

The BC Healthy Connections Project: A Scientific Evaluation of the Nurse–Family Partnership Program in British Columbia

Presenters:

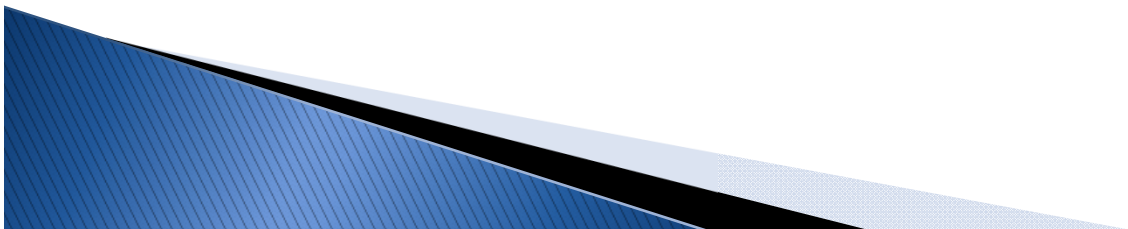
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Conflict of Interest Declaration

- ▶ As speakers for this presentation, we declare that we, our spouses and close family members do not have any affiliation (financial or otherwise) with a commercial or other industry interest with respect to information being presented at this conference.



Learning Objectives

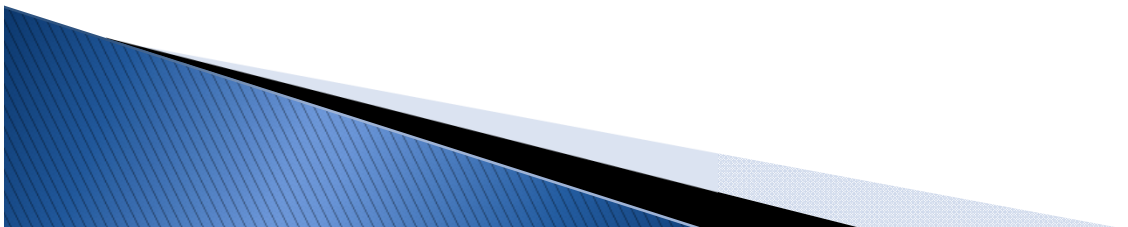
1. Review the rigorous scientific methodology of the BCHCP:
 - Randomized-controlled trial (RCT)
 - Process evaluation (PE)
2. Discuss how the PE is contributing to identifying quality improvements in BC, prior to implementation of NFP in Canada



What is the Nurse–Family Partnership Program?



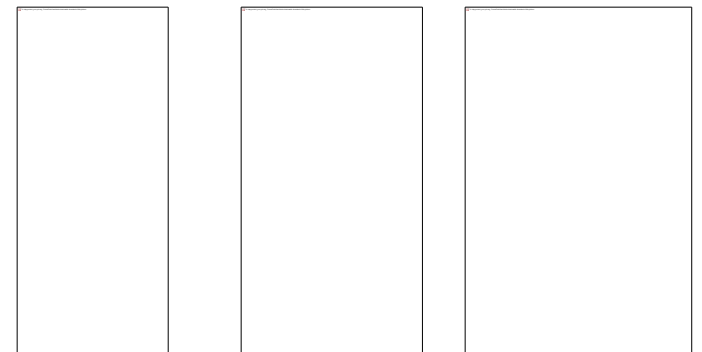
- ▶ Landmark primary prevention program first developed by Dr. David Olds in the US 35 years ago
- ▶ Aimed to help young, first-time mothers vulnerable to socioeconomic disadvantage and their children to age 2



What is the Nurse–Family Partnership Program?



