BC Healthy Connections Project
PROCESS EVALUATION

Implementation and Delivery of Nurse-Family Partnership® in British Columbia, Canada

A synthesis of selected findings from the British Columbia Healthy Connections Project Process Evaluation (2013-2018)

2020

McMaster University
SFU SIMON FRASER UNIVERSITY

Acknowledgements

We celebrate the First Peoples on whose traditional territories we are all privileged to live and work. The British Columbia Healthy Connections Project (BCHCP) Process Evaluation Research Team would like to thank the Nurse-Family Partnership (NFP) public health nurses, supervisors and program administrators from Fraser, Interior, Island, Northern and Vancouver Coastal Health Authorities for their generosity in sharing their experiences and expertise on how this nurse home visitation program was implemented and delivered in British Columbia (BC). Thank you to members of the BCHCP Steering Committee for providing guidance and support throughout the Process Evaluation. We dedicate this report to the girls, young women and children who received NFP through the BCHCP.

The BCHCP is a randomized controlled trial (RCT) funded by the BC Ministry of Health with support from the BC Ministry of Children and Family Development, and from Fraser, Interior, Island and Vancouver Coastal Health Authorities. The BCHCP trial is led by nominated principal investigators, Drs. Charlotte Waddell and Harriet MacMillan, and principal investigators Nicole Catherine, Susan Jack and Debbie Sheehan together with a Canada-wide Scientific Team and a Study Team based at Simon Fraser University. (For more information see childhealthpolicy.ca). The trial also involves close ongoing collaborations with the BC Ministries of Health, Children and Family Development, and Mental Health and Addictions, as well with regional Health Authorities including Fraser, Interior, Island and Vancouver Coastal Health. A BC-based Steering Committee oversees the trial, with continuing input from the Provincial Advisory Committee. The Djavad Mowafaghian and R. and J. Stern Family Foundations also generously support the BCHCP. In addition, the BCHCP supports two adjunctive studies: the Healthy Foundations Study, led by Dr. Andrea Gonzalez and funded by the Canadian Institutes of Health Research, and a Process Evaluation (reported on here). Funding for the BCHCP Process Evaluation was provided by the Public Health Agency of Canada (2013-2020).

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Executive Summary

Purpose

The overall goal of the British Columbia Healthy Connections Project (BCHCP) Process Evaluation was to explore how Nurse-Family Partnership (NFP) was implemented across five regional health authorities and delivered to girls and young women and their children who were visited by public health nurses (PHNs) between 2013-2018 in British Columbia (BC), Canada. The Process Evaluation is an adjunctive study to the BCHCP randomized controlled trial (RCT) evaluating NFP's effectiveness in comparison with BC's existing health and social services. The main outcome indicators are: prenatal substance use; childhood injuries at age two years; children's mental health and cognitive development at age two years; and mother's economic self-sufficiency at 24 months postpartum.

Nurse-Family Partnership Program Overview

Public health nurses work with mothers, their partners, and other caregivers to:

1. Improve pregnancy outcomes by promoting positive prenatal health behaviours;
2. Improve children's health and development outcomes by supporting parents to provide sensitive and competent care;
3. Enhance parents' health and life-course by guiding individuals to reduce closely spaced subsequent pregnancies, complete their educations, and secure employment to sustain their family.

   Visits and outreach to families begin early in pregnancy and continue until the child's second birthday.

How was the BCHCP Process Evaluation Conducted?

A mixed methods approach was used to:

1. identify the mechanisms and conditions required to deliver the program with fidelity to the NFP core model elements;
2. assess the acceptability of this complex intervention; and
3. document how teams adapted their professional practices to meet the needs of families living in their local communities.

The findings in this report were informed through:

1. a series of interviews with 82 NFP PHNs; 19 NFP supervisors and 23 senior program administrators;
2. an analysis of program implementation data.

In this report, selected findings are shared to provide a "snapshot" of NFP implementation between 2013 and 2018, noting that NFP delivery through the BCHCP RCT continued beyond this, until June 2019. (The BCHCP RCT is ongoing until 2021, while NFP continues to be delivered as a program embedded within the suite of public health services in BC.) Data were collected at the individual regional health authority level but are aggregated and reported at the provincial level for this report.

Who were the public health nurses delivering Nurse-Family Partnership?

The 82-baccalaureate prepared PHNs who participated in the Process Evaluation were highly experienced nurses and skilled home visitors.

MEAN YEARS AS A **REGISTERED NURSE** **21.3**

MEAN YEARS **HOME VISITING EXPERIENCE** **12.8**

Most nurses applied to work in the NFP program because they:

- were inspired to deliver a nursing intervention grounded in evidence and theory
- desired a program that provided the education, structure, resources, time and support necessary to establish therapeutic relationships with pregnant and parenting girls and young women, and to support their children.

Nurses spoke passionately about having the opportunity to potentially have a long-term impact on the lives of families.

Factors contributing to the retention of PHNs in the NFP program included:

- the opportunity to work at their full scope of professional nursing practice
- validation that the program afforded them the time, structure and resources to develop and maintain genuine therapeutic nurse-client relationships
- participation in a program of ongoing professional development to develop PHN competency in home visiting practice
- engagement in reflective supervision
- development of supportive and cohesive team cultures.

How is reflective supervision provided to NFP teams?

The 19 individuals who held an NFP supervisor role during the Process Evaluation assumed these new roles with strong, established foundations of nursing experience.

MEAN YEARS AS A **REGISTERED NURSE** **24**

PERCENTAGE OF WORK TIME SPENT MANAGING NFP PROGRAM RESPONSIBILITIES **87.4**

The NFP supervisors met weekly with nurses (when possible) for reflective supervision and approximately every four months, accompanied a nurse on a home visit(s). From 2013-2018, 62.4% of scheduled or planned reflective supervision meetings were held and the most common reason for cancellation was because either the supervisor or PHN was on vacation. Almost two thirds of the sessions (average length of time = 59 minutes) were conducted in person, with remaining sessions completed by telephone or videoconference. Across the province, NFP teams were successful in meeting program requirements to hold weekly meetings (as either a case conference, team meeting or educational session), with each session lasting an average of 112 minutes. The NFP teams valued these opportunities to meet as they helped to establish team cohesion, created a space for peer support and learning, created opportunities for ongoing reflection and promoted nurse retention. Additionally, for nurses working as a "lone" NFP team member within an office, opportunities to link with the team reduced feelings of isolation.

What are the characteristics of a nurse home visit?

NFP PHNs completed almost 80% of home visits scheduled with their clients. Yet despite a significant investment of nurse time and effort to offer flexible scheduling and to confirm visits ahead of time, almost 20% of home visits were attempted but not completed or cancelled by the client less than 24 hours before the scheduled visit time, perhaps reflecting the complex and unpredictable nature of the lives of NFP clients.

Overall, during the Process Evaluation study period, girls and young women enrolled in NFP received an average of 37 home visits. However, as delivery of the program through the RCT continued until June 2019, we anticipate that in future RCT reports, a higher number of visits during toddlerhood will be noted, which will increase the overall total number of home visits received.

A close examination of program implementation also illuminated that no single home visit was the same as any other, and that NFP PHNs were required to carefully consider how geography, the type of encounter (e.g., face-to-face or telehealth), and the number of people present in a visit affected their daily scheduling of visits and caseload numbers.

Travel: On average, PHNs would travel 14.3 kilometres (km) for a single client encounter; yet, reflecting the diverse geography in BC, distances travelled per visit ranged from 1 to 120 km.

Visit Location: While 70% of the encounters occurred within the client's home setting, the

remaining in-person encounters occurred in a range of community or clinic settings reflecting clients' needs, preferences, safety, privacy or access.

Visit Participants: While 63% of all home visits were conducted alone with the NFP client, the infant's father or the client's partner participated in approximately 20% of all visits.

Visit Length: Across home visits, face-to-face encounters lasted an average of 90 minutes and across program phases, NFP PHNs were fairly consistent in meeting benchmarks for apportioning visit content across the program domains.

A critical function of a Process Evaluation is to describe the essential mechanisms of complex interventions under evaluation. Selected findings in this report provide insights about the PHNs and supervisors responsible for the delivery of this nurse home visitation program with eligible girls and young women living in BC. Future reports will focus on describing the acceptability of integrating NFP into existing public health programming as well as developing disciplinary knowledge that describes how NFP PHNs delivered the program with families living in geographically diverse contexts and how they worked to meet the needs of families experiencing multiple forms of adversity, including poverty, housing instability, violence and/or mental health issues, including substance use.

1.0 Background

1.1 Nurse-Family Partnership

Nurse-Family Partnership (NFP) is a primary prevention program delivered by public health nurses (PHNs) to promote the health and well-being of young first-time mothers and their children who experience social and economic disadvantage.

NFP Program Goals

The three NFP program goals are to:

1. Improve pregnancy outcomes by promoting positive prenatal health behaviours;
2. Improve children's health and development outcomes by supporting parents to provide sensitive and competent care;
3. Enhance parents' health and life-course by guiding individuals to reduce closely spaced subsequent pregnancies, complete their educations, and secure employment to sustain their family

In NFP, home visits start early in pregnancy and continue regularly until the child's second birthday. This program was developed by Dr. David Olds in the United States. Through three randomized-controlled trial (RCT) evaluations, beginning in 1977, NFP has been demonstrated to lead to significant improvements in the health and lives of children and mothers living in the United States, with enduring benefits for those experiencing socioeconomic disadvantage.[1-3]

In Canada, efforts began more than a decade ago to adopt and adapt NFP as a strategy to prevent child maltreatment, improve children's mental health and development, and promote health and economic outcomes for pregnant and parenting girls and young women.[4] A pilot study conducted by McMaster University and Hamilton Public Health Services demonstrated that it was feasible to deliver NFP through existing public health programming and that this intensive intervention was acceptable to families enrolled in the program, service providers, and community partners.[5] Yet, in Canada, the effectiveness of NFP in achieving important health and social benefits for mothers and their children has been unknown.

In 2010, the British Columbia (BC) Ministry of Health and Ministry of Children and Family Development invited the Children's Health Policy Centre at Simon Fraser University to explore options for evaluating NFP in BC, in consultation with the McMaster-Hamilton team and with Dr. Olds. At the same time, BC convened a Provincial Advisory Committee comprising senior representatives from regional health authorities (including Fraser, Interior, Island and Vancouver Coastal Health) and other relevant organizations to seek province-wide consensus on proceeding with a large-scale NFP evaluation. The British Columbia Healthy Connections Project (BCHCP) emerged from this process.

1.2 British Columbia Healthy Connections Project

The BCHCP involves an RCT evaluating NFP's effectiveness compared with BC's existing health and social services (2011-2022). The main outcome indicators for the BCHCP RCT are: 1) child injuries by age two years (primary outcome indicator); 2) prenatal substance use: 3) child cognitive development at age two years; 4) child mental health at age two years; and 5) subsequent pregnancies at two years postpartum, as a marker of maternal economic self-sufficiency. Numerous other secondary and exploratory indicators of child and maternal well-being were also measured in this trial and are outlined in the study protocol.[6] Findings from the RCT are being reported on separately. To prepare PHNs for practicing in the NFP program model, a nurse education pilot project was initiated in 2012 prior to the onset of the trial.

Two adjunctive studies have been conducted in parallel with the BCHCP trial:

1. The Healthy Foundations Study,[7] a biological evaluation of NFP's impact on measures of childhood stress in an RCT sub-sample. Findings from this study will be reported on separately.

2. The BCHCP Process Evaluation,[8] conducted to explore how NFP was implemented and delivered in five BC regional health authorities (reported on here; Northern Health participated in the Process Evaluation but not the RCT).

Since participant enrollment in NFP through the RCT closed in December 2016, NFP has been offered to eligible girls and young women and their children as a program embedded within the suite of enhanced public health services offered in four regional health authorities in BC (Fraser, Interior, Island and Vancouver Coastal Health).

1.3 BCHCP: Participating Regional Health Authorities & Study Participants

The girls and young women, and their children, who became participants for the BCHCP RCT or its two adjunctive studies were recruited through regional health authorities (Table 1, next page).

