

**BECOMING BABY-FRIENDLY: INCREASING BREASTFEEDING
EXCLUSIVITY AND DURATION RATES THROUGH VANCOUVER'S
COMMUNITY HEALTH SERVICES**

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GLOSSARY

Any Breastfeeding	The child has received breast milk (direct from the breast or expressed) with or without other drink, formula or other infant food (includes those who are exclusive breastfed)
Baby-Friendly Initiative	Global effort launched in 1992 by WHO/UNICEF to help countries promote, protect, and support breastfeeding by creating a favourable environment for breastfeeding in hospitals providing maternity care and their associated community institutions to increase initiation, duration, and exclusivity of breastfeeding
Breastfeeding duration	The total length of time an infant received any breastmilk from initiation until weaning is complete
Breastfeeding initiation rate	The percent of babies who have ever been breastfed. Typically, this occurs immediately after birth, ideally within the first 30 minutes, but can occur later in a baby's life. Initiation rates are often calculated during the baby's hospital admission
Breastmilk	Human breast milk, including colostrum
Exclusive breastfeeding	An infant has received only breastmilk (including expressed breast milk or donor milk) and no other liquids or solids with the exception of drops or syrups consisting of minerals, vitamins, or medicines
Supplements	Any solid food or liquid (e.g. water, formula) other than human breastmilk given to a newborn/infant

FOREWARD

In September 2010, the Breastfeeding Committee for Canada integrated the *Ten Steps* and the *Seven Points* into the “Integrated 10 Steps Practice Outcomes Indicators for Hospitals and Community Health Services”. It is important to note that this capstone was written prior to this integration and reflects a time when BFI in Canada was viewed through the *Ten Steps* and the *Seven Points*.

Additionally, the Vancouver Coastal Health (VCH) policy was formally approved by the VCH Senior Executive Team in September 2010.

1: INTRODUCTION & BACKGROUND

Breastfeeding has a major role to play in public health internationally and within Canada. Breastfeeding, especially when exclusive and sustained, has numerous positive effects on child and maternal health outcomes, many of which result in significant health care costs savings. Despite international and national recommendations for exclusive breastfeeding during the first six months of an infant's life, breastfeeding is far from universally practiced across Canada. While gains have been made in increasing the initiation rate of breastfeeding, exclusivity and duration rates remain suboptimal, with certain groups of women being more or less likely to breastfeed. Without concerted effort to protect, promote, and support breastfeeding, breastfeeding rates may stagnate or decrease and, as a society, we may not realize our potential for a healthier population and reduced health care system costs.

As such, many public health organizations and professionals have taken measures over the last few decades to protect, promote, and support breastfeeding and best practices in infant feeding, most notably through implementation of the Baby-Friendly Initiative (BFI). The BFI is an international program to improve breastfeeding outcomes for mothers and babies by improving the quality of their care in both hospital and community settings. This momentum is exemplified by Vancouver Coastal Health's (VCH) development of a VCH-wide draft policy with guidelines to promote best practices for feeding of healthy term infants (henceforth referred to as the *Policy*). This *Policy* adheres to the BFI and aims to establish breastfeeding as the cultural norm.

The *Policy* is an example of health service policy. Development of health service policy is a strategy for 'reorientation of health services', one of the five action areas identified in the Ottawa Charter for Health Promotion. Health service policies are enabling documents that provide a framework and endorsement for direct action, making them an "important way of introducing, establishing, promulgating and sustaining best practice and consistency amongst services and professionals." (1)(p.9). However, if a policy is to affect practice, active dissemination and implementation systems are required. Additionally, it is crucial to tailor policy implementation to

organizational resources and capacity, population needs, and the economic, social, and political climate of the day.

Therefore, although the *Policy* will apply to all VCH sites and services, it is important to consider the issues facing sub-regions and the diverse population needs within the VCH jurisdiction. The *Policy* also acknowledges the diversity in site-specific space and human resource capacity stating that each site may require site-specific implementation detail to meet the standards. This is especially relevant for community health services because their audience is dispersed and heterogeneous, their services are diverse, and they often engage clients over the course of several years, making flexibility an important element of policy implementation.