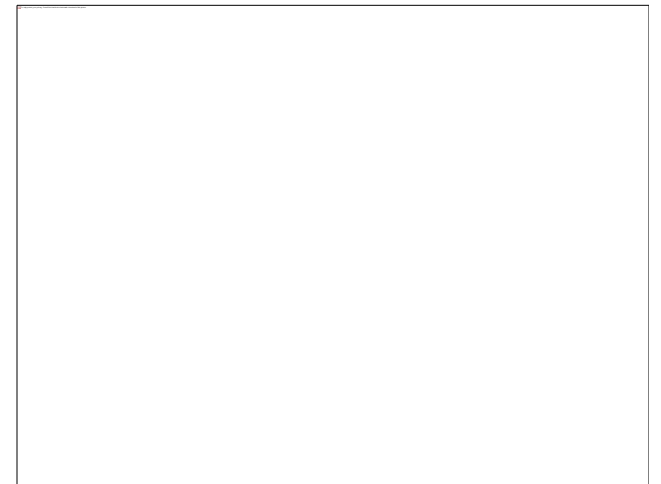
- ▶ Regular home visits by Public Health Nurses
 - First visit before 28th week of gestation
 - Range of 38 to 68 visits
 - Flexibility to meet individual needs of clients
 - Nurses build a trusting, therapeutic relationship with the client



What is the Nurse–Family Partnership Program?



- ▶ 3 goals of NFP:
 - I. Improve pregnancy outcomes
 - II. Improve child health and development
 - III. Improve parents' economic self-sufficiency
- ▶ Nurses: weekly reflective supervision
- ▶ Anecdotal feedback/progress with clients



What is the policy context for NFP in BC?

Healthy Minds, Healthy People

A Ten Year Plan to Address Mental Health and Substance Use in BC

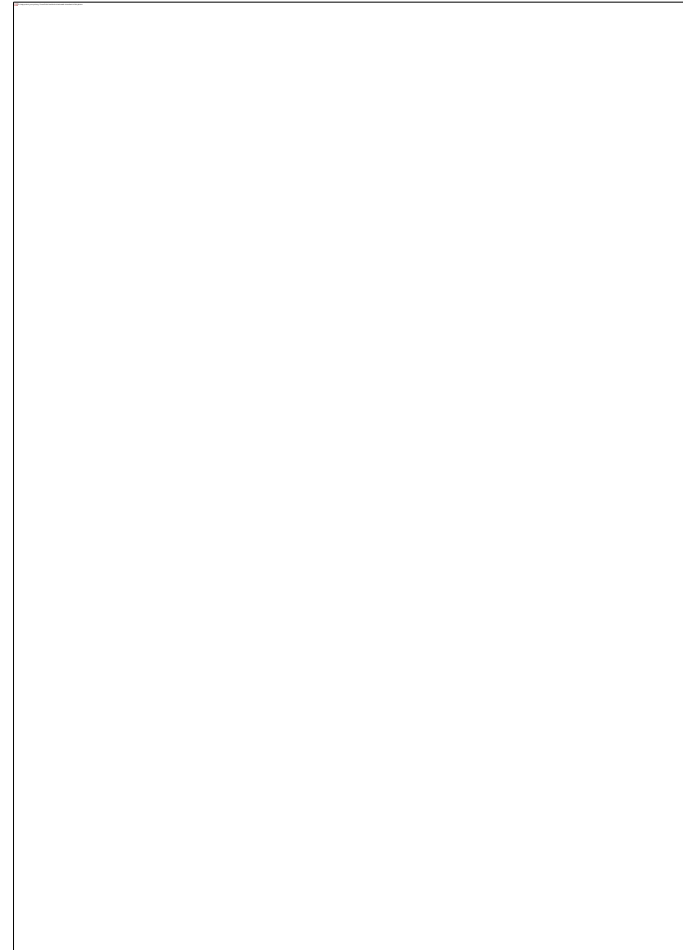


Action:

“By 2012, launch a nurse-led, in-home, individual parent training program for first-time, at-risk parents and their infants, provided during pregnancy and up to two years after delivery.”

Healthy Families BC: Healthy Start

- Developed for 3 population groups:
 - ✓ Prenatal
 - ✓ Birth to 8 weeks postpartum
 - ✓ 8 weeks postpartum up to 2 yrs
- Supports provincial consistency and equity
- Continuum includes:
 - Universal services
 - Enhanced services



Promote, Protect, Prevent: Our Health Begins Here: Guiding Framework for Public Health

- *Establishes 7 visionary goals including for Child and Family Health*
- Goal 2: *“Families have the capacity to achieve and maintain good health at all stages of child development”*

What is the evidence for NFP?

