were asked to describe their interaction with the NP, the majority identified that they worked collaboratively with one or more NPs on a team. Participants remarked that a supportive working environment, where new practices were embraced, contributed to effective collaboration with NPs. Similarly, co-workers commented positively on how NPs' knowledge, approachability, and communication skills contributed to their trust in them. Co-workers indicated that they worked collaboratively with NPs to attend to patient care issues such as wound care. On a scale of 0 to 10, with 10 representing extremely effective, the average for all categories of co-workers was 9, indicating that they perceived collaboration and consultation with the NP to be extremely effective. One co-worker described the NP as *very competent in her role, a team player and has excellent communication skills with staff, residents and family members*³⁶.

The co-worker survey was helpful in providing evidence of collaboration, and patients who responded to the patient survey and in interviews provided further evidence. Comments from patients indicated that they were aware their NP collaborated, for example with specialist physicians, pharmacists or nutritionists, or by talking about care issues with the physician in the office.

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In the 2013 practice pattern survey, NPs indicated they practiced in settings with interdisciplinary team members, most often medical office assistants, physicians, and registered nurses. Other professionals co-located with NPs included pharmacists, dietitians, social workers, care aides, and so forth (Appendix B). The majority of NP participants worked in a direct relationship with one or more physicians and were satisfied with these relationships. This is consistent with the results in the 2011 survey. Comments from NPs indicated that, in some situations, physicians had limited time for collaboration, and in other situations physicians' understanding of the NP role was insufficient, both of which could lead to dissatisfaction with the relationship.

From the same NP practice pattern survey we were able to summarize that the majority of NPs referred patients to specialist physicians and to a variety of other health care professionals. In comments taken from the survey, NP participants indicated that specialist physicians sometimes would not accept their referrals, most commonly because of specialists' incorrect belief they would not receive payment for these referrals. Several NPs commented that, although the referrals were accepted, sometimes the results were returned to the GP in the office instead of the NP, creating some confusion. NPs also referred patients to an array of health programs including diabetes programs, home care, mental health and addiction services, and community based self-help programs. One patient commented on referrals to other providers by acknowledging that if the NP *encounters anything beyond her capability she refers me to someone who can help.*

These findings were also identified in the co-worker survey, where all co-workers indicated collaborating with NPs was very effective and team members accepted NPs. Although the structure of the NP-MD relationship was a potential barrier, in this study the structure of relationships between NPs and co-workers, including physicians appeared to be supportive of NP role integration.

Appropriateness of NP Practice

Participants of the co-worker survey were queried for their perceptions as to whether or not NPs were duplicating the work of others. The majority (89%) indicated there was no inappropriate duplication of work between themselves and NPs. Some co-workers suggested increasing the number of NPs to increase access to care and free up physicians to attend to patients with more complex conditions ³⁰.

In summary, the impact of adding an NP to the healthcare teams involved in this study was beneficial. Co-workers were satisfied with their relationships with the NP, the team functioned collaboratively, and NPs were perceived to be an added benefit ³⁰. Likewise, NPs were satisfied with the collaborative relationships they had established with other healthcare providers. The significance of adding an NP to the team included having another provider to increase access for patients, and the chance for other team members to learn from the NP. Another key benefit was collegial relationships between the NP and other team members. Patients recognized and commented on the

willingness of NPs to collaborate with other providers when managing their care. These findings are similar to that of other researchers who found that NPs contribute to teams functioning efficiently and effectively ⁴⁰ and increase other professional staff's knowledge and skills ³⁶.

Although co-workers were satisfied with their working relationship and perceived that NPs were meeting role expectations, some physicians expected NPs to work independently in a GP-like role by assuming responsibility and managing their own practice. This could be a reasonable expectation if experienced NPs are hired, but also has the potential to be problematic. Admittedly NPs are hired into positions and expected to be another provider and team member, however if NPs are recent graduates the first year after graduation is a time of transition and most likely NPs will need some mentoring and support ^{41,42}. Given that co-workers indicated the structure of the NP-MD relationship influences NP integration, if a physician is working with a newly registered NP in need of mentoring and support, this should be clarified to, and accepted by, the physician and NP before the NP is hired into the position.