Across these studies there were three participant categories:

1. girls and young women and their children (RCT and Healthy Foundations Study);
2. PHNs responsible for providing NFP (RCT and Process Evaluation); and
3. NFP supervisors and senior managers (Process Evaluation).

Additional details about BCHCP RCT participant eligibility and data collected are summarized in Appendix A. Detailed protocols for each study have been published.[6-8]

Table 1: Participating BC Regional Health Authorities

BCHCP Study	Participating Regional Health Authorities	
RCT	Fraser, Interior, Island, and Vancouver Coastal Health (739 girls and young women and their 744 children)	• October 2013: Recruitment and enrollment started • December 2016: Recruitment closed • June 2019: Intervention participants completed NFP • November 2019: Participant in-home and other interview data collection closed • 2013-2021: Child injury administrative data collection and analysis • 2019-2022: Data analyses and dissemination of RCT data and findings
Healthy Foundations Study	Fraser and Vancouver Coastal Health (RCT sub-sample; 391 girls and young women and their children)	• April 2014: Recruitment and enrollment started • April 2016: Recruitment closed • August 2019: Data collection completed • 2020-2022: Data analyses and dissemination of findings
Process Evaluation	Fraser, Interior, Island, Northern*, and Vancouver Coastal Health (82 NFP PHNs; 19 NFP Supervisors; 23 Senior Managers) 157 girls and young women living in Process Evaluation "only" sites and who met the eligibility criteria enrolled to receive NFP	• 2013-2018: Ongoing recruitment, data collection and preliminary analysis • November 2016: Process Evaluation client participant recruitment closed • December 2018: Data collection completed • 2018-2023: Ongoing analysis and dissemination of findings

*Northern Health participated in the Process Evaluation from 2013 until February 2018 but did not participate in the RCT.

2.0 BCHCP Process Evaluation

2.1 Implementation and Delivery of NFP

The implementation of NFP involved close collaborations among the BC Ministry of Health, the BC Ministry of Children and Family Development, the five regional health authorities, numerous community agencies and the BCHCP RCT and Process Evaluation Scientific Teams. Starting in 2012, each regional health authority established NFP teams to implement and deliver the program in accordance with the NFP core model elements (Figure 1).

Figure 1: NFP Core Model Elements*[10]

1	Client participates voluntarily in the NFP program.
2	Client is a first-time mother.
3	Client meets socioeconomic disadvantage criteria at intake.
4	Client is enrolled in the program early in her pregnancy and receives her first home visit no later than the end of the 28th week of pregnancy.
5	Each client is assigned an identified NFP nurse who establishes a therapeutic relationship through individual NFP home visits.
6	Client is visited face-to-face in the home, or occasionally in another setting (mutually determined by the NFP nurse and client), when this is not possible.
7	Client is visited throughout her pregnancy and the first two years of her child's life in accordance with the current standard NFP visit schedule or an alternative visit schedule agreed upon between the client and nurse.
8	NFP nurses and supervisors are registered nurses or midwives with a minimum of a Baccalaureate/bachelor's degree.
9	NFP nurses and supervisors develop the core NFP competencies by completing the required NFP educational curricula and participating in on-going learning activities.
10	NFP nurses, using professional knowledge, judgment and skill, utilize the Visit-to-Visit Guidelines; individualizing them to the strengths and risks of each family, and apportioning time appropriately across the six program domains.
11	NFP nurses and supervisors apply the theoretical framework that underpins the program (self-efficacy, human ecology, and attachment theories) to guide their clinical work and achievement of the three NFP goals.
12	Each NFP team has an assigned NFP Supervisor who leads and manages the team and provides nurses with regular reflective supervision.
13	NFP teams, implementing agencies, and national units collect/and utilize data to: guide program implementation, inform continuous quality improvement, demonstrate program fidelity, assess indicative client outcomes, and guide clinical practice/reflective supervision.
14	High quality NFP implementation is developed and sustained through national and local organized support.

*This figure reflects the current and revised 14 core model elements. At the start of the BCHCP RCT and Process Evaluation an original version of the core model elements guided program implementation.[8] However, the critical program elements outlined above remained consistent across both versions.

Within the BC Ministry of Health, a Provincial Coordination role was established to support regional health authorities and established working groups to: implement the NFP model of care; plan for participant recruitment; prepare for NFP implementation and delivery; coordinate and deliver NFP nurse and supervisor education; mentor and coach NFP supervisors; monitor program quality and reporting; develop marketing materials and web-site communication; and liaise and consult with the Study Team at Simon Fraser University, Steering Committee and Provincial Advisory Committee and other working groups.

2.2 BCHCP Process Evaluation Purpose and Objectives

The overarching purpose of the BCHCP Process Evaluation was to explore how NFP was implemented and delivered across five regional health authorities between 2013 and 2018. Specific study objectives are listed in Figure 2.

Figure 2: BCHCP Process Evaluation Study Objectives

- To determine the extent to which the intervention was delivered with fidelity to the NFP core model elements.
- To measure the dose of NFP (delivered and received) and reach (participation rate throughout pregnancy, infancy and toddlerhood).
- To explore the acceptability of NFP to PHNs, supervisors and senior public health decision makers.
- To describe PHNs' and supervisors' experiences of the NFP education program and to identify additional content areas needed for further knowledge and skill development.
- To explore processes used to support NFP PHNs and supervisors through activities including reflective supervision, coaching and mentoring.
- To identify contextual factors that influence: organizational adoption and implementation of NFP; caseload coordination; location, engagement and retention of NFP clients; sustainability of the NFP in BC; and staff retention.
- To identify program adaptations needed to support PHNs and supervisors to meet the needs of clients living in suburban, rural and remote communities.
- To identify and describe PHNs' experiences of delivering NFP to clients and their families experiencing a range of adversities including mental health problems including substance use, intimate partner violence (IPV), and/or engagement with the child protection system.

In this report, selected findings are shared to provide a "snapshot" on how NFP was delivered by the five regional health authorities in BC between 2013 and 2018, as NFP delivery during the BCHCP RCT continued beyond this, until June 2019. Data were collected and analyzed at the individual regional health authority level but are aggregated and reported on at the provincial level for this report.

Findings in this report include quantitative and qualitative descriptions of:

1. Characteristics of NFP PHNs and supervisors responsible for program delivery;
2. Characteristics of reflective supervision activities; and
3. Home visit (and alternate visit) number, type, duration, location, content and participants.

2.3 BCHCP Process Evaluation Methods

The BCHCP Process Evaluation was a mixed methods study that included the purposeful collection of both quantitative and qualitative data.[8]

In close collaboration with the RCT Study Team based at Simon Fraser University, the BC Ministry of Health and the five participating regional health authorities designated 32 NFP sites, based on estimated annual live births to first-time, low-income mothers who were under 25 years old. The RCT Study Team and the BC Ministry of Health then designated 19/32 as RCT sites and 13/32 as Process Evaluation "only" sites (including two sites in Northern Health) based on five considerations: 1) birth rates; 2) personnel budgets; 3) sample size; 4) health authority preferences; and 5) feasibility of conducting RCT in-person research interviews.

2.3.1 Qualitative Study Component

Interpretive description,[11] an applied qualitative methodology, provided the structure for answering questions that arose within clinical practice and generating findings that will be used to advance disciplinary knowledge.

Three distinct groups of participants discussed their experiences and shared their reflections on how NFP was implemented and delivered in BC between 2013-2018. All participants provided informed consent to participate.

NFP Public Health Nurses

For this Process Evaluation, 82 PHNs who completed the NFP education and had clients enrolled in the Process Evaluation or RCT on their caseloads were invited to participate in this study. However, over time, these nurses reflected on their experiences of providing NFP to a range of clients on their caseloads, including those who:

1. Continued to receive NFP as part of the education pilot project that was initiated in 2012 to prepare PHNs for practicing in the NFP model;
2. Were randomized to receive NFP as part of the BCHCP RCT;

3. Were enrolled in Process Evaluation "only" sites; or

4. Received NFP as part of the enhanced suite of public health services starting in December 2016.

NFP Supervisors

Each NFP team had an assigned NFP supervisor who led and managed the team and provided PHNs with regular reflective supervision. During the study period, 19 individuals were interviewed about their experiences of providing supervision to NFP teams.

Senior Regional Health Authority Decision-Makers

A purposeful sample (n=23) of senior regional health authority decision-makers were also invited to participate in the Process Evaluation to discuss their perceptions on how different organizational and contextual factors influenced overall implementation of NFP in BC.

Participants were invited to share their experiences and reflections through a series of interviews on a number of different topics (Appendix B). When possible, in-depth, one-to-one (1:1) interviews were also conducted with individuals who were making an exit from working with NFP (n=38). Demographic data were collected from all participants.

A summary of the data sources and types and frequency of data collection for both the qualitative and quantitative components of the Process Evaluation is provided in Table 2.

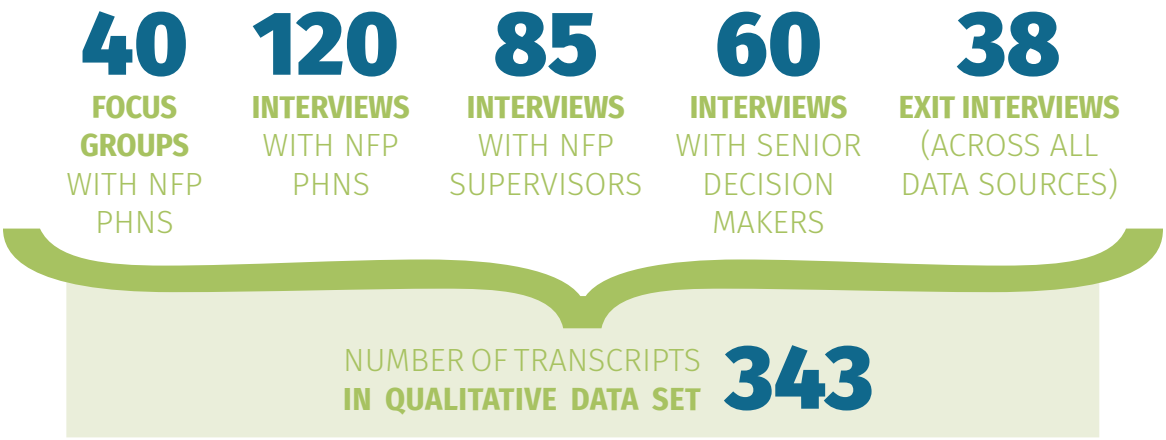
Table 2: BCHCP Process Evaluation Data Sources and Types

QUALITATIVE DATA			QUANTITATIVE DATA
Data Source	**Data Type**	**Frequency**	**Data Type**
PHNs* (n=82)	1:1 telephone interviews Focus groups	• 8 waves of data collection ~ every 6 months	• NFP Program Fidelity Reports (aggregate data)** • Home Visit Encounter (HVE) / Alternate Visit Encounter (AHVE) Forms (aggregate data)
Supervisors (n=19)	1:1 interviews (telephone or in-person)	• 8 waves of data collection ~ every 6 months	• Team Meeting, Case Conference, Education Session Form*** • Weekly supervision record***
Senior Decision-Makers (n=23)	1:1 interviews (telephone or in-person)	• 5 waves of data collection ~8-12 months	
All NFP data sources (n=38)	1:1 exit interviews (telephone)	• As required at time of exit from NFP program	
Field notes	Observations	• Scheduled twice-yearly site visits	

*1:1 telephone interviews were conducted with PHNs in Northern Health or when it was not feasible for a PHN (from any regional Health Authority) to physically travel to a focus group scheduled in their region.

**Data were collected from 2013-2018 from RCT participants only.

***Data collected from 2013-2018 only.



2.3.2 Quantitative Study Component

Within the overall BCHCP RCT dates of 2011–2022, data sources from 2013–2018 (only) were provided and analyzed to understand how the NFP program was implemented at the regional health authority level and the characteristics of the home visits (and alternate visits) delivered by PHNs. For this report, all findings are aggregated at the provincial level. These BCHCP RCT aggregate data were securely accessed and analyzed onsite at Simon Fraser University by a BCHCP RCT Co-Investigator, in accordance with requirements outlined in the Information Sharing Agreement that Simon Fraser University holds with the BC Ministry of Health.