US Scientific Evaluations

- ▶ Three randomized controlled trial (RCT) evaluations
 - Elmira, New York (semi-rural, 89% White)
 - Memphis, Tennessee (urban, 92% African-American)
 - Denver, Colorado (urban, 45% Hispanic)

- ▶ Multiple significant positive outcomes found
 - When children turned 2 years old (at RCT completion)
 - Over 10 to 17-year follow-up
 - Program “pays for itself”
 - Net returns → \$US 2.88 – \$US 5.70 for every dollar invested

US Scientific Evaluations

**Elmira, NY
1977**

N = 400

- **Low-income caucasian women**
- **Semi-rural**

**Memphis, TN
1988**

N = 1,139

- **Low-income African-American women**
- **Urban**

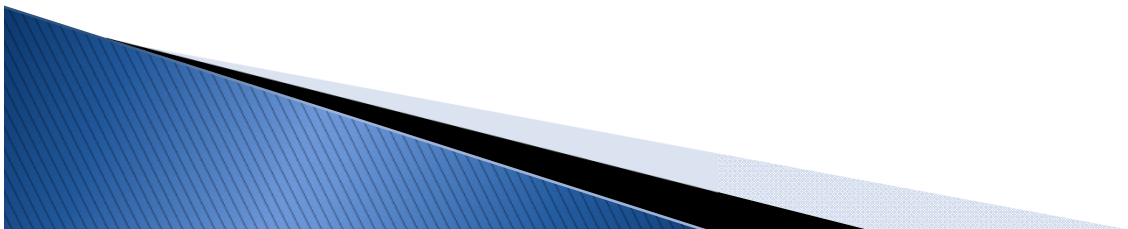
**Denver, CO
1994**

N = 735

- **Large portion of Hispanic women**
- **Nurse versus paraprofessional visitors**

Nurse Family Partnership

- ▶ Coalition for Evidence-Based Policy
 - “Top Tier” evidence in the United States
- ▶ Royal College of Physicians and Surgeons of Canada
 - Position Statement endorsing NFP
- ▶ Public Health Agency of Canada
 - “Best Practice”



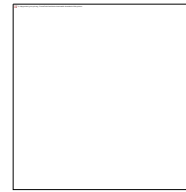
Projected Outcomes of NFP 1996–2013, USA

- Estimates of program impact were applied to measured outcomes of 177,517 pregnant women enrolled in NFP between 1996 – 2013 in USA
- Projected that by 2031, NFP will prevent an estimated:
 - 500 infant deaths
 - 10,000 preterm (first and subsequent) births
 - 13,000 dangerous closely-spaced second births
 - 42,000 child maltreatment incidents
 - 36,000 IPV incidents
 - 90,000 violent crimes by youth
 - 594,000 property and public order crimes
 - 36,000 youth arrests
 - 41,000 cases of youth substance abuse

Miller, T. *Prevention Science*. 2015:16:765–777

US Nurse-Family Partnership Locations

9 Countries Globally



Countries with NFP	Dates Program Began	Stage of Implementation 1 to 4
USA (43 States & USA Virgin Islands)	1977 (Elmira) 1996 – 1 st sites x 2	4
Netherlands	2004	4
England	2007	3 (Oct. 2015 release)
Australia	2008 (3 sites)	2
Canada	2008 (Hamilton)	3 (tied to BC RCT)
	2012 (BC)	3 (publish 2020)
Scotland	2009	3 (tied to England RCT)
Northern Ireland (not all Ireland)	2010	3 (tied to England RCT)
Norway	2015	1
Bulgaria	2015	1

International Scientific Evaluations

- ▶ Netherlands
 - Reduced prenatal smoking
 - Increased breastfeeding
 - Reduced child protection reports
 - Reduced exposure to intimate partner violence
- ▶ England
 - No program effects on main outcomes
 - Small effects on other outcomes e.g., language development
- ▶ **Interventions need to be evaluated in different countries



Why evaluate NFP in BC?