Changes for Patients and Implications for the Healthcare System

As mentioned earlier, according to results from the NP practice pattern survey, NP participants perceived that, as a result of being part of the care process, patients and the healthcare system had increased access to care, chronic diseases were managed, and there was reduced use of acute and/or emergency departments (Appendix B). We used surveys of patients cared for by NPs, co-workers of NPs (including physicians), and interviews conducted in our case studies to corroborate findings from the practice pattern survey. Although we merged data from all data sources, the patient surveys and interviews were the primary source of data used to identify changes for patients. Patient demographics are represented in Table 5 below.

Table 5. Patient Demographics

Patient Survey	Gender	Mean Age	Age Range	Number of Co-morbidities	Frequency of Office Visits	Length of time patient of NP
n=148	117 Female 31 Male	63 years	16-91	0-6 (average 2)	Every 3-6 months	6 months to 8 years

Analysis of the converged data resulted in identification of four themes. The first theme is increased access to care, which includes comprehensive care, continuity of care, and convenient care. Other themes are patient centred care, patient behavioural changes, and changes to the healthcare system.

Increased Access to Care

All patient data collected indicated that NPs increased access to care, patients were satisfied with the care they received, and made changes in how they cared for themselves and managed their chronic health conditions. Increasing access to care was one of the Ministry of Health's mandates when the NP role was first funded in 2005⁴³. Access included comprehensive care, continuity of care, and convenience of care. Participants also indicated that part of increased access was that NPs connected them with community resources.

Comprehensive care. Co-workers and patients described comprehensive care as care that met all patients' needs, not just a single physical problem. Co-workers indicated that NPs spent time working closely with patients looking for solutions to health problems, and involving them in care decisions. Patients mentioned NPs' ability to prescribe, refer to specialists, review x-ray reports, order blood work, and provide treatments were all valuable. One patient reported on the patient survey: *Just about any medical concern I have can be taken care of with the NP.*

Patients mentioned that the NP followed up with phone calls, paper work and forms were filled out promptly, referred to other providers, and monitored medications. A patient related:

My NP listened to me every visit ... she also diagnosed acute appendicitis, even though I did not fit the profile. She made the necessary arrangements to make sure my time in emergency was short and then followed up after surgery.... This situation could have been life threatening.

Patients commented that NPs' assessments were comprehensive. They commented on how NPs took the time to listen and explain health issues. As a result patients felt well cared for and understood by NPs. As one patient wrote, *she takes me seriously even though I am 81*. Another patient described the NP as *current with treatment options, actually listens to what I have to say, is not arrogant or dismissive in any way, and makes a point of explaining test results and treatment options*.

Additionally, patients indicated that the health teaching NPs provided helped them and their families to make lifestyle changes. For example, a patient commented that an NP used the "Eat Well Program" to help the entire community. Patients liked that NPs involved them in their care and that their input was valued by NPs. Another patient described the comprehensive care provided by the NP as:

I am the husband and care giver of the "Patient" of the content of this questionnaire. I was present at all the sessions when the NP interviewed the patient and also attended the session with the Psychiatrist. I found the NP to be a very professional, caring person. Her manner and style of interviewing were exceptional. She brought respect and empathy, as well as knowledge of her work. Her interviews of the tests around mood and memory were

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thoughtful and respectful. Some of the interviews lasted an hour (in contrast to the three minutes in the doctor's office). She quickly built up a relationship with the patient and was sensitive in discussing such topics as suicide, which was evident in previous speech by the patient. I believe this is a very important and essential position in the healthcare system

Finally another patient described the care provided by an NP as:

I encountered the NP as a result of an unusual occurrence involving an elderly neighbour requiring assistance, subsequent to a motor vehicle accident. Encouraged by the reception and demeanor of the NP that met with us, I found her listening skills and insight first-rate. She was acquainted with my neighbour and I felt instantly comfortable and reassured that the circumstances were correctly acknowledged and assessed for best practice. My neighbour was relaxed, conversational and willingly responded to the pleasant, caring dialogue and assessment demonstrated by the NP. We were immediately dispatched to the local hospital for lab and diagnostic radiology, arranged by the NP. Assurance was given that a consultation with the practicing physician at the clinic would follow as soon as testing results were known. Suggestions for home care treatment, pain relief and access to assistance if required were discussed. To sum up, I was very relieved and thankful that a NP was available to my neighbour. In future, I would not hesitate to recommend the NP to anyone in need of professional, competent care served up with kindness and attention to individual needs.