A. NFP Fidelity Reports

Client assessment data were entered at the regional health authority level by the nurse into an electronic health record system and extracted through data reporting. The extracted reports included NFP fidelity data. Data were gathered within the context of the provision of a service to a client and SFU received data on BCHCP RCT participants (girls and young women who were receiving NFP as RCT intervention participants). No data were included on girls and young women receiving NFP through Process Evaluation "only" sites (including Northern Health). This analysis reflects only aggregated data collected between October 1, 2013 and May 31, 2018.

DATA

From NFP Fidelity reports aggregate data were obtained on:

1. Stage of pregnancy at time of enrollment;
2. Percentage of time spent by NFP PHNs on five of six program domains during each of the three NFP program phases (pregnancy, infancy, toddlerhood); and
3. Total number of visits during each of the three program phases.

B. Home Visit Encounter/Alternative Visit Encounter Forms

PHNs completed these forms following each home visit or encounter with a girl or young woman as part of the NFP program. Encounter data were entered at the regional health authority level into electronic health record systems. Data were gathered within the context of the provision of a public health service; only data on girls and young women who were receiving NFP as RCT intervention

participants were securely provided to SFU. No data were included on girls and young women receiving NFP through Process Evaluation "only" sites (including Northern Health). This analysis reflects only aggregated data collected between October 1, 2013 and May 31, 2018.

DATA From the Home Visit Encounter form, the following aggregated data were obtained:

1. Number of scheduled home visits completed, attempted, or cancelled;
2. Number of home visits by program phase;
3. Duration of home visit encounter;
4. Distance travelled to home visit;
5. Location of home visit; and
6. Individuals present at home visit.

The Alternate Home Visit form was intended to track the number, duration, and general content of services provided to an NFP client that was not provided in the standard home visit format (e.g., telephone, text) or was outside specific program content (e.g., service coordination/case conference). The form was completed for these types of contacts between the NFP nurse and the NFP client, the NFP client's family, and/or other involved healthcare/service provider(s). Significant encounters were defined as engaging in some form of professional service (e.g., health teaching, consulting, making a referral or gathering assessment data). This form was not to be completed for recording telephone calls or texts to confirm, cancel or reschedule visits.

DATA Information obtained from the Alternate Home Visit Encounter form included:

1. Type of alternate home visit encounter;
2. Duration of alternate home visit encounter; and
3. Individual initiating alternate home visit encounter.

C. Weekly Reflective Supervision Meetings and Joint Home Visits Form

NFP supervisors in all five regional health authorities completed the reflective supervision form on a regular basis to document their reflective practice meetings with NFP PHNs. Copies of these forms were then provided to the Study Team at Simon Fraser University, who then securely shared the forms with the Process Evaluation team. Data reported here reflects meetings held from November 1, 2013 to December 31, 2018 for Fraser, Interior, Island and Vancouver Coastal Health, and from October 1, 2013 to March 31, 2018 for Northern Health.

DATA Information obtained from the Weekly Supervision Form included:

1. % of weekly scheduled meetings completed
2. Mode of meeting session
3. Topics reviewed

D. Weekly Team Meetings, Case Conference, or Education Sessions

NFP supervisors in all five regional health authorities also completed this form on a regular basis to document the frequency of team meetings, case conferences and education sessions. Copies of these forms were then provided to the RCT Study Team at Simon Fraser University. Forms documented meetings from October 2013 until December 2018 for four health authorities; Northern Health submitted data until May 2018. These reports therefore reflected aggregated data collected between 2013 and 2018.

DATA

Aggregated data are reported here on:

1. the percentage of weekly scheduled meetings that were held,
2. the mode of weekly supervision sessions,
3. the duration of each session, and
4. reasons why meetings did not occur.

E. Process Evaluation Logs

Information about participant referral and eligibility for girls and young women who provided informed consent to receive NFP through the Process Evaluation were maintained until July 2016 in logs developed and held by the RCT Study Team at Simon Fraser University.

3.0 Selected Findings (2013-2018)

3.1 Nurse-Family Partnership Public Health Nurses

Our understanding of nurse home visiting practice was informed by the experiences of 82 NFP PHNs (Table 3) who were well positioned to provide in-depth descriptions of how nursing care was delivered in NFP and the individual, program and organizational factors they perceived influenced program implementation. NFP PHNs who temporarily assumed responsibilities for team supervision and who held a dual "nurse" and "supervisor" role are included within this group.

Table 3: NFP Public Health Nurses' Education and Nursing Experience

Nursing Education	%
Bachelor of Nursing/Bachelor of Science in Nursing	100
Master's Degree	6.3
Type of Nursing Experience	**Mean in Years (Range)**
Nursing (overall)	21.3 (2-40)
Public health nursing	13.2 (0.5-28)
Home visiting	12.8 (0-28)

3.1.1 NFP PHN Recruitment

NFP PHNs stressed the importance of organizations implementing NFP to develop practices that promote hiring nurses who are the "right fit" for the program. Given the job requirements to deliver health promotion services within the community and to develop long-term therapeutic relationships with families experiencing multiple adversities, they perceived that the professional and personal qualities necessary to be successful in the NFP role included being flexible, self-aware and non-judgemental.

> *"If a nurse doesn't fundamentally have the right attitude - if they're not open... if they're not able to roll with the punches, if they're not able to really critically look at themselves, their boundaries, their reaction to things, if they don't have that insight or aren't willing to develop it, they won't get, or last in, NFP." NFP PHN*

NFP PHNs identified critical experiences or skills that they perceived organizations might consider when recruiting new nurses to join the team:

1. Nursing experience working with populations experiencing adversity or marginalization;
2. Confidence and competence delivering nursing care in a home or range of diverse community-based settings;
3. Demonstrated abilities to establish professional boundaries within therapeutic relationships with clients that include girls and young women;
4. Knowledge of system level resources and services required to meet complex and often multiple health and social needs experienced by girls and young women eligible for NFP; and
5. The ability to frame and deliver client-centred care and services from a strengths-based, rather than a deficit-focused, approach.

3.1.2 Joining the NFP Team

> *"I really felt like I wanted to do something in my career that I felt would really be able to make a difference. I felt a real connection with the core values and the NFP client-centred principles, and just the social impact that NFP had not only for the client's family but then through generations." NFP PHN*

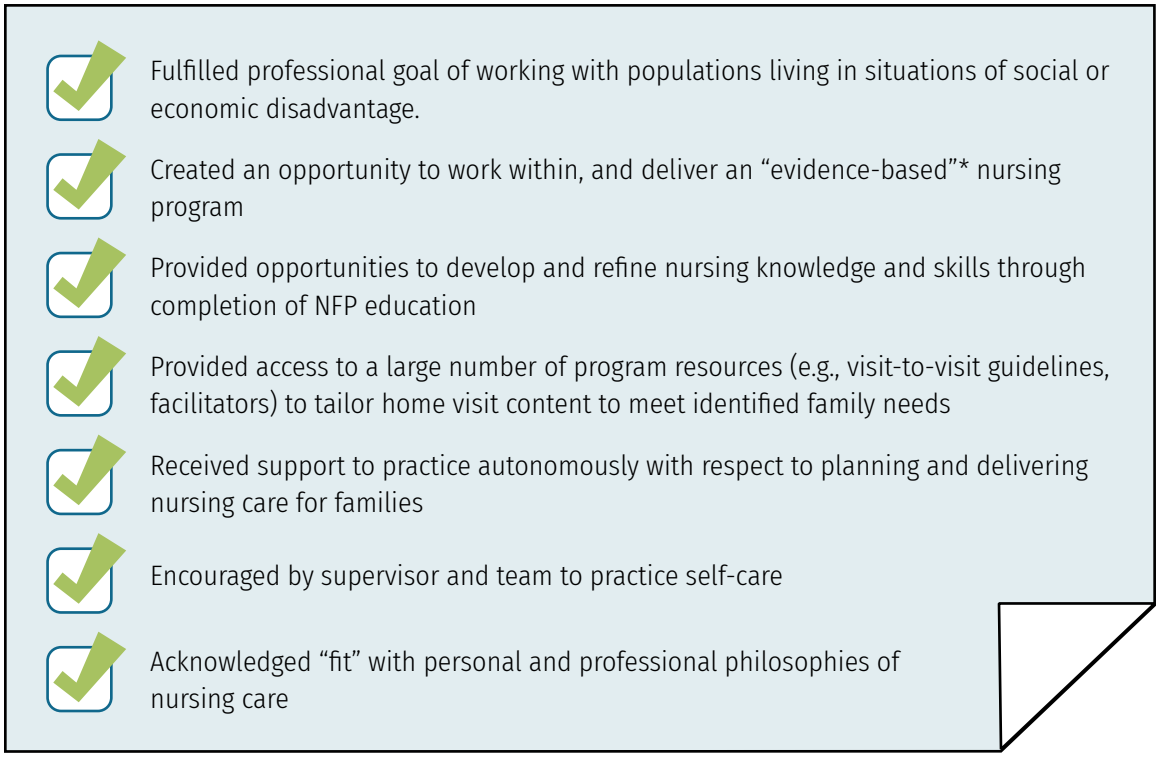
To establish the NFP teams, PHNs explained that typically an "expression of interest" was circulated at the regional health authority level encouraging PHNs to submit an application for an NFP assignment and several described completing an interview. A synthesis of the most common

reasons for joining an NFP team is highlighted in Figure 3. A few PHNs recalled that within their health authority they were informed by their team lead (or equivalent) that their PHN assignment would be adjusted to also include delivery of NFP.

PHNs who shared their motivations for applying for an NFP position explained that they were particularly inspired to deliver a nursing intervention:

- grounded in evidence and theory,
- that provided the education, structure, resources, time and support necessary to reach and then establish therapeutic relationships with pregnant and parenting girls and young women, and to support their children's health and development.
- that provided an opportunity to potentially have a long-term impact on the lives of families.

Figure 3: NFP PHNs' Reasons for Joining an NFP Team



*Throughout the interviews, nurses referred to NFP as an "evidence-based program," even though the effectiveness of the program in BC or anywhere in Canada has not yet been established. This language reflects their awareness of the evidentiary foundation of the program, established in the trials conducted in the United States, Netherlands, and England which was reviewed in their NFP education.

3.1.3 Retention of PHNs in NFP

A synthesis of the NFP program elements, activities and structures that PHNs described as contributing to nurse retention are summarized in Figure 4. There was consensus that the primary reasons PHNs were motivated to continue to work in NFP were the opportunities provided to:

1. Engage in specialized and structured professional development experiences to advance their nursing knowledge and skills
2. Develop genuine therapeutic relationships with families; and
3. Provide care and services at a fuller scope of their professional nursing practice

Figure 4: NFP Program Components Perceived to Influence PHN Retention

- Program structure and model elements that emphasize and prioritize the importance of developing and maintaining relationships with families.
- A schedule of regular and frequent home visits that allow nurses to witness the attainment of potentially positive health outcomes among families experiencing socioeconomic disadvantage.
- Application of the nursing process to promote multi-faceted aspects of maternal, child and family health creates a context where PHNs are working at the full scope of professional practice.
- Program model of education that ensures opportunities for ongoing and regular professional development to address nurse-identified educational needs.
- Provision of regular reflective supervision that provides nurses with a supportive environment to practice reflection and evaluate nursing care.
- Establishment of strong, cohesive nursing team(s) that allow for regular debriefing, consulting about challenging clinical situations, and support from individuals who "understand" program demands.

"The team meetings and reflective practice are huge for retention and, well, decreasing burnout. But also, for growth as well. The case conferences that we do are really engaging also." NFP PHN

3.1.4 PHN Turnover in NFP

Among the 82 PHNs who consented to participate in the BCHCP Process Evaluation, 45% (n=38) remained in their NFP nursing role at the end of the study (2013 to 2018). Through exit interviews with 28 PHNs who left their positions between February 2015 and May 2018, it was established

that there were either external (decision initiated and determined at the organizational level) or voluntary (decision initiated by the PHN) reasons for leaving the program. An additional 10 PHNs left their position during this time, but either an exit interview was not feasible to schedule before their exit date or the PHN did not respond to the invitation to participate. In Table 4, the organizational, personal or program-related factors influencing PHN turnover are summarized.