Why Evaluate NFP in BC?

“We need to know whether these [programs] are really wise public investments. And if they really do work, then, we need to work together to figure out how to reliably replicate this adapted program.”

(David Olds)

Why Evaluate NFP in BC?

- ▶ NFP is untested in Canada
 - beyond a pilot in Hamilton, ON
- ▶ How well will NFP work here?
 - Greater socioeconomic inequalities in the US
 - Greater baseline (health and social) services in Canada
 - NFP may not be more effective than our existing services

Why Evaluate NFP in BC?

1. Adaptation

- Modify the program for the local context

2. Feasibility and Acceptability

- Conduct a pilot study in a small sample

Pilot study
Hamilton, ON

3. Randomized Controlled Trial

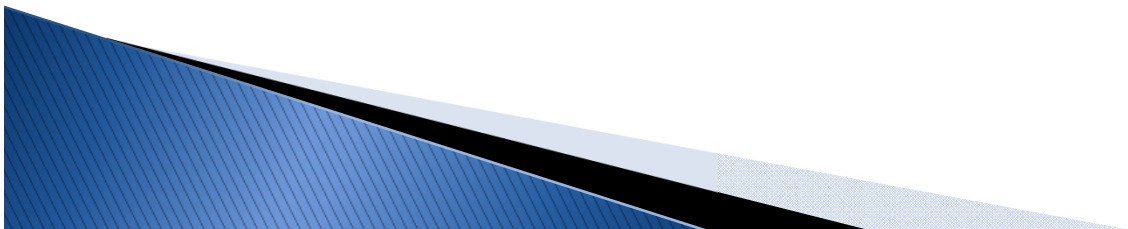
- Empirically evaluate effectiveness in a large sample

4. Expansion

- Disseminate and maintain, with ongoing evaluation

BC Context

- ▶ Nov 2010 → BC's new *10-Year Plan to Address Mental Health and Substance Use* announced in November 2010
- ▶ 2010 → The Children's Health Policy Centre at Simon Fraser University was engaged to explore the BC options
- ▶ June 2011 → BC's Health Minister announced NFP
- ▶ Dec 2011 → Project planning officially commenced



BC Healthy Connections Project

I. Randomized Controlled Trial (RCT)

- Compare the effectiveness of the Nurse–Family Partnership (NFP) program to BC’s existing services

II. Process Evaluation (PE)

- Assess feasibility and acceptability of delivering the NFP program in small rural and remote settings



BC Healthy Connections Project

Principal Investigator Team

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Susan Jack, Debbie Sheehan

Co-Investigators and Consultants

Ronald Barr, Michael Boyle,
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David Olds, Harry Shannon

BC Healthy Connections Project Collaborators

BC Health Authorities

Fraser Health
Interior Health
Island Health
Northern Health
Vancouver Coastal Health

BC Government

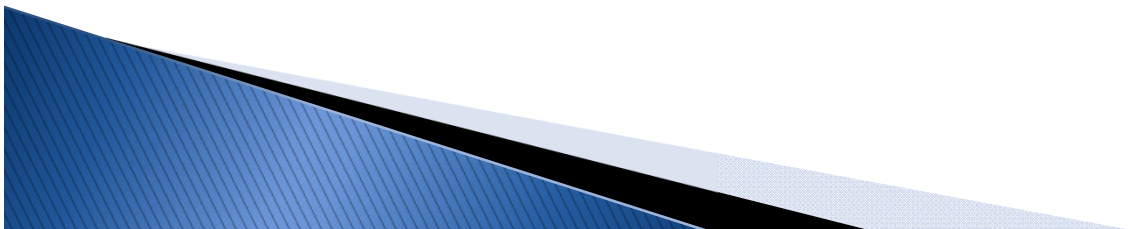
Warren O'Briain, BC Ministry of Health
Robert Lampard, BC Ministry of Children and Family
Development
Donna Jepsen, BC Ministry of Health