Continuity of care. Several co-workers and patients mentioned that NPs were the constant healthcare provider in rural communities where there was turnover of physicians. During times when care was being provided by locum physicians or the clinic was waiting for a physician to begin practicing in the community, NPs were the provider most familiar with patients and would review results of laboratory tests and communicate the results to patients. As a result most people in these small communities were acquainted with NPs, and many had their primary care provided by NPs. NPs were described as a resource to staff and as the one who *lubricated the whole system, making things work*.

Patients also indicated their appreciation of consistency of having the same NP in the community, particularly in areas with frequent physician turnover. The following quote, taken from the patient survey is typical of comments made by patients about NPs' role in continuity of care:

Unfortunately in the past few years I have had numerous health issues. I have lost four doctors who have moved away. We have a shortage of doctors so I went to see an NP whom I have nothing but good things to say about him, I plan to stay with him.

The continuity of care provided by NPs in small rural communities was important for patients and a significant support for co-workers. In addition to NPs providing continuity of care, the care was convenient for patients.

Convenient care. Convenient care meant that NPs provided care close to where people lived so they did not have to travel to receive care or take time off from work. As well, care was offered late in the day after children were out of school or patients were home from work. One NP described how she offered care to teenagers when they were on their lunch break from school. NPs also communicated electronically with their patients so the patient could avoid coming into the clinic for minor issues. An NP described what taking care to the community meant:

I work on reserves. I drive to one reserve community that's two and half hours by a logging road. Going there and being able to visit people in their homes and provide them with care that they would not get is great. They'll go to a walk in clinic and get their T3s (Tylenol #3) and that's all of the healthcare they have received in years. I get so many thank you's [from patients].

Receiving care close to where they lived meant that patients did not have to travel long distances for care. A co-worker commented:

Just having that presence [of the NP in the community] people are coming and really wanting to see her. I think the big thing is that it's in their home community, out on their territory and I think that's a big deal.

Along with convenient care, participants identified how NPs connected patients to community resources.

Connecting patients with community resources. NPs described how they worked with patients and families who had difficulty accessing community and health resources, for example teen mothers, and young children with undiagnosed fetal alcohol spectrum disorder (FASD) or autism. A rural NP described how he was able to connect with a psychiatrist in the city and ensure that an extremely ill patient could be transferred for care. Other NPs described how they helped teenagers access all aspects of the healthcare system and move through it quickly and easily. A manager indicated that *the connectedness of the NP to the community, that responsiveness to the communities' changing needs is critical*. This same manager commented that referrals made by NPs to community resources, for social issues like housing, were effective and enabled patients to access health services more quickly.

As a result of being in the community, small changes were occurring because NPs partnered with other healthcare providers such as social workers and diabetic nurses. Together, they were providing care to community members.

Not only did NPs connect patients to community resources, a co-worker related that the NP conducted kindergarten fairs, youth programs, and prenatal classes in the community. One NP described connecting community resources and patients this way:

Taking a complex family and connecting them to all of the community resources is huge. It takes enormous linkages to help families coming from (refugee) camps that have no idea how to parent or their parenting has been limited to corporal punishment or have never seen cars to settle (in Canada).

Patient Centred Care

The Institute for Healthcare Improvement [IHI] ⁴⁴ defines *Person- and Family-Centered Care* as placing patients and families at the centre of all decisions as partners in their care. According to the IHI, in the future the model of care will shift from asking patients “What is the matter?” to asking them “What matters to you?” Using this definition of patient centred care, patient comments indicate that NPs are already providing it.

Many patients commented that NPs listened and valued their input. As well, many patients indicated that they liked the amount of time NPs spent with them because they were not rushed through appointments. A few patients indicated the care provided by NPs and physicians was similar, or NP care was more basic.

Some patients disliked seeing NPs for care because they had to wait for appointments, or to get through to the office on the telephone, or to pay for parking. Equally important patients did not like that NPs: did not have hospital admitting privileges, could not prescribe controlled drugs, or could not perform ICBC physicals, and that NP care was not recognized by Blue Cross. In spite of these limitations mentioned by some, many patients commented that there was nothing they disliked about seeing NPs for care. Overall, the perceptions of care by the majority of participants were positive.