Table 4: Circumstances that Contributed to PHNs Leaving an NFP Position

Contributing Factors	Reasons as Described by PHNs	% (n)*
External Decision		
Organizational	Health authority restructuring	32.1 (9)
	Reallocation of nurse resources to other health unit program	
	Position terminated with no known rationale	
	Union grievance resulting in staff movement	
	Temporary assignment to NFP team	
Voluntary Decision		
Organizational	Lack of job security	32.1 (9)
	Uncertainty regarding sustainability of their NFP position post-BCHCP RCT	
	Misunderstanding of RCT study timeline	
	Negative work environment	
Personal	Retirement	57.1 (16)
	Family needs	
	Health issue	
	Moving out of health authority area	
	Another employment opportunity	
Program	Perceived lack of adequate supervisory support	42.9 (12)
	Lack of time to meet program demands (e.g., increased caseload, travel time, preparation for visits, locating clients, documentation)	
	Lack of fit between PHN preferred assignment and demands of NFP program (e.g., working exclusively with families with multiple complex needs)	
	Caseload management (particularly when assigned only part-time to NFP)	
	Experienced isolation due to geographical factors	
	Too much driving/covering broad geographic area	
Unknown	No reason given	0.03 (1)

*Among the 28 participants who contributed to this analysis, some PHNs described more than one reason for leaving their position.

3.2 Nurse-Family Partnership Supervisors

As per the NFP core model elements, an NFP supervisor is assigned to lead and manage the team. Typically, a team consists of no more than eight and no fewer than four nurses.[10]

During the Process Evaluation, 19 individuals assumed an NFP supervisor role across the five regional health authorities (Table 5). The number of NFP supervisors per regional health authority, at any one point in time, ranged from 1-3. At the start of the Process Evaluation (2013) there were 10 supervisors who participated in the first wave of interviews and at the end of the study (2018) 9 supervisors participated in the final wave of interviews. On average, this group of supervisors spent 87.4% of their assigned worktime managing NFP program responsibilities.

Table 5: NFP Supervisors' Education and Years of Experience

Supervisor Education	%
Bachelor of Nursing/Bachelor of Science in Nursing	100
Master's Degree	17.6
Type of Nursing Experience	**Mean in Years (Range)**
Nursing (overall)	24 (12-37)
Public health nursing	16.2 (6-26)
Management/supervision (prior to NFP)	3.8 (0-12)

3.3 Supervision in Nurse-Family Partnership

NFP core model element 12 requires that each NFP Supervisor provide nurses with regular reflective supervision (Figure 5).

Figure 5. Description and Frequency of NFP Reflective Supervision Activities[10]

1:1 REFLECTIVE SUPERVISION NFP PHN and supervisor meet weekly (when possible) for reflective supervision. Reflective supervision utilizes a reflective cycle to explore the NFP PHN's experiences allowing her to discover solutions, concepts and perceptions on her own without interruption or direction from the supervisor. Each session is to last approximately one hour.

CASE CONFERENCES NFP team meets to review and discuss cases, data reports, and to critically analyze practice issues to promote professional growth. Generally held twice a month.

TEAM MEETINGS NFP team meets to discuss program implementation issues and to promote team building. Held ~ twice/month.

ACCOMPANIED HOME VISITS Previously referred to as "joint home visits." Approximately every four months the NFP Supervisor accompanies a PHN on one or more home visits. Joint reflection on the visit is intended to support the PHN develop a deeper understanding of observed family dynamics and relationships as well as enable exploration of the PHN's clinical practice.

EDUCATIONAL OR LEARNING ACTIVITIES May be scheduled during case conference or team meeting time or in addition to case conferences and team meetings. Educational activities provided to extend learning related to NFP program, skill development, or knowledge enhancement on topics related to NFP practice.

KEY FINDING

It was observed that when NFP supervisors were valued and supported in their roles by health authority management, a workplace culture was created where supervisors could successfully implement the multifaceted NFP supervision model. There was general consensus from PHNs that the NFP supervision model was essential for providing them with the supports needed for their home visiting practice with families experiencing social and economic disadvantage.

In the majority of sites, PHNs described that their supervisors were highly competent in establishing cohesive NFP teams. Finally, many nurses explained that reflective supervision provided them with a safe place within the supervisor-nurse relationship to "emotionally refuel." PHNs also valued supervisors' use of the parallel process to support them to reflect about the nature of their relationships with their clients.

"The ongoing support from upper management is important. We are lucky to have a really supportive manager and that is key. The job can be stressful at times and if we didn't have the manager's support, it would be difficult to do this job." NFP Supervisor

"In NFP the whole idea of the parallel process is valued where the supervisor does to us what we do to the clients. When that happens, we feel that support and trust, and we feel cared for." NFP PHN

3.3.1 Weekly Reflective Supervision Sessions & Accompanied Home Visits

From 2013-2018, across BC, 62.4% of scheduled or planned reflective supervision meetings were held. The majority of the 1:1 supervisory sessions were conducted in-person between the PHN and the supervisor (62.3%, n=4384), while the remaining sessions were conducted by teleconference (37.1%, n=2614) or videoconference (0.6%, n=42), reflecting that some PHNs and Supervisors were not physically co-located within the same office. Some sessions were a touch base only (n=150).

AVG. MEETING DURATION

REFLECTIVE SUPERVISION **59** (Range: 5-420 minutes)

ACCOMPANIED HOME VISITS* **172.5** (Range: 45-450 minutes)

*This time includes a pre-visit overview of the client, identification by the nurse of areas she would like support on or feedback from the supervisor, time for the actual visit with the client, and then a post-visit reflection between the nurse and supervisor and completion of the accompanied home visit form.

Data regarding weekly reflective supervision sessions and accompanied home visits represents weekly supervision reports from 2013 to 2018 (only) across all five Health Authorities. There were 11,701 reports provided in total.

Reflective supervision sessions or accompanied home visits did not occur for the following reasons:

- Illness (6.9%)
- Inclement weather (0.1%)
- Scheduling conflict (10.1%)
- PHN or supervisor vacation (51.0%)
- Stat holiday (4.5%)
- PHN or supervisor medical leave (3.2%)
- PHN or supervisor busy workload (2.9%)
- Left NFP program (3.5%)
- Other (7.3%)
- Not indicated (9.5%)

KEY FINDING

NFP supervisors and PHNs were in agreement that engagement in regular, high-quality reflective supervision is an "essential part of NFP" that promotes nurses' professional growth and is a valuable tool for preventing compassion fatigue.

"My experience of the one-to-one reflective supervision has been incredible. It is one of the most positive and strongest components of the NFP program, and probably, truthfully, it is what has kept me working in the program despite the challenges I have experienced with clients. Reflective supervision keeps me practicing at the best level that I can. I've always felt very safe with my supervisors and I can speak freely. The relationship between myself and the supervisor was just very strong and supportive. It's provided a lot of opportunity for tremendous growth in my practice – and helping me grow both personally and as an NFP home visitor." NFP PHN

"With our clients we explain that when you feel depleted you need to fill that energy back up. For me, 1:1 supervision is my emotional refueling. Because of the nature of the clients we are working with, one of the most important things is to get that emotional recharge from your supervisor and reinforcement that what we are doing is hard work and to hear, "you are doing an amazing job and keep going." I can say with 100% confidence that without reflective supervision I would not still be working in NFP." NFP PHN

There was consensus that the formal requirement by the NFP program to provide reflective supervision was critical for securing organizational support for the required time and resources, as well as ensuring NFP teams prioritized scheduling this activity.

"Reflective supervision. It's nice that it is supported by the model so it's very clearly stated within NFP that reflective supervision is required. It's not a "nice to do" it's a "must do." So as supervisor workload and nurse caseloads increase, reflective supervision can't fall by the wayside." NFP Supervisor

Both supervisors and PHNs reflected that the quality of the reflective supervision experience was influenced by individual, relational, and procedural characteristics as outlined in Table 6. It was acknowledged that the establishment of a nurse-supervisor relationship where deep and honest reflection can occur is a process and requires time to be developed and maintained.

The NFP supervisors provided supervision to some nurses who were not physically co-located within the same office building or community. On average, NFP supervisors were responsible for supervising NFP PHNs across 3 office sites (Range: 1-6 offices).

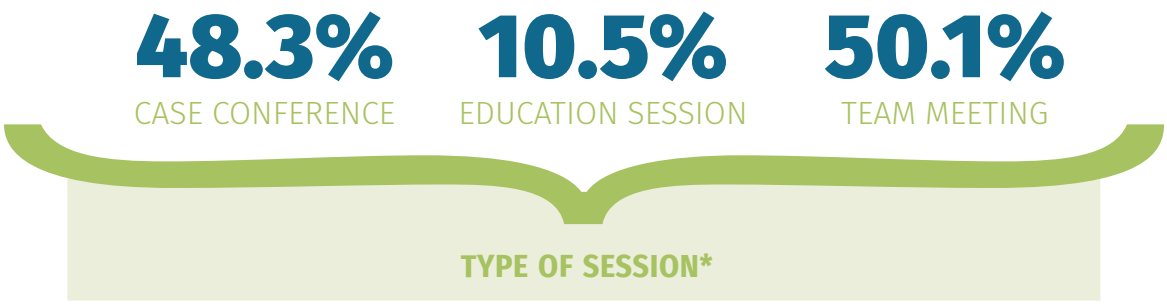
Table 6: Factors that Influence Quality of PHN Reflective Supervision

Factor	Characteristics
Individual	Supervisor • Skill level in motivational interviewing • Communication skills including active listening, posing open-ended questions, providing guidance and not direction • Accurate understanding of complexity of field issues and appreciation for how they impact nurse functioning and caseload management (e.g., locating clients, communication with clients or community partners, system navigation to secure supports for clients, managing travel and home visiting logistics, time for documentation) • Commitment to ongoing professional development to enhance skills and an openness to evaluate oneself • Skilled in assisting PHN to examine her own questions and generate solutions while the supervisor provides support, additional information and guidance • Skilled in focusing on nurses' reflections of events rather than focusing on case review and problem solving PHN • Level of preparation for reflective supervision (e.g., comes prepared with topic or issue to discuss) • Willingness to express own thoughts, feelings and needs in context of the relationship to the supervisor • Communication skills and ability to engage in discussion about sensitive issues
Relational	• Recognition that time is required to develop a relationship between a supervisor and a PHN • Both the supervisor and the PHN need to feel safe in the relationship, and that the sharing of emotions, will be met with a non-judgemental and non-punitive response
Procedural	• Scheduling of reflective supervision sessions prioritized within the context of busy workloads • A regular and consistent schedule (when possible) of supervisory sessions are booked • Both individuals attend the session focused on the purpose of reflection and minimize opportunities for disruption (e.g., put phone on silence, put cell phones away, put "do not interrupt" sign up, negotiate use of private space within agency) • Mode of reflective supervision mutually negotiated and determined with built-in flexibility to adapt to changes in location or nurse needs (e.g., some PHNs expressed appreciation for having an option to meet for reflective supervision out of the office)

For reflective supervision, generally nurses and supervisors spoke of a preference for face-to-face sessions (where geographically possible). The frequency and mode of weekly supervision was influenced by the co-location of the PHN and the supervisor. Where co-location occurred, it was most likely that face-to-face sessions occurred in person. When nurses and supervisors did not work out of the same office, then geography, weather and travel distance influenced the mode of the supervisory session. When an in-person session was not possible, PHNs and supervisors preferred the option of conducting supervision through videoconference compared to a telephone call, so that non-verbal expression of emotions and reactions could be observed. When establishing a new supervisor-PHN relationship between individuals working in different locations, it was recommended that efforts be made to hold multiple face-to-face visits first, to establish the relationship before transitioning to video/telephone encounters.

3.3.2 Case Conferences, Team Meetings, and Educational Sessions

Across the five regional health authorities, the NFP teams were successful in scheduling sessions and meeting the NFP recommended ratio of 50% team meetings and 50% case conferences/ education sessions.



*Slightly over 100% because some meetings were recorded as both case conference and team meetings. Aggregated across all five Health Authorities. Representing 2,292 meetings in total from 2013-2018.