Planning for implementation of the *Policy* has commenced in VCH and although a VCH-wide gap analysis was conducted in 2009 that resulted in VCH-wide recommendations, Vancouver Community Health Services (VC) identified the need for program-specific recommendations that take into account the program specific contextual factors and rates of breastfeeding in the population they serve. The purpose of this capstone is to do just that – to inform the planning process for policy and guideline implementation in VC community health services with the goal of increasing exclusive breastfeeding and duration rates in the population it serves. In support of accomplishing this goal, this capstone will describe what is known about breastfeeding rates in Vancouver, the research evidence on effective breastfeeding promotion activities in community settings, and VC considerations related to promotion of breastfeeding to inform recommendations to the VCH Breastfeeding Steering Committee regarding possible actions for policy implementation in Vancouver. Given the high rates of breastfeeding initiation in Vancouver, VC is particularly focused on increasing rates of exclusive breastfeeding and breastfeeding duration.

These recommendations are to be made within a resource-neutral context. Although the *Policy* applies to infant feeding (including introduction of solids and guidelines for supplementation), the majority of its content concerns breastfeeding

protection, promotion, and support. For the purposes of this capstone, I will focus on the aspects of this policy that relate to breastfeeding.

VC delivers community health and wellness services funded by VCH in Vancouver. Vancouver is one of three Health Service Delivery Areas (HSDA) within VCH and its boundaries are nearly identical to those of the City of Vancouver. Vancouver is a metropolitan city with a reputation for progressive public health services resulting from its use of harm reduction strategies in addiction medicine and being home to the only donor breast milk bank program in Canada. The province of British Columbia (BC) is also known for having some of the highest breastfeeding rates in all of Canada. It also has some of the highest living costs in Canada and Vancouver has the highest child poverty rate of all Canadian municipalities, a high incidence of families living below the poverty line, and increasing income disparity between the highest and lowest earners (2). Vancouver has a multi-ethnic and multi-linguistic population. In 2005, approximately 15% of its residents reported immigrating to Canada within the last 10 years and identified as being a visible minority, with the majority of Asian descent (2). Although only 2.0% of Vancouver residents self-identify as Aboriginal, a large proportion of this population resides in the Downtown Eastside neighbourhood (3).

The topic for this capstone arose from my academic interest in maternal/child public health, my professional experience in the field of breastfeeding support, and from recent developments in the field of breastfeeding in Vancouver. Prior to enrolling in the Master's of Public Health program at Simon Fraser University, I worked as a Public Health Nurse (PHN) within VC in the 0-5 Infant, Child & Youth Program for two years and worked with many caregivers and their young children. During my studies, I learned about the draft VCH breastfeeding policy and guidelines from discussions with Barbara Selwood of the BC Perinatal Program and the BC Baby-Friendly Network, and Radhika Bhagat and Leslie Mills, both nursing leaders within VC. I was excited by the opportunity to develop recommendations for strategic planning for policy implementation in VC.

2: PUBLIC HEALTH ISSUE

2.1 Breastfeeding recommendations, definitions, and benefits

Major national and international health organizations including the World Health Organization (WHO), Health Canada, and the Canadian Paediatric Society (CPS) recommend that healthy term infants be exclusively breastfed until six months of age, stating that breast milk provides the optimal nutrition required for growth, development, and health during this period. These organizations also recommend that after the provision of safe and nutritionally adequate complementary foods (i.e. solid foods) at six months, breastfeeding continue for up to two years and beyond (4-6). These international recommendations recognize that there are certain infant and maternal medical indications for supplementation and that all efforts should be made to ensure that infant feeding decisions are made in an environment in which caregivers can make and implement informed choices (4-6).