When asked to compare care provided by NPs to that of other providers, again many patients commented that: NPs took time to answer all of their questions; as patients, they were not limited to one problem per visit; and they did not feel rushed through the appointment. They also indicated that NPs attended to all aspects of their care. One patient described this as: *she looks at the whole person and is willing to address all sides.*

Other patients wrote that they were involved in their care and that NPs provided teaching and quality care, resulting in the need to visit the office less frequently. A patient echoed these comments, writing:

I am very impressed and grateful for the care I receive from my NP. I found I get a much deeper level of care. In the past, I have been uncomfortable and rushed. I have had unapproachable, cold-seeming doctors where I felt I was taking up their time for nothing significant. I have felt non-human to regular doctors sometimes, as if they don't see me as a

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person. I have also been prescribed a lot of medication in the past that turned out to not be necessary for me, almost seeming to be given drugs and rushed out the door. Now with my NP, she makes me feel that I am valid, a real person with real problems, and she treats me and helps me learn rather than using drugs as a band aid.

Overall, patient centred care resulted in patients feeling good about themselves and in charge of their lives. Equally important patients felt free to ask questions and were comfortable seeing the NP. They commented that the NP cared about them as individuals. One patient mentioned that she had seen four different NPs over the years and *I pretty much feel the same way about all of them. They are caring and it's not a rush, we work together to find exactly what's going on.* While another patient described the NP's approach as:

She helped me to change my outlook about mental health by relating it to diabetes. If I had diabetes I would monitor it every day and do things proactively to take care of myself. She encourages me to think of mental health in exactly the same light and that has been very helpful.

Just as patients identified NPs as looking at the whole person, co-workers commented on NPs being respectful, empowering patients, and providing consistent and holistic care. Co-workers noted patients were able to self-manage their health conditions with the help of NPs' teaching and education. A co-worker commented that patients felt it was *more of a partnership vs. just being told what they should be doing.*

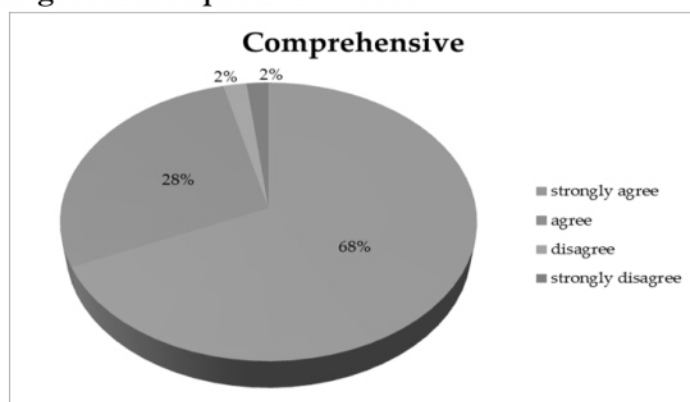
Overall, comments from the patient survey indicated that patients were satisfied with the care received from NPs and that it was *excellent care model and should be commonplace.* Another patient wrote:

I believe they (NPs) are crucial for our healthcare system. They take pressure off overly busy practices especially for routine visits. In the case of female NP, young and old women feel less inhibited discussing sexual health. My experience with my NP yielded positive results in improving my health and I have great confidence in her.

Patient satisfaction. As discussed earlier, the *Patient Satisfaction with NP Care* Scale was included in the patient survey. The Scale includes statements related to comprehensive, caring and inattentiveness²⁶. Below we provide the results of the Satisfaction Scale.

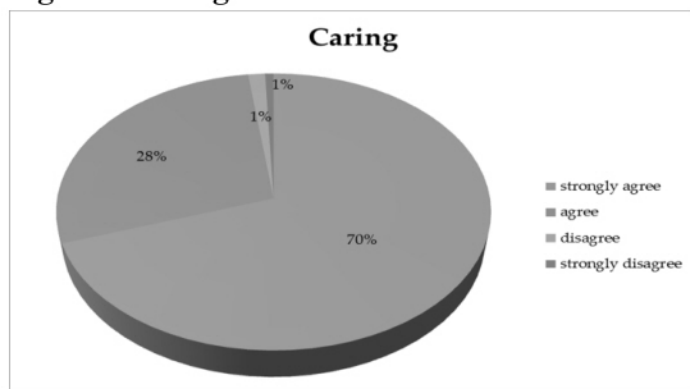
Comprehensiveness include: "The NP gives me a thorough check-up;" "The NP gives me a chance to say what was really on my mind;" and "When I see the NP, he/she spends enough time with me". Figure 3, below indicates that patients are overwhelmingly satisfied with the comprehensiveness of the care received from their NP.