Overall, 1980 meetings were held (91.5% of scheduled). Most were conducted in person (43.7%), while the remaining were done by teleconference (29.4%) or both (29.9%). Meetings lasted 112 minutes on average, and anywhere from none to ten guests were invited. On average, 9.8 team members attended the meetings (Range: 2-37).

A wide range of topics (Table 7) were discussed during team meeting and education sessions. The types of topics reflected the complexity of NFP participants' lives as well as the commitment of NFP PHNs to enhance their roles as advocates and to deepen their knowledge and skills related to assessment and intervention for both mental and physical health concerns.

Table 7: Topics (Examples) Reviewed During Team Meeting/Education Sessions

Topic Category	Examples
NFP participant mental and physical health	• Adverse childhood experiences • Perinatal mental health including anxiety
Application of nursing process to address critical health, social or legal needs of girls and women receiving NFP	• Recognition and response to intimate partner violence and other abusive relationships • Substance use • Custody/guardianship • Homelessness • Supporting behaviour change
Parenting/maternal role	• Attachment • PIPE (Partners in Parenting Education) • DANCE (Dyadic assessment of naturalistic caregiver-child experiences) • Caring for twins • Resources for fathers • Perinatal loss
Therapeutic nurse-client relationships	• Establishing boundaries • "Ending" home visits • Cultural safety • Trauma-informed care
System navigation and advocacy	• Community engagement • Client advocacy • Social injustice • Locating and developing relationships with community services • Supporting NFP clients to work with other providers
Public health nursing role within NFP program	• Managing emotional exhaustion/compassion fatigue • Emotional refueling • Documentation • Use of technology with girls and women enrolled in NFP • Review of program theories • Cell phone usage • Caseload management

KEY FINDING

Meeting regularly for the purpose of team meetings, education or case conferences helped to establish team cohesion, created a space for peer support and learning, created opportunities for ongoing reflection and promoted nurse retention.

"What's important? I think the team itself, right? The commitment that we have to each other, the team of NFP nurses is strong and it helps us to stay with the program. Plus, the team understands the work and they are there to support you. And that whole piece about reflection that is so integrated. Reflection is woven throughout the program, through our meetings, in our sessions with our supervisor and just even informally in how the program has been set up here." NFP PHN

3.4 Public Health Nurses' Perceived Value of Nurse-Family Partnership

Two central and important themes that were woven throughout all waves of interviews with the NFP PHNs were that:

1. The NFP program model provides the necessary structure and resources to support PHNs to more fully apply their scope of nursing practice to identify and then address the complex needs of girls and young women (as well as their children) enrolled in NFP; and
2. The establishment and maintenance of a therapeutic nurse-client relationship is valued and prioritized within the program.

KEY FINDING

Consistently, NFP PHNs described that NFP clients experienced an extensive number of complex health and social challenges (e.g., exposure to violence across the lifespan, poverty, homelessness, mental health and substance use) while parenting. They explained that supporting their clients to navigate these issues required an equally intensive and comprehensive response from an early intervention program like NFP. The introduction of the NFP program to deliver services to families experiencing social and economic disadvantage was positively received by PHNs.

To engage in early intervention, many PHNs specifically valued that NFP:

- home visits start early in pregnancy,
- that regular and frequent home visits from a consistent PHN were required,
- provides them with the resources (e.g., education, visit-to-visit guidelines, facilitators) and time to apply the nursing process (e.g., assessment, diagnosis, planning, implementation and evaluation) to identify and support clients in meeting their personal and parenting goals.

Nurses' positive experiences delivering NFP was often contrasted to their past public health nursing experiences working with similar populations where their nursing role was to primarily assess client needs and then refer to other supports and services.

"Over my career as a public health nurse there was always a piece missing. I've always wanted to do more. We used to follow our 'high-risk' clients, but there was a gap between what they needed and what I was able to do as a public health nurse within the confines of my job. Generally, we tended to be a referral source. We saw a need and then we would find somewhere in the community or a program to refer them to. I always felt like I had more I could be sharing with these clients, but I didn't have the mandate or time to do it. So, with NFP, I saw I would be doing what I'd always really felt was my passion and what I could do as a public health nurse." NFP PHN

KEY FINDING

The NFP PHNs identified that the establishment and nurturing of a therapeutic nurse-client relationship was central to the delivery of the program. There was an expressed appreciation that the program principles, structure and philosophies inherently reflect the importance and need to slowly and sensitively establish a therapeutic alliance with the client. This relationship then becomes the foundation through which the client's health promotion and behaviour change work occurs and where nurses are sensitized to the impact of social circumstances on clients' lives.

"The intervention is the nurse-client relationship. The relationship builds between the nurse and the client... that takes time. You wouldn't be able to have the results without the time being spent building that relationship. The time is needed for clients to feel safe in that relationship, safe to share and be vulnerable. Then the nurse becomes that voice in their life saying, 'Yeah, I believe in you.'" NFP PHN

3.5 Delivery of Nurse-Family Partnership to Pregnant and Parenting Girls and Young Women

Of 739 girls and young women who consented to participate in the BCHCP RCT, 368 were randomized to receive NFP and existing services through their regional health authority and 371 were randomized to receive existing services (with no NFP).[9] An additional 157 NFP-eligible girls and young women received the program as part of the Process Evaluation.

***At enrollment**

MEAN AGE IN YEARS **19.17**

(SD = 2.18; Range: 14-24 years)

MEAN WEEKS GESTATION **16.78**

(SD = 5.89; Range: 4-27 weeks)

3.5.1 Timing of Participant Enrollment in Nurse-Family Partnership

Over a five-year period (October 1, 2013 – December 31, 2018), data from 480* participants enrolled in NFP across four regional health authorities was received from the aggregated BC Ministry of Health dataset. (Again, note that NFP delivery continued after this.)

The benchmark for enrolment is 100% of clients should be enrolled and have received a home visit by the 28th week of gestation. In addition, 60% of clients should be enrolled by the 16th week of pregnancy. BC was challenged to reach, offer and enrol young pregnant women and girls into NFP by the 16th week of pregnancy.

3.5.2 Number and Duration of Nurse-Family Partnership Home Visits

Across four regional health authorities, data were also available on RCT participants for 2013-2018 (only) (not Process Evaluation), during which time, 14,042 visits were scheduled – 3,444 during pregnancy, 7,151 during infancy, and 3,447 during toddlerhood. The percentages of completed, attempted and cancelled visits for this time period are summarized in Table 8.

Table 8: Completed, Attempted, and Cancelled Home Visits*

Completed	Attempted	Cancelled by client**	Cancelled by PHN
Mean % (Range)	Mean % (Range)	Mean % (Range)	Mean % (Range)
78.9 (76.3-82)	6 (3.7-9.3)	13.2 (9.8-17.5)	1.9 (1.8-2.1)

* Please note that for Tables 8-13 and 15-18 that the totals recorded reflect RCT NFP delivery data collected October 1, 2013 - December 31, 2018 from Fraser, Interior, Island and Vancouver Coastal Health Authorities. RCT NFP delivery continued until June 2019. These data do not include Process Evaluation "only" sites (i.e., Northern Health Authority and smaller, rural sites in participating regional Health Authorities).
** Less than 24 hours before visit.

Table 9 (next page) provides an overview of the number of visits received by program phase during this same time period. It is important to note, however, this is not a complete picture of the number of home visits given that visits were still occurring for clients enrolled in the RCT until June 2019.

Table 9: Mean Number of Home Visits by Program Phase

Pregnancy			Infancy			Toddlerhood		
Mean	Median	Mode (Range)	Mean	Median	Mode (Range)	Mean	Median	Mode (Range)
8.31	8.25	8.25 (1-19)	17.62	18.5	21.75 (1-42)	11.10	11.88	7.25 (1-27)

NFP PROGRAM COMPONENT

While the NFP program allows for flexibility in determining the schedule and frequency of visits, a general schedule of visits shared with clients to decide upon is:

1. visits weekly for the first four weeks in the program, then bi-weekly until the infant is born;
2. weekly visits for the first six weeks postpartum, and then biweekly to 21 months; and then
3. tapering visits to monthly over the last three months of the program (prior to the child's 2nd birthday.

The total number of visits in pregnancy will vary depending on the client's gestational stage at the time of enrollment, but it has been estimated that an individual could be eligible for a maximum of 14 home visits in pregnancy and up to 50 visits following the child's birth (throughout infancy and toddlerhood), however there are no stipulations on the maximum number of visits a client may receive.

During the pregnancy phase, there were an average of 8-9 visits per client; whereas during the infancy phase (birth to <12 months) there were 17-18 visits per client. Finally, in the toddlerhood phase (12 months to 24 months), clients received between 11 and 14 visits on average with differences across regional health authorities. However, as delivery of the program to clients participating in the RCT continued until June 2019, this presents just a "snapshot" of data and we can anticipate that in future RCT reports, a higher number of visits during this phase will be noted.

In Table 10, descriptors for visit duration (in minutes) by program phase are highlighted. The average duration of visits was 75 minutes. The most frequent visit length (mode) varied by health authority with 3 of 4 reporting 90 minutes as the most common visit duration and one health authority reporting 60 minutes. Length of the visits was fairly consistent across program phases with an average duration ranging from 72 to approximately 80 minutes.

Table 10: Home Visit Encounter Duration (in minutes) by Program Phase

Pregnancy		Infancy		Toddlerhood	
Mean	Mode	Mean	Mode	Mean	Mode
79.4	82.5	75.0	82.5	72.4	82.5

3.5.3 Distance Travelled to Complete Home Visits

In NFP, the nurse-client encounter occurs in a mutually negotiated, community-based location and the NFP PHN travels to meet with the girl or young woman. Across interviews with all Process Evaluation participants, geography was highlighted as a critical factor that influenced how the program was uniquely implemented and delivered across and within different health authorities. Understanding distances travelled to complete home visits provides important information to guide decisions related to resource and caseload management, as well as scheduling of home visits and other NFP program components (e.g., meetings, accompanied visits).

In Table 11, descriptives for distance travelled for each visit in kilometers (kms) are presented. On average, across four of the health authorities, the average distance was 14.3 kms to travel for a home/community visit. Yet, the range of distances travelled was quite broad, from 1 km and up to 120 km for a single visit; this reflects the diverse geographies in which NFP is delivered in BC. Distance travelled was fairly consistent across program phases. Despite long travel distances for some nurses, other nurses have reported short travel distances but being "stuck in traffic" which is also time intensive.

Table 11: Home Visit Encounter Distance Travelled (in kms) by Program Phase

Pregnancy		Infancy		Toddlerhood	
Mean	Range	Mean	Range	Mean	Range
11.5	1 - 120	15.4	1 - 150	16.0	1 - 86

3.5.4 Where is "Home" in Nurse Home Visiting?

While NFP is designed as a home visitation program, not all visit encounters occur in the home. Within the program, home is operationalized as the location where the NFP client sleeps at least 4 days per week. Across all program phases, the majority of face-to-face encounters took place in the client's home (Table 12).

Table 12: Home Visit Location by Program Phase

Home Visit Location	Pregnancy	Infancy	Toddlerhood
	% of All Recorded Home Visits (Range)		
Client home	65.1 (48.5-72.7)	73.5 (66-83.7)	72.4 (58.9-80.5)
Family or friend's home	3.6 (1.0-4.6)	4.9 (1.1-6.4)	3.6 (0-5.6)
Doctor's office or clinic	0.2 (0-0.4)	0.4 (0-0.3)	0.8 (0-0.6)
School	1.5 (0.3-2.6)	2.6 (0.8-4.5)	3.0 (0.6-5.0)
Public health office	14.3 (2.9-30.4)	8.8 (3.0-13.5)	10.6 (2.3-20.1)
Other	14.8 (9.9-17.3)	10.7 (7.0-15)	8.8 (7.3-11.4)

Examples of 'other' locations identified in text responses (pregnancy):

- Coffee shop
- Community centre
- Library
- Maternity clinic
- Hospital
- Parks
- Shopping mall
- Food bank
- Shelter
- Supportive/transitional housing centre

Examples of 'other' locations identified in text responses (infancy and toddlerhood):

- Kinship care/foster home
- Coffee shop
- Daycare
- Library
- Park
- Shopping mall (with play area)
- Vehicle (PHN's car or van)
- Transition homes
- Courthouse
- Play group
- Community service centre (e.g., BC Ministry of Child and Family Development office)

Reflections on home visit site locations

In their interviews, PHNs and supervisors both discussed that having a "face-to-face" encounter was prioritized regardless of the location of the encounter. While many encounters occurred in the place the participant calls "home," for others, the encounter occurred in another community setting. Over time, once the relationship had been established through those early "face-to-face" encounters, only then did many PHNs feel confident in offering some visits by "phone" or "video" (e.g., using FaceTime call option on an iPhone or equivalent applications) when distance or weather made it difficult to physically reach the client. Findings related to alternate home visits are addressed in section 3.6.