Funding

BC Ministry of Health
BC Ministry of Children and Family Development

BC Health Authorities
Fraser Health, Interior Health, Northern Health
Vancouver Coastal Health, Vancouver Island Health

Canada Research Chairs Program
Djavad Mowafaghian Foundation
Public Health Agency of Canada
The R.J. Stern Foundation



Eligibility Criteria: RCT and PE

INCLUSION: Women are eligible to participate if they meet all inclusion criteria

1. Aged 24 years or under
2. First birth
3. Less than 27 weeks gestation
4. Competent to provide informed consent, including conversational competence in English³
5. **Socioeconomically disadvantaged**

EXCLUSION: Women are ineligible to participate if they meet any exclusion criteria

1. Planning to have the child adopted
2. Planning to leave BCHCP catchment area for three months or longer

Experiencing Socioeconomic Disadvantage

1. **Aged 19 years or younger** → Eligible
2. Aged 20 – 24 years of age → Eligible if has TWO of the following three indicators
 - I. **Lone parent**
 - II. **Less than grade 12**
 - III. **Low income** (ONE or more of the following)
 - Receives 1) Medical Services Plan Premium Assistance 2) Disability Assistance or 3) Income assistance
 - Finds it difficult to live on total household income with respect to either food or rent
 - Lives in a group home, shelter or institutional facility or is homeless

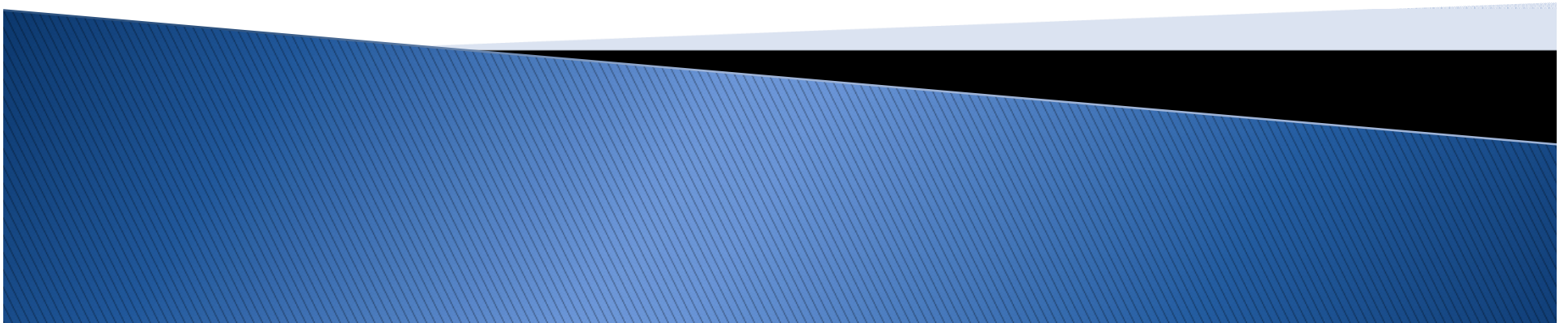


Serving Disadvantaged Women and Children

“We see the greatest program effects in the young mothers and their children who are struggling the most.”
(Olds, 2011)