Figure 3. Comprehensive Care



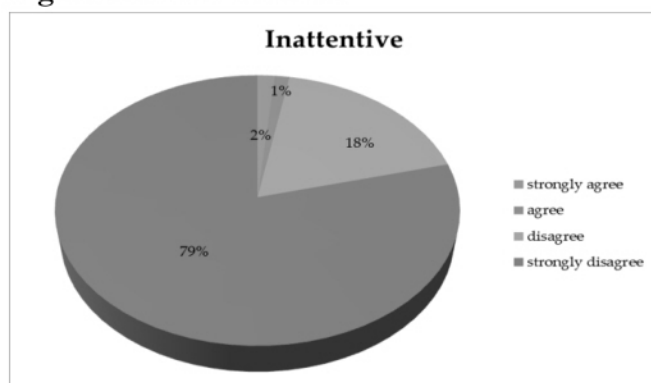
Reporting on Caring, participants responded to items such as “The NP is concerned about me as a person” and “I easily feel understood by the NP.” On all items, NPs’ patients feel well cared for as demonstrated in Figure 5, below.

Figure 4. Caring



Reporting on Inattentiveness, participants responded on items such as “The NP does not spend enough time with me”, “The NP seems rushed during his/her examination”, and the “NP does not take my problems seriously.” On all items, 97% or more disagreed with all items in this category, indicating that NPs are attentive to their needs (see Figure 5, below).

Figure 5. Inattentiveness



Findings from the Satisfaction Scale indicate that patients of NPs in BC are highly satisfied with their care. Interestingly, co-workers responding to the co-worker survey reinforced this, and identified patient acceptance as a facilitator to NP integration. Thus, we are confident that patients accept NPs as their primary care provider and are exceedingly satisfied with the care they receive.

Patient Behavioural Changes

We wanted to learn what, if anything, patients changed in their health behaviours because of the care provided by NPs. In our interviews with patients (n=20) they told us that they changed their diets, exercised more, and understood better how to take their medications and why they needed to take them. Examples of behavioural changes include losing 70 pounds resulting in no longer needing medications to control hypertension or hypercholesterolemia, and increase lung capacity to prevent COPD from worsening through bike riding.

In our focus group with NPs, they described changes patients made that included dietary changes, weight loss, reduction in smoking, and increased exercise. As illustrated above, some of these changes resulted in people reducing or eliminating the need for medications for diabetes or hypertension. One NP referred to the changes made by a patient for whom she provided care:

Now he comes in well groomed. He's gradually changed. He walks in with pride and has hope for the future. He's getting his teeth fixed, he had his hearing aids done, he's going to the eye-doctor, and he's starting to care about himself.

Data from coworkers, patients, and NPs converge on the same impression, that is NPs increase access to comprehensive healthcare by, for example, spending time with patients, helping them manage their chronic conditions, and referring them to community resources. This is important to the healthcare system because increased access and careful management of chronic conditions, such as diabetes or hypertension, can prevent costly long-term complications. Not only did individual

patients make changes to how they care for themselves but NPs made changes that affected the overall healthcare system.

Changes to the Healthcare System

Co-workers and NPs described how NPs impacted the healthcare system in a variety of ways. For example, NPs created new programs that increased access to care for teen mothers, and women in general, through women's health days, allowing women to obtain previously unavailable pap smears and breast exams. In one community the presence of an NP created access to healthcare services that previously unavailable and required people to travel more than an hour for care. Another NP began a weight loss program that resulted in 20 people losing 300 pounds in ten weeks. NPs increased access to mental health service through outreach by providing direct mental health treatment for children and families in a community where many barriers to direct treatment existed.

In addition to providing access and patient centred care, co-workers noted how NPs scope of practice facilitated changes to how patient care was provided. This included comments about how NPs prescribed, referred or treated patients. Some co-worker participants also noted how NPs had more time to care for patients.

Along with creation of new points of care, in an interview with a manager we asked if they were able to demonstrate any patient outcomes associated with NPs spending more time with patients, the manager stated that the number of ER visits was reduced. She attributed this to *the whole self-management model*, because patients were *"certainly not in crisis so they didn't have episodic admissions."*

Another way NPs impacted patients and the healthcare system was through health promoting activities. Many participants mentioned NPs' teaching role and the time spent teaching patients about their health was valuable because it reduced polypharmacy and helped patients to care for themselves. A co-worker commented, *she can spend time in a teaching role that the doctor's may only be able to spend 5 minutes, she can spend more time and that's a big deal.*

Similarly, a patient commented on the patient survey that *I feel she is more thorough and into prevention, proactively helping me to look after myself.*

In the practice pattern survey we queried NPs for their perceptions of the most important contributions they made to the healthcare system. They contributed to their organizations by supporting others and providing leadership. At the healthcare system level they were providing access to care and cost savings. Findings from co-workers strengthen the NPs' perspectives. Evidence is stronger when combined from multiple perceptions, in this study co-workers and patients supported NPs' perceptions of their contributions.