"Most of the visits do occur in their home – it seems to be the expectation. But they [the NFP client] knows that if they call me to cancel a visit, maybe because there's too many people in the home or whatever, then I'll suggest we can meet somewhere else... They usually choose a coffee shop." NFP PHN

KEY FINDING

Supervisors acknowledged the flexibility NFP PHNs demonstrated in planning visits and their commitment to accommodating client preferences for visit location. Across the narratives shared by the nurses, their capacity to deliver non-judgmental, client-focused nursing care was clearly evident.

"We pulled over a little table and chair that was in the corner for smokers and the father sat on the curb. I plunked the scale on the table, and we carried on, with taking baby's weight and doing a full breastfeeding assessment. We actually had our entire visit out there."

(NFP PHN on describing a visit that occurred in a parking lot outside the client's home)

In visits during pregnancy, when the nurse-client therapeutic relationship was being established, nurses shared that for some clients, when trust had not yet been established, there was sometimes a hesitancy for the client to allow a stranger into their home. So, for some clients, these early visits were scheduled in public places, often familiar and non-threatening locations such as a coffee shop or park. Other times, meeting at a location where the client had an appointment or was accessing other services was an efficient strategy for scheduling a visit. For pregnant girls still in high school, PHNs often found it convenient to arrange a visit at the school.

"The clients are not always comfortable with us in their home as the relationship is being developed. So, we find that it's important to first work on establishing the relationship and then later, [ask] for a visit in the home environment. Often postpartum they'll be more open to home visiting than prenatally. We do have some prenatal clients still refusing to have the nurse come to their home. So, we work with that just feeling that it's all about the relationship and feeling safe with the nurse. And so that's where we go." NFP PHN

In other situations, meeting in the home environment raised concerns about safety or privacy. PHNs shared that working with individuals experiencing intimate partner violence sometimes raised significant concerns for both nurse and client safety when conducting a visit in the home. PHNs also described that many of their NFP clients lived with extended family members or in small spaces, occupied by many people, making it difficult to locate a private space where the nurse and the girl or young woman could meet.

Nurses also discussed that in some circumstances the girl or young woman did not hold the decision-making power to determine who entered the household. Thus, the decision to let an NFP PHN visit in the home would be left to a "gatekeeper," often the client's partner or parent.

"I met one of my first clients at a coffee shop and then all of our subsequent visits were done at the health office. She would not have consented to the NFP program or any nursing involvement, if the visits had to be in her home. She was living with her family at the time and her mother did not allow guests in the home. I never did get to see her in her home, but I was able to offer the NFP program anyways." NFP PHN

Many PHNs wondered if program administrators understood how much of a nurse's time was often occupied by activities to locate this highly mobile population of young mothers. PHNs shared that the majority of clients had moved at least once while they were in the NFP program, and for those who had experienced homelessness, or who did not always have access to a phone, nurses were creative in locating and finding their clients. Nurses acknowledged knowing when an NFP client might be accessing another service (e.g., teen parent drop-in, doctor's appointment, playgroup) and then "dropping in" at the same time to use that opportunity to have a spontaneous visit at the other agency.

Changing the location of the home visit was often done purposefully as a strategy to promote the girl or young woman's goal attainment and retention. A common NFP nursing intervention is to refer clients to other supports and services. Yet at times when the individuals they were working with experienced anxiety in accessing a new service, the nurse would agree to meet them at the community agency ("warm referral"). In the infancy and toddler phases of the program, many of the visits were taken outside to focus on physical activity goals. "Walking home visits", nurses explained, not only incorporated exercise into the mother's daily routine, but also served to create more privacy or just a "much needed change of scenery" for the visit. For clients with an established relationship with the nurse, PHNs identified how essential it was to provide variety in the home visit location and used this as one strategy to promote client retention. As the children grew older and more mobile, home visits in parks and playgrounds became a strategy where the child could be occupied during the visit and the nurse and mother could also speak about the benefits of play, social interactions, and exercise for children.

3.5.5 Individuals Attending Home Visit

PHNs recorded who attended each home visit. Table 13 presents the percent of visits attended 1) only by the client and/or their child, 2) by the father of the child (in combination with the client, the client and child, or the client and other individuals), and 3) the partner (not the father of the child) by program phase.

In rare instances, the father of the infant attended visits without the mother being present. Across three of the regional health authorities, some fathers of the infant attended up to 18 visits during infancy and up to 7 during toddlerhood without the client. In the fourth regional health authority, no recorded visits with the fathers alone were noted. Some reasons for this included incarceration of the mother, addiction treatment for the mother, or a mother's hospitalization.

Table 13: Client, Father, and Partner Attendance at Home Visits by Program Phase*

Pregnancy			Infancy			Toddlerhood		
Client	Infant's father	Partner	Client or client with child	Infant's father	Partner	Client or client with child	Infant's father	Partner
65.7%	19.2%	0.6%	57.9%	21.9%	0.6%	65.4%	16.7%	1.8%

*Note: One health authority's electronic record system, did not differentiate any fathers listed as present during home visits. Partners were listed for visits during infancy and toddlerhood. Given this discrepancy, data from this one health authority are not included in final totals.

During other home visits there were a variety of other individuals present including the participant's mother and/or father, other family members, friends, other children (family members, children of friends, or others), other NFP nurses or supervisors (e.g., for the purpose of "joint" or accompanied home visits), foster parents, or other health care professionals. Other individuals listed as attending visits included BC Ministry of Child and Family Development support workers, social workers and other social service workers including drug counsellors, home transition workers etc. Given the various and numerous combinations, we do not report the percent of these individuals present during home visits.

3.5.6 PHNs' Experiences of Father/Partner Presence and Participation in Home Visits

NFP PHNs discussed that they valued and created opportunities to have the client invite the infant's father or the NFP client's partner to join the visit. The PHNs described four patterns of father/partner presence and participation in home visits (Table 14).

Table 14: Pattern of Father/Partner Presence and Participation in Home Visits (2013-2018)

Active Engagement in Home Visit Encounter/Discussions
Present in Home Visit
• Father/partner frequently present during home visit and actively engages with PHN • NFP participant values or accepts presence of father/partner; observed to be comfortable with his presence. • Father/partner demonstrates engagement by asking PHN questions, completing home visit "homework" or "activities; or contributes to discussion. • Father/partner actively participates in infant care and is knowledgeable of infant routine and developmental milestones. • Father expresses interest to PHN in learning more about paternal role or becoming a "better" parent.
Inconsistent Attendance/Absent from Home Visit
• Father/partner not physically present for home visit due to school or work schedule. • NFP client may act as a facilitator to share information between father of infant/partner and PHN. • PHN observation that NFP client values or accepts this level of engagement; perceives that participant and partner/father of infant discuss program content before or after home visits • Father/partner demonstrates engagement and interest by leaving questions with NFP client for the nurse or requesting information on parenting.
Limited or No Engagement in Home Visit Encounter/Discussions
Present in Home Visit
• Father/partner physically present during home visit with limited to no engagement or conversation with PHN. • PHNs describe two unique pattern variations: a) small living space means that father/partner has few options on where to locate self; may be in physical space but focused on other activity (e.g., video games, TV, phone) or b) present, but for the purpose of observing or controlling the home visit to influence what client shares (or does not share) with the PHN (surveillance). • Father/partner does not seek information from PHN or demonstrate interest in program content.
Inconsistent Attendance/Absent from Home Visit
• NFP participant does not have a current partner or contact with "father of baby" (or may be unaware of who is father of baby)

3.5.7 Home Visit Content by Nurse-Family Partnership Program Domain

PHNs use the NFP Visit-to-Visit guidelines to plan and implement their home visits, individualizing their approach to meet the individual needs and choices of each client and family. During their visits, PHNs apportion time across the six program domains.

NFP PROGRAM COMPONENT

Below, the domains are listed with examples to demonstrate the scope of content covered within each domain.

1. **Personal Health**
   Health maintenance practices; nutrition and exercise; substance use; mental health
2. **Environmental Health**
   Home, work, school and neighbourhood
3. **Life Course**
   Family planning, education, budgeting, livelihood
4. **Maternal role**
   Mothering role, physical, behavioural, and emotional care of the child
5. **Family and friends**
   Personal network relationships, conflict management, communication, assistance with childcare
6. **Health and Human Services**
   Linking family with needed referrals and services

Estimates of the amount of time that are beneficially spent on different content areas vary by program phase (Pregnancy, Infancy or Toddlerhood). Goals for the amount of time spent in each area are based on the content covered in the three trials conducted in the United States and address the varied (yet common) needs of clients and families in stages of pregnancy, infancy and toddlerhood.[10] It is expected that the time spent on accessing the need for additional services/making referrals (Domain 6. Health and Human Services) will be threaded within the time spent on the other relevant domains, so it is not captured as a separate domain.

In Tables 15, the percent of home visit time apportioned across the NFP program domains by program phase between 2013-2018 is summarized. RCT reporting in the future will provide a fuller picture. The NFP benchmarks[10] for program domain content coverage for each program phase are also provided in the tables.

Based on these reports, the four regional health authorities were typically within the benchmarks for each of the content domains during pregnancy, with one small exception. PHNs across the four regional health authorities were spending more allotted time on 'Environmental Health' than what is recommended by the benchmarks. Furthermore, in three of four regional health authorities less time was focused on 'Maternal Role.'

During the infancy phase, most regional health authorities met targeted benchmarks across all domains.

During the toddler period, the four regional health authorities did not meet the benchmark for the 'Maternal Role' domain by 5.25%, with all regional health authorities reporting less than 45% of time spent on that domain. However, almost 40% of the time within a home visit is allocated to maternal role, the domain intended to be the primary focus within the nurse-client encounters. PHNs across all regional health authorities spent more allotted time (2.25%) on 'Personal Health' with four of four regional health authorities reporting greater than 15% of time spent on this domain.

Table 15: Home Visit Time by Program Phase: Pregnancy, Infancy and Toddlerhood

	DISTINCT VISITS (n)	PERSONAL HEALTH (%)	ENVIRONMENTAL HEALTH (%)	LIFE COURSE DEVELOPMENT (%)	MATERNAL ROLE (%)	FAMILY & FRIENDS (%)
PREGNANCY						
Benchmark	-	35-40%	5-7%	10-15%	23-25%	10-15%
Total/Mean	457	38.5%	10.5%	14.0%	22.0%	15.0%
INFANCY						
Benchmark	-	14-20%	7-10%	10-15%	45-50%	10-15%
Total/Mean	467	19.0%	9.0%	14.5%	44.0%	13.5%
TODDLERHOOD						
Benchmark	-	10-15%	7-10%	18-20%	45-50%	10-15%
Total/Mean	342	17.25%	10.0%	18.75%	39.75%	14.25%

3.6 Alternate Home Visit Encounters

In addition to "face-to-face" or home visit encounters with the girls and young women, plus their children, PHNs also had significant encounters with clients, their family members or other service providers with whom the client was working by telephone or text, or while attending an appointment or client case conference.

NFP PROGRAM COMPONENT

A significant encounter is defined as engaging in some form of professional service such as providing health teaching, consulting, making a referral or gathering assessment information. Non-significant encounters such as telephone calls or texts to schedule, confirm, cancel or re-schedule visits were not recorded on this form.

Information from the Alternate Home Visit Encounter forms provided a snapshot of:

- the types of alternate visit encounters completed by PHNs (Table 16),
- the average duration of these encounters (Table 17)
- insights about who initiates these types of contacts (Table 18).