Randomized Controlled Trial Methodology



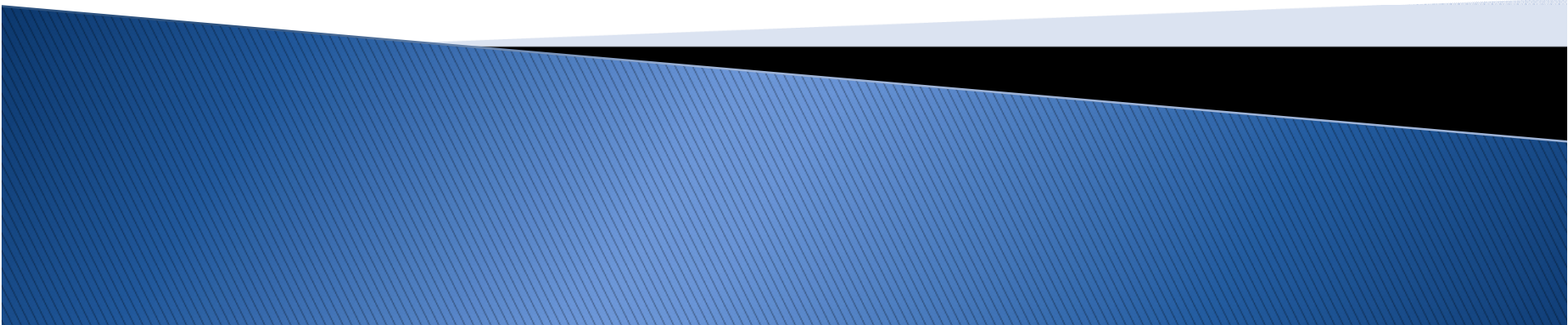
Randomized Controlled Trial

Participating Local Health Areas (LHAs)

Health Authority	No. Participants	LHAs
Fraser	574	11
Interior	172	3
Vancouver Coastal	120	3
Vancouver Island	174	5

Total sample size of $N = 1040$





RCT Outcome Indicators

Domain	Primary Indicator	Secondary Indicators
Pregnancy		Prenatal tobacco and alcohol use <i>Maternal Self Report</i>
Child Health	Childhood injuries (birth → 2 years) <i>Ministry of Health data on outpatient, emergency and hospital healthcare encounters</i>	Child cognitive development (at 2 years) <i>Bayley Scales of Infant Development</i> Child behaviour (at 2 years) <i>Child Behavior Check List</i>
Maternal Health		Subsequent pregnancies (at 24 months postpartum) <i>Maternal Self Report</i>

Other Outcome Indicators

▶ Children

- Provision of a safe and nurturing environment
- Physical health, e.g., immunizations

▶ Mothers

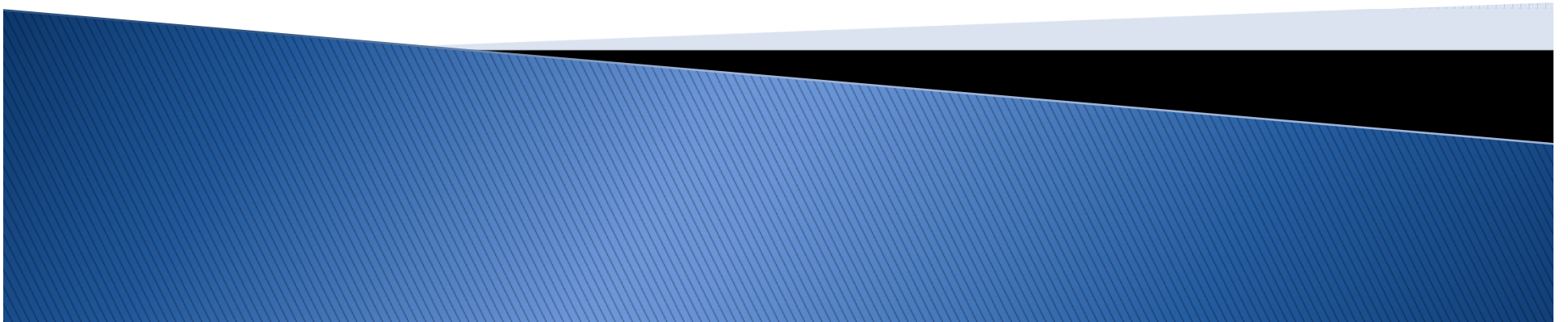
- Mental health, cognitive status, sense of self-efficacy
- Education, employment, income, social supports

▶ Children and mothers

- Exposure to intimate-partner violence
- Health and social services access and use



Process Evaluation Methodology



Process Evaluation Objectives

- ▶ Determine *fidelity* to required NFP model elements
- ▶ Explore *acceptability* by nurses
- ▶ Describe experiences of the *education* program
- ▶ Document *supervisory processes* used to support nurses
- ▶ Identify *contextual factors*