To summarize, based on the evidence presented above when NPs become part of the care process they add value to the healthcare system by increasing access to healthcare for patients. The care is comprehensive and convenient, and in locations with frequent turnover of physicians NPs provide stability for patients and co-workers. Patients are satisfied with the care they receive from NPs. This is significant because co-workers identified patient acceptance as a potential barrier to NP integration.

Furthermore, as a result of NP care, patients made dietary changes, became more physically active, and understood why and how to take their medications. While seemingly minor changes, losing weight, becoming more physically active and adhering to medications and treatment plans can have potential benefits for patients and in the long-term result in savings to the healthcare system. Consequently, as NPs increase access to care that is satisfying to patients, the healthcare system ultimately benefits because of behavioral changes made by patients.

Challenges and Limitations

During this project a number of challenges emerged, mostly associated with sampling. Initially, we planned to connect patient outcomes data, such as hemoglobin A1C or renal functioning, to NP practice to identify impacts of care provided by NPs. However, early in our discussions with the MOH we learned that, because of patient confidentiality and the cost of access to the data sets, we could not use these data, and consequently abandoned the plan to use population based data.

Likewise, in our discussions with NP participants we learned that patient confidentiality precluded us from obtaining anonymous patient data through their EMRs. As a result, we were not able to quantify if NPs were preventing complications associated with chronic conditions or if patients accessed the healthcare system less often. Anecdotally, patients indicated that they had a better understanding of their conditions, and one manager said there were fewer visits to the emergency department, but we were unable to confirm their statements.

Another challenge was the amount of time required to obtain access to MOH data sets we were allowed to access. Although we anticipated challenges locating and obtaining access to existing MOH data sets, we did not foresee how difficult and time consuming it was. In spite of meeting with multiple individuals within the MOH, we encountered challenges in: determining where the data were located, identifying the custodian(s) of the data, learning about, and completing the processes needed to obtain the data, adapting frequently to new partners at the MOH, and dealing with the substantial costs imposed to access MOH data.

Moreover, accessing NPs proved challenging. The College of Registered Nurses of BC maintains a list of all registered NPs, and we planned to obtain permission from the College to send an electronic message that would include an online link to the practice pattern survey to registered NPs. Instead of being able to email all registered NPs, we were allowed to access only those NPs who had

previously agreed to participate in research, which was less than 100%. In addition to the limited number of NPs we could invite to participate, we had to send the recruitment letter to potential participants by surface mail, and they were required to go online and type in the URL address for the survey. While this may sound like a simple act, we believe it served as a disincentive and resulted in some NPs not participating in the study because the URL was typed in incorrectly.

Finally, NPs' requirement to maintain patient confidentiality resulted in challenges to accessing patients of NPs. The direct-to-consumer approach we used for recruitment using community newspapers increased the number of patient participants, but we could not confirm that they were patients of NPs.

Summary of Findings

The MOH began initiatives to implement the NP role in 1997 and NPs have been practicing in the province since 2005. We wanted to understand whether or not: a) the value of adding NPs to the BC health care system matched what had been demonstrated elsewhere over the last 40 years, b) NPs were having a positive impact on collaborative teams, and c) NPs were functioning within the Province as expected^{19,20}. We found that NPs are practicing in diverse settings with different patient populations throughout BC, and are accepted by patients and co-workers. NPs are over-represented outside of large metropolitan areas, as had been hoped, and are making a difference in people's lives. NPs are adding value to the BC healthcare system by increasing access to care that is comprehensive, convenient and continuous. To sum, we have demonstrated that BC's NPs are practicing in the same way as NPs elsewhere in North America.

Unfortunately, barriers to role integration continue almost 10 years after the introduction of the role in BC. These barriers require attention by government and employers of NPs. It is unfortunate that the following significant barriers to role integration remain:

1. some administrators and physicians are inadequately knowledgeable about NP role and, thus are unsupportive,
2. legislation continues to restrict NP practice, and
3. a model of sustained funding has not been secured.