3.6.1 Types of Alternate Visits

Across all program phases, the most common types of alternate visits were telephone calls, telephone visits and texts.

NFP PROGRAM COMPONENT

A telephone visit is typically a "planned" encounter between the PHN and the NFP client to review program content and scheduled because a face-to-face visit was not possible. In contrast, a telephone call is any other telephone interaction between the PHN and the client (e.g., a client calls the nurse to ask a question between booked visits), the client's family, or another service provider.

In their interviews, there was consensus across PHNs that use of an agency-supplied smartphone with access to a data plan is required for PHNs to successfully and safely deliver NFP to families. Essential telephone features they identified as necessary to provide to nurses included: QWERTY keyboard (vs ABC), car charger cord, and a hands-free headset. PHNs who had been issued "flip phones" experienced high levels of frustration and explained that flip-phones impeded their ability to efficiently communicate with clients.

In addition to communicating with NFP participants, the PHNs' cell phones were frequently utilized for multiple other functions including:

- text-messaging; navigation (e.g., GPS);
- internet access to share resources with clients;
- access shared online calendars;
- talk-to-text function (for recording notes between visits);
- respond to emails;
- and to send/receive photos from NFP clients.

Table 16: Type of Alternate Home Visit Encounter by Program Phase

	Pregnancy		Infancy		Toddlerhood	
	%	Range (%)	%	Range (%)	%	Range (%)
Telephone visit	14.1	5.3-19.8	20.4	7.6-26.9	18.0	1.8-27.9
Telephone call	31.7	13.2-41.7	30.2	23.4-36.0	22.4	13.0-30.8
Attend Appointment	10.4	0.5-20.9	4.4	0.1-8.0	5.2	0.2-11.5
Case conference	5.1	1.3-9.9	5.3	0.9-10.9	4.1	0.9-11.1
Text	20	5.9-40.6	20.7	12-41.0	23.3	3.7-62.5
Other	18.8	10.6-24.2	19.2	14.4-23.0	27.0	10.0-48.1

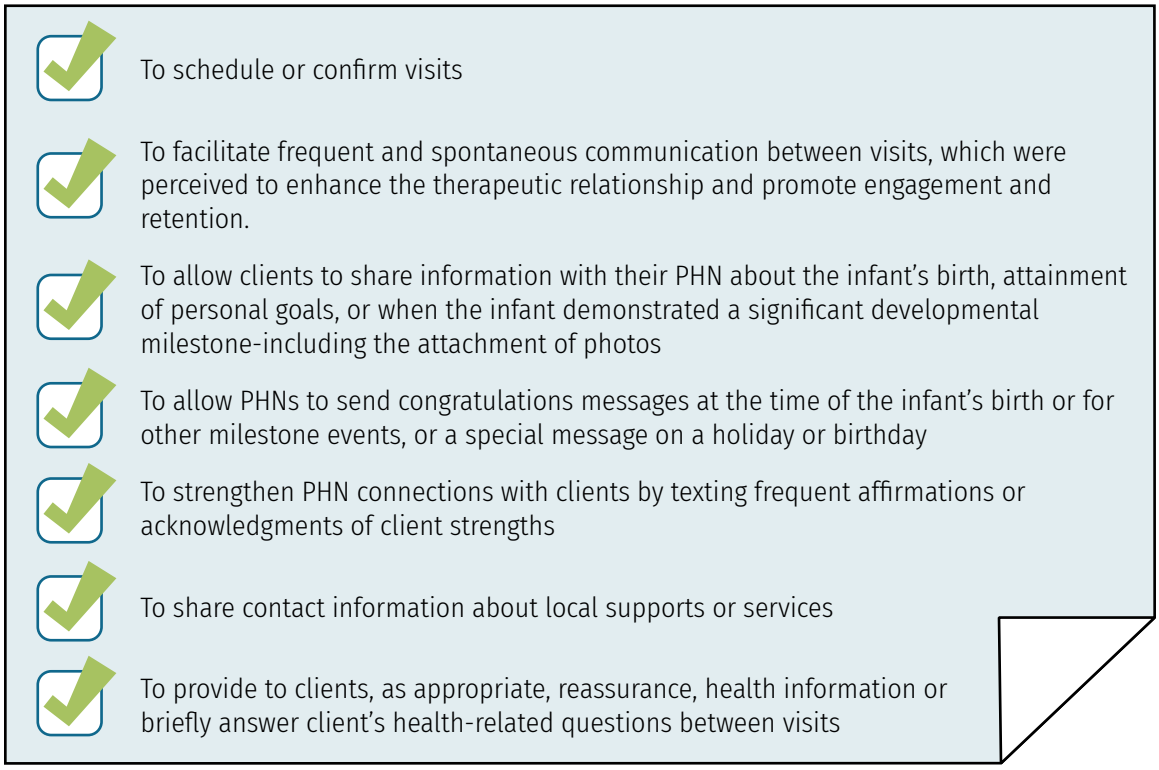
KEY FINDING

The PHNs confirmed that a majority of NFP clients have access to, and use, a cell phone as their primary mode of communication. PHNs perceived that NFP clients preferred texting, compared to calling and in their experience, clients are more likely to respond to a text message than a call. Many cell phone plans provide unlimited texting while phone calls are charged to the plan.

As many of the NFP clients lacked an informal network of family or friends who could provide general information about pregnancy, parenting, or infant well-being, the NFP PHNs perceived that they became a primary source of health information.

In their work with clients, PHNs confirmed that text messaging served several important functions. These are listed in Figure 6 (see next page).

Figure 6. Functions of Text Messaging Reported by PHNs



"The minute their baby is born, they send us a photo and a message, like, "here's my new baby." And you [the PHN] say, "thank you for sending the photo." And the client responds, "I can't wait to see you and for you to meet my baby." And that's the connection." NFP PHN

The scope of alternate visits varied widely. Examples of alternate home visits provided included:

- emails to agencies
- meeting with other community service providers
- attending prenatal classes, baby showers
- birthday parties or graduations (as appropriate)
- hospital and neonatal intensive care unit visits
- mailing packages and information
- meeting or speaking with teachers, pharmacists or housing workers

and in toddlerhood, attending dental visits, immunization appointments, eye appointments, or visits to speech and language or hearing centres.

3.6.2 Duration and Initiation of Alternate Visit

Duration of time of alternate home visit encounters by program phase are highlighted in Table 17. There was a wide range of duration reported given that alternate visits captured anything from emails and text messages to attending case conferences and meetings with other service providers.

Table 17: Duration (in minutes) of Alternate Visit Encounters

Pregnancy		Infancy		Toddlerhood	
Mean (SD)	Mode (Range)	Mean (SD)	Mode (Range)	Mean (SD)	Mode (Range)
27.3 (32.7)	7 (1-300)	24.6 (29.6)	12.5 (1-270)	20.8 (31.1)	6.25 (1-360)

Information regarding who initiated the alternate home visit encounter is provided in Table 29 by program phase. In most instances the NFP PHN, initiated contact, followed by the NFP client. Other healthcare professionals and service providers were the next mostly likely to initiate contact. Family members and partners rarely initiated alternate encounters.

Table 18: Who Initiated Type of Alternate Home Visit Encounter

	Pregnancy		Infancy		Toddlerhood	
	%	Range	%	Range	%	Range
Client	27	18-40.2	26.5	21.2-36.5	31.1	21.5-35.5
NFP PHN	59.9	41.4-72	57.2	37.7-70.6	59.5	51.5-71.2
Other family	0.8	0-2.3	1.8	0.7-3.6	0.8	0-3.1
Husband/partner	0.4	0-1.1	.05	0-0.1	0	0
Healthcare professional	4.3	3.4-5.7	4.9	2.1-7.2	1.4	0-3.2
Service provider	7.7	5.5-10.1	9.5	4-15	7.2	4.1-10.7

4.0 Implications and Next Steps

This profile of NFP PHNs' and supervisors' professional practice confirms that between 2013 and 2018 the program was implemented with fidelity to multiple NFP core model elements. Given the adversity and concentrated disadvantage experienced by the girls and young women, and their children, enrolled in BCHCP, PHNs emphasized that the NFP program's multifaceted structure, comprehensive client-centered educational and therapeutic offerings, and extensive home visiting resources were necessary to adequately support clients to address their multiple complex and critical needs. Furthermore, within NFP, PHNs highly valued the ability to work at a fuller scope of practice with defined caseloads of clients to provide high quality and comprehensive care compared to observations of PHNs in other early intervention programs predominantly providing case management services to higher caseloads of families with similar needs. By optimizing the

PHN role in home visiting NFP practice, capacity was established to conduct comprehensive health assessments that informed the development, implementation and evaluation of tailored plans of care to help the client address their complex health needs and goals. Implementing and supporting continuous, frequent home visits by a PHN starting in pregnancy and continuing until a child's second birthday may therefore be a critical mechanism to promote behaviour change among girls and young women in NFP and to prepare them to parent while also managing adversities including low income, experiences of violence, mental health concerns including substance use, and unstable housing conditions.

Given the crucial role of PHNs in delivering NFP, and the importance of maintaining a constant therapeutic relationship with the girls and young women they work with, as well as their children, our findings highlight key factors to consider for nurse recruitment and retention in the program. The NFP PHNs emphasized the importance of hiring individuals with the right "fit" for the position, which included recruiting nurses whose personal and professional philosophies, goals, and experiences reflected a commitment to working with families living in complex situations of disadvantage. It has been established in studies conducted in the United States that NFP client retention is optimized when a family establishes a relationship with one nurse who is the consistent home visitor throughout the length of the program; thus, nurse turnover is strongly connected with client attrition or lack of engagement in the program.[12-16] Our findings suggest that connections made in the NFP team were drivers of nurse retention. Nurses who developed strong connections with their NFP supervisors, team, and program participants also expressed a greater sense of job satisfaction and acknowledged it as a factor related to retention. In rural environments or communities with lower numbers of births which reduces the potential number of families eligible for NFP, implementing agencies may need to explore opportunities to reduce nurse isolation and increase connection to other NFP team members through such strategies as developing rural communities of practice and continued use of videoconferencing for supervision and team meetings.[17]

In addition to being identified as a valued strategy for nurse retention, it is an NFP program requirement that an assigned supervisor provides nurses with regular reflective supervision (Core Model Element 12). Our data reflected high rates of completed supervisory sessions. Reflective supervision sessions were most commonly cancelled because of the absence of the supervisor or PHN due to vacation or leaves of absence; a small percentage of sessions were cancelled because individuals were "too busy" or had a "work conflict." This reflects that these program elements were valued and prioritized within the work week. In several health authorities, the use of videoconferencing (with expressed preference for most over telephone calls) provided nurses and supervisors with an opportunity for "face-to-face" interactions when geography limited opportunities for in-person meetings. In reflecting on the establishment of a relationship with a new supervisor, PHNs recommended finding opportunities to meet in-person first to establish the relationship and to build trust and rapport before moving communication to telephone or videoconference options.

Across BC, NFP teams also met established benchmarks for attending regularly scheduled team meetings and case conferences. These meetings provided an opportunity for NFP teams to address

specific program issues as well as to explore more general topics that emerged as issues and challenges to providing care to NFP program participants. Given the overlap of topics across health authorities, it might be timely to identify which program or nursing role topics require additional coverage in the core NFP education (e.g., use of technology with participants, caseload management). The development of new team meeting education or e-learning modules to provide education on common topics related to enhancing NFP PHN knowledge about and skills to address NFP clients' health, social or legal needs might also be considered. The development of standard educational materials can reduce burden on individual teams as well as ensure continued access to professional development as new team members are hired.