Funded by Public Health Agency of Canada (Susan Jack)

Process Evaluation Data Sources

▶ Interviews:

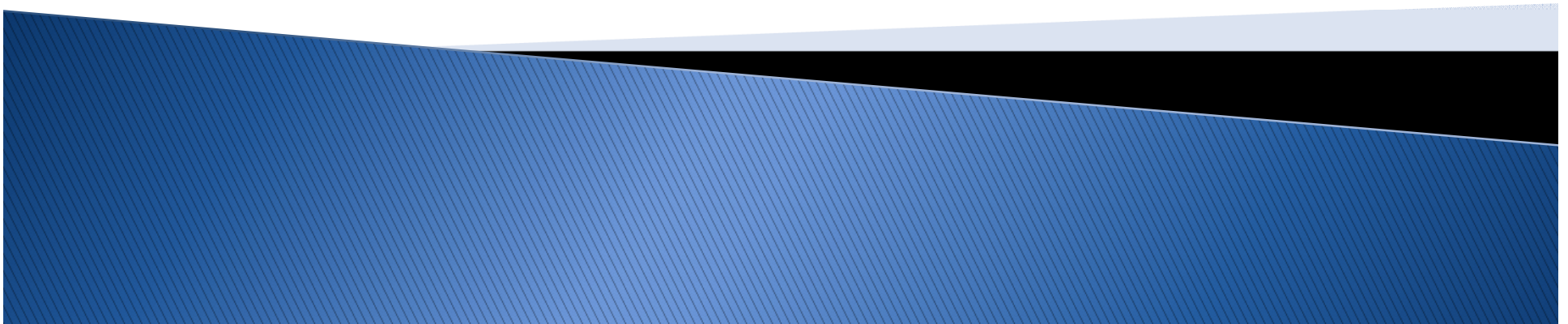
- Public Health Nurses and Supervisors
- NFP provincial coordinator
- Twice/year for 60 minutes

▶ Documents:

- NFP Fidelity reports
- Team meeting & case conference report
- Supervision report



BCHCP Progress to Date



BCHCP Phase I (2012–2014)

- PHN and Supervisor Education
 - New Canadian NFP curriculum finalized
 - New curriculum added on intimate-partner violence
 - PHN and Supervisor NFP basic education completed
 - Practice period of 6–12 months required to hone PHN knowledge and skills → with “guiding clients”

BCHCP Phase II (2013–2021)

- ▶ RCT and Process Evaluation
 - Ethics approval obtained: 10 research ethics boards
 - Protocols, measures, instruments and databases developed
 - Government data-sharing agreements finalized
 - Recruitment launched Dec 2013 (3-years)
 - Over 570 families enrolled in RCT (target = 1040)
 - Over 100+ families enrolled in PE
 - Data Collection ongoing
 - Final Results → 2019 – 2021

Healthy Foundations Study

- ▶ First evaluation of NFP's biological impact on children
 - Non-invasive biological samples, e.g., hair, saliva and cheek swabs, in 2 Health Authorities
 - Measuring biomarkers of exposure to chronic stress and adversity, e.g., cortisol
 - Future mental and physical health problems, e.g., depression and cardiovascular disease
- ▶ Funded by Canadian Institutes of Health Research (Andrea Gonzalez)



Referral to Public Health

- ▶ Fraser Health, Island Health and Interior Health have prenatal registries
- ▶ Vancouver Coastal Health is targeting prenatal programs to those who would benefit from enhanced services
- ▶ Refer all clients to your local public health office
- ▶ All clients will be assessed and offered public health services. Then, potentially eligible women will be referred to BCHCP



Questions?

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- ▶ Nicole Catherine

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- ▶ For more BCHCP information:

- ▶ <http://www.childhealthpolicy.ca>

- <http://www.healthyfamiliesbc.ca/home/articles/pregnancy-support-and-care>

- <http://www.health.gov.bc.ca/socsec/>