In the original report on advanced practice nursing roles²⁰, the authors recommended that there be a Province-wide public education initiative to familiarize the population, including potential co-workers, with the NP role. It was anticipated that such an initiative would facilitate implementation and acceptance of the new role. This did not happen, thus there are areas in the Province characterized by unfamiliarity of the contributions NPs could be making in those communities. This could be reversed with some timely public education.

Legislative restrictions on NPs' scope of practice were discussed briefly above, and many legislative barriers have been removed, but changes are needed to permit NPs to sign various governmental forms and prescribe controlled drugs and substances. Federal legislation has been passed allowing NPs to prescribe this class of drugs, but a Provincial implementation plan has not been finalized.

Co-workers and NPs identified the current funding model as a barrier to full integration of the NP role. The current model creates difficulties between NPs and physicians with regard to the structure of how they practice together, especially in a fee-for-service environment. While we cannot offer any solution to this issue, we recognize that until a sustainable funding model is in place, the lack of one will continue to be a significant barrier to NP integration. Two models of care have been successfully piloted, one in BC and the other in Ontario. In BC, integrating government salaried NPs into fee-for-service physician offices increased patient access to care and providers were satisfied with the working relationship. Ontario's Ministry of Health and Long-Term Care funded 26 NP-led clinics in which NPs work collaboratively with physicians and other interdisciplinary team members⁴⁶. Early evaluation of this model indicated increased patient access to care, reduced numbers of unattached patients, and satisfied patients and providers²⁹. Both models have strengths and challenges, however they are a start.

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Appendices



MICHAEL SMITH FOUNDATION
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January 20, 2016

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RE: End of Award Notification
Program Name: Health Services and Policy Research Support Network - Health Human Resources Research Program – Innovations for Evaluation
MSFHR Award #: PJ HHR 00004 (10-1)
Project Title: Evaluation of the Integration of Nurse Practitioners (NP) into the BC Healthcare System

Dear Dr. Sangster-Gormley,

On behalf of the Michael Smith Foundation for Health Research (MSFHR), I wish to inform you that the deliverables pertaining to your Health Services and Policy Research Support Network - Health Human Resources Research Program – Innovations for Evaluation Award entitled '*Evaluation of the Integration of Nurse Practitioners (NP) into the BC Healthcare System*' have been received and that the administrative activities are now officially closed.

MSFHR is pleased to have contributed towards your achievements in examining the implementation of nurse practitioners in BC. Now that the award has reached its end, we congratulate you on the completion of your study, and wish you continued success with your future research endeavours.

Sincerely,

Greg Martyn, MHM
Director, Operations

cc: Ms. Ceciline Goh, Manager, Accounting & Compliance Reporting, MSFHR
Ms. Cindy Soules, Manager, Research Programs (Provincial Initiatives), MSFHR
Ms. Sandy Bligh, Director, Research Accounting, UVIC
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Nurse Practitioners, Action Plan –Recommendations

NP Action Plan Recommendations

Key issues identified with regards to NP education include:

1. Consider the option of offering an adult NP and education program in BC.
2. Establish a residency program for NP graduates and financial compensation for preceptors to mentor student NPs. A residency would address NPs' readiness to practice and prepare them to assume responsibility for increasingly complex patients, (e.g. mental health, frail seniors). Compensation for preceptors would facilitate placements aligned with where NP graduates are expected to practice.
3. Consider developing neonatal educational program in BC and/or working with the CRNBC to establish a registration category for neonatal NPs in BC.

Key issues identified with regards to the NP funding model include:

1. With respect to funding provided to HAs, the Ministry should develop a plan that embeds funding for NPs (and eventually all human resource requirements, including physicians) within HA global operating budgets. This places the onus on HAs to do proper needs-based human resource planning that aligns patient need with available provider skill sets, as opposed to the current dynamic in which HAs appear reluctant to add NPs without specific funding.
2. NPs employed by physicians in private clinics could use their practitioner number to submit encounter records and use the physician's payee number to provide funding for the physician. This allows NP work to be accounted for (via NP practitioner number) and the physician to receive funding (via the physician's payee number) to cover the salary and benefits of the NPs and help off-set overhead costs. It also eliminates the work around of "shadow-billing" that exists now.
3. An alternative approach to funding from that described above is to recognize NPs as another primary care service provider working in his/her own sole practice. In this situation NP services could be funded through a model similar to physician alternative payment plan (APP) funding.