Early identification of pregnancy among adolescents and inadequate prenatal care among populations that experience multiple indicators of social disadvantage have been longstanding challenges for health services to address.[20] One program requirement (Core Model Element 4), is that a client is enrolled in the program early in pregnancy and receives a first home visit no later than the 28th week of pregnancy. The international benchmark is that 60% of referrals to NFP should be enrolled in the program by 16 weeks gestation in order to provide sufficient time to address issues that will affect the program's ability to improve pregnancy outcomes.[10] Between 2013 and 2018, 27% of girls or women participating in the BCHCP trial were enrolled by 16 weeks gestation; with a median gestational age at time of the baseline RCT interviews of 20 weeks, six days.[18] However, for Process Evaluation "only" sites, at the time of enrollment, the mean gestational age was 16.8 weeks. With NFP now being delivered as part of an enhanced suite of public health services in four regional health authorities, it would be interesting to explore the similarities and differences across sites and regional health authorities related to enrolling girls and young women into the program at earlier stages of gestation — although, in the Canadian NFP Education (CaNE) pilot study conducted in four Ontario public health units, only 35% (94/268) of participants were enrolled <16 weeks gestation and the mean gestational age at time of enrollment was 19 weeks, six days.[19] Given the similarity in rates between the BC studies and Ontario CaNE pilot study sites, we might also hypothesize that enrollment later in pregnancy is a common issue associated with public health services reaching women and girls early in pregnancy.

Our analysis of the characteristics of the nurse home visits confirm that across program phases, 70% of visits occurred in clients' homes (Core Model Element 6). However, when necessary, NFP PHNs demonstrated creativity and flexibility in arranging visits in alternate locations to: 1) respect client preferences or needs, 2) promote efficiency in scheduling visits, 3) promote client goal attainment, 4) enhance client and/or PHN safety; or 5) as a strategy to increase client retention in NFP. Findings from both the quantitative and qualitative data highlight the extent to which PHNs navigate providing nursing care in a variety of settings while always prioritizing client privacy, confidentiality, and safety. Given the variability of visit location, it is important for NFP implementing agencies to continue to ensure that safe home visiting and telehealth policies and procedures are regularly reviewed to ensure that mechanisms for supporting both nurse home visitor and client safety in private homes, as well as in public settings, are prioritized. Additionally, with some visits occurring in shopping malls, coffee shops or accompanying clients to various appointments, it highlights a need to ensure that organizations establish budgets and processes to ensure that

PHNs are reimbursed for out-of-pocket expenses such as bus tickets or buying coffee or snacks for girls, young women and their children.

Although data on caseload numbers were not specifically calculated; this review of partial home visit data identifies some key factors for consideration in assessing recommended NFP caseload numbers. Based on findings from the NFP pilot study conducted in Hamilton, Ontario, it was suggested that a full-time NFP PHN carry a caseload of no more than 20 clients.[5] From this Process Evaluation we have learned that: 1) many PHNs needed to travel far distances; 2) that a typical home visit lasted 1 hour and 20 minutes; 3) that in addition to scheduled home visits, NFP PHNs also conducted alternate home visit activities with clients, their families or other professionals, with each lasting approximately 24 minutes; and; 4) regardless of their full-or-part-time employment status, PHNs regularly attended weekly reflective supervision and team meetings. Evidence from evaluations of the NFP in the United States also identified that the required number of visits, as well as clients' levels of risk, influence the maximum caseload number.[21] Given this, it may not be realistic to provide a single recommendation for caseload numbers for any given jurisdiction; instead, caseload numbers may need to be individually negotiated and regularly reviewed by agencies implementing NFP.

A common theme threaded across this analysis was that the efficient delivery of NFP by PHNs and supervisors relies on access to reliable and up-to-date technology. At the team level, given the vast geography across several regional health authorities, teams relied on teleconferences and videoconferences to ensure that all team members could equally participate in reflective supervision, team meetings and case conferences. NFP PHNs confirmed that access to a work-distributed smartphone with an unlimited data plan is an essential resource that results in efficiencies related to scheduling home visits and use of time around visits, and communication with participants, colleagues and other service providers. Given NFP clients' preferences for communicating via text, access to smartphones provided nurses with additional opportunities to establish and maintain connections; allowed them to share appropriate health information in a timely fashion; and to recognize and affirm new mothers' parenting skills and strengths. With the increasing integration of technology or "telehealth" to augment face-to-face encounters in the NFP program, teams are requiring clear guidance and policies related to documentation of encounters, data security, client confidentiality and safety issues, and how to apportion alternate visit encounters in relation to face-to-face visits. Furthermore, while the use of technology provides several benefits to increasing NFP participant accessibility to the PHN and flexibility for nurses to respond to client concerns, discussions related to setting boundaries around cell phone usage are recommended to ensure increased accessibility does not contribute to nurse burnout or compassion fatigue.

Within the NFP program, PHNs are required to distribute time appropriately across the six program domains (Core Model Element 10). Within the time period reported on here and from this analysis we observed that PHNs were successful in meeting internationally established benchmarks for program domains by program phase, with one notable exception. PHNs spent slightly less than the recommended time addressing "Maternal Role" across the three program phases by 1 to 5% of time. It is important to note though, that in infancy and toddlerhood, the highest percentage of time is spent on the maternal role domain in comparison to other domains. A similar finding that less

time (than the benchmark) is spent on maternal role in NFP home visits has also been reported in evaluations conducted in different settings in the United States[22] and Ontario, Canada.[19] Given this consistency, one of two recommendations might be considered. First, augmentations to the NFP nursing education completed by new and existing NFP PHNs (through their team meetings) could be considered. In responding to the same issue in the United States, the NFP core education was enhanced through the addition of experiential teaching and learning activities to increase nurse knowledge about maternal role, parenting knowledge and skills, and confidence in using program-specific tools to promote parent-infant attachment.[10, 23] Second, the team of NFP Consultants from the International NFP Program (Prevention Research Centre, University of Colorado Denver) may consider reviewing existing program guidance and exploring if the current benchmark rate is feasible and flexible to achieve in practice or if new practice recommendations are required as part of the guidance provided to countries or jurisdictions involved in implementing NFP.

The analysis of this program delivery data has limitations. The analysis of home visit descriptors related to timing, number, duration, distance travelled, location and individuals participating in home visits was based on RCT NFP delivery data collected between October 1, 2013 and December 31, 2018. Given that clients were enrolled in the RCT until June 2019, these findings do not provide a complete summary of the program delivery for all BC clients. While the qualitative findings are reflective of a population of NFP PHNs' and supervisors' experiences, this analysis has not included the perspectives of senior managers. Future reports will include these broader administrative perspectives and examine how NFP was introduced into existing public health programming and the organizational and community factors that influenced overall implementation and delivery.

These findings illustrate that from a public health nursing perspective, for PHNs to be able to comprehensively assess and holistically respond to the complex health and social needs of NFP clients, this work is facilitated by working within a program that values and provides sufficient time to establish and maintain long-term therapeutic alliances. By practicing at a fuller scope of nursing practice, the PHNs were well positioned to support girls and young women to adopt behaviour changes to promote maternal, child, and economic health. NFP is comprehensive both in terms of direct program delivery to the girl or young woman and their children, as well as the support provided to the NFP PHNs from their supervisors and teams. With respect to the first point, NFP is a program that truly "meets the client" where they are at and the PHNs are skilled in adapting the service delivery model by holding visits in unique locations and using technology to meet the participants' needs via text messaging and video chats. It was also seen that PHNs tailored the program to provide necessary supports to help clients respond to the challenges they were experiencing in their lives and while parenting their children. This breadth of support was also seen for PHNs who generally received skilled supervision and support from their supervisors and teams.

Finally, although we are awaiting further RCT results that describe the effectiveness of the program on important maternal and child health outcomes, data on the PHNs' perspectives on the NFP program provide an opportunity to support nursing practice where nurses' competencies are acknowledged and utilized and where therapeutic relationships are developed together with clients and their families.

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Appendix A

BCHCP RCT Participant Recruitment and Data Collection

Recruitment of girls and young women for the BCHCP RCT started in 2013 and finished in 2016. Health authorities developed recruitment plans then referred potential participants to the RCT Study Team located at Simon Fraser University, who confirmed eligibility (see below), obtained informed consent, and conducted the baseline research interviews. Individuals were then randomized to receive either: 1) NFP plus existing services; or 2) existing services. A description of the baseline characteristics of these girls and young women indicated significant experiences of multiple forms of socioeconomic disadvantage.[9]

RCT data were collected during research interviews/assessments (in-person/telephone) with participants and their children starting in early pregnancy and continuing until children reached age two years. As well, administrative data from BC provincial health databases are being collected on findings related to the RCT's primary outcome indicator, child injuries. These and other RCT outcome data, as well as NFP dosage/fidelity data, will be reported from 2020 through 2022.[6]

BCHCP RCT Participant Eligibility Criteria (adapted from[6,9])

Inclusion Criteria	
1.	Age 24 years or younger
2.	Preparing to parent for the first time (eligible if previous pregnancy ended in termination, miscarriage or stillbirth; or if previous parenting experience involved step-parenting only)
3.	Pregnant and less than 28 weeks gestation (must receive first NFP visit by end of the 28th week of gestation)

4.	Experiencing socioeconomic disadvantage. Indicators of disadvantage included:
	• Age 19 years or younger *(pregnant adolescent girls were deemed to automatically meet disadvantage criteria)*
	• Age 20-24 years and meets 2 of the following 3 indicators:
	  • Lone parent (not married or living with the same partner for one year or more consecutively)
	  • Less than Grade 12 (did not complete secondary school or receive secondary school equivalency certificate)
	  • Low-income as determined by meeting one of the following:
	  • Receiving income assistance,
	  • Homeless, defined as living on the streets, in an emergency or homeless shelter, staying in places not meant as residences (e.g., car or tent), or experiencing "hidden homelessness" such as couch surfing
	  • Finding it very difficult to live on total household income regarding food or rent

5.	Able to converse in English
Exclusion Criteria	
1.	Planning to have the child adopted
2.	Planning to leave the catchment area for three months or longer during the trial

Appendix B

Topics Explored by Interview/Focus Group Wave with NFP Public Health Nurse

Wave	Topics Explored
1.	• Experiences of NFP education • Acceptability of NFP program • Strategies to promote client enrolment
2.	• Contextual factors influencing NFP implementation within community • Factors that influence client engagement in NFP
3.	• Nurse experiences of NFP reflective supervision • Intersection between public health and child welfare services • Public health nurse and supervisor retention • Strategies to promote client retention • Capacity to implement NFP with fidelity to core model elements
5.	• Clinical nursing practice • Personal and professional impact of home visiting families experiencing social and economic disadvantage
6.	• Influence of geography (rural/urban) on delivery of NFP • Maintenance of the therapeutic nurse-client relationship • Use of the NFP intimate partner violence (IPV) intervention to safely recognize and respond to IPV in home visiting practice
7.	• Nurses' perceptions of changes to their professional nursing practice since program inception • Support of woman/infants transitioning from NICU to home • Experiences of integrating DANCE into practice • Identification and response to infant development concerns
8.	• Communication with NFP clients • Process of graduating clients from the NFP program • Parenting challenges and supports for parenting • Engaging with fathers of infants in home visits • Overall NFP experiences

Topics Explored by Interview Wave with NFP Supervisors

Wave	Topics Explored
1.	· Implementation and fidelity to core model elements · Local adaptations required for NFP implementation
2.	· Experiences of NFP education · Acceptability of NFP program
3.	· Early experiences of NFP delivery within BCHCP · Reflective supervision · Supervisor and nurse retention
5.	· Experiences providing supervision to NFP teams · NFP implementation · NFP education · Transition to working in NFP program
6.	· Influence of geography (rural/urban) on delivery of NFP · NFP program staffing · Support of nurses providing care to women and families experiencing mental health concerns · Support of nurses providing care to women and families experiencing past/present substance misuse · NFP education · Transition to working in NFP program
7.	· Implementation and use of DANCE within teams · Overall capacity of local health authority to implement NFP with fidelity to core model elements
8.	· Overall experiences as an NFP supervisor · Review of how program is supporting clients to become competent and sensitive parents; and to identify and address any infant development concerns

Topics Explored with Health Authority Senior Decision Makers (Managers)

Wave	Topics Explored
1.	· Role of the Health Authority Manager responsible for the NFP Program/BCHCP · Acceptability of the NFP program · NFP Planning Phase · NFP Implementation Phase
2.	· Meeting the needs of socially and economically disadvantaged families · NFP and the public health system · Public health priority setting and health priority setting overall
3.	· Contextual factors that influence organizational implementation of the NFP: external and internal · Communication policies (text messaging)
4.	· Administrator needs for orientation to NFP
5.	· Lessons learned from implementation of NFP · Impact of implementation of NFP within your Health Authority