There are several breastfeeding terms used in this report that warrant explanation: *exclusive breastfeeding*, *any breastfeeding*, *initiation*, and *duration*. It should be noted that while the breastfeeding literature has not always used the same definitions or made explicit the definitions they are using, there are improvements in standardization and many jurisdictions and researchers use definitions that approximate or are identical to WHO definitions.

Exclusive breastfeeding is defined as the practice of feeding only breast milk (including expressed breast milk or donor milk) in addition to any medically-necessary vitamins, minerals, or medicine. A baby is considered to have been 'supplemented' when they are fed water, breast milk substitutes (e.g. formula), other liquids, and solid foods. When a baby is being fed (or has been fed) a combination of any of these supplements and breastmilk, the baby would fall under the category of "any breastfeeding", or partial breastfeeding. According to the definitions set forth by the Breastfeeding Committee of Canada (BCC), the category "any breastfeeding" technically includes three sub-categories: "total", "predominant", and "partial". A breastfeeding initiation rate refers to the percent of babies who were ever breastfed and

breastfeeding duration refers to the total length of time an infant received any breastmilk from initiation until weaning is complete.

Breastfeeding is associated with a myriad of maternal and child health benefits, both short and long term. In terms of infant health, breastfeeding has been associated with decreasing the incidence and/or severity of respiratory infections, asthma, otitis media, and gastroenteritis and protecting against sudden infant death syndrome, type 1 and type 2 diabetes, childhood obesity, childhood leukemia, and cardiovascular disease (7-10). In terms of maternal health, breastfeeding has been associated with decreased risk of ovarian and breast cancer, type 2 diabetes, post-partum depression, post-partum bleeding, and lower postpartum weight retention (10-12). In addition to not having the benefits of breastmilk, formula feeding is associated with risks related to errors and factors involved in formula preparation (13). Clearly, the aforementioned associations position breastfeeding promotion as an important element in the chronic disease and childhood obesity prevention efforts, two realms of public health garnering recent attention in the media, in politics, and among health care professionals.

There are also economic benefits associated with the practice. Specifically, the health risk reduction conferred by exclusive and sustained breastfeeding translates into cost savings. A recent US study calculated the potential health care system savings from 10 pediatric diseases for which breastfeeding provides a protective effect, assuming 80% of all babies in the US were exclusively breastfed for 6 months. The researchers estimated that the US health care system could save \$13 billion per year as well as prevent at least 911 deaths each year if this breastfeeding rate was achieved (14).

2.2 Breastfeeding trends

Despite established links between breastfeeding and maternal and child health, as well as the potential economic benefits associated with the practice, breastfeeding rates are suboptimal in the western world, including Canada and the province of BC (15-18). Encouragingly, current rates of breastfeeding in Canada indicate that Canadian mothers are increasingly planning and initiating breastfeeding. The Canadian Maternal

Experiences Survey (MES) conducted in 2006/2007 found that 90.0% of women in Canada intended to breastfeed prior to giving birth and 90.3% reported initiating breastfeeding (includes both exclusive and *any* breastmilk), in contrast to an estimated initiation rate of only 25% in 1965 (17,19). In BC, a province with some of the highest rates of breastfeeding in Canada, 96.4% intend to breastfeed and 97% initiate breastfeeding (17).

Yet, despite a resurgence in breastfeeding initiation rates, a significant proportion of newborns are not exclusively breastfed during their hospital admission, a stay that usually lasts two to three days. Therefore, even though the WHO and CPS recommendation is to exclusively breastfeed for the first 6 months of life, a significant proportion of newborns are not even exclusively breastfed during their short hospital stay after birth. In 2006/2007, only 69.2% of all newborns in BC were exclusively breastfed during their birth admission (15). This illustrates that high initiation rates do not necessarily imply similar exclusivity rates.

Additionally, current national rates of any or exclusive breastfeeding decline considerably after birth. By three months, 67.6% of Canadian women self-reported any breastfeeding and 51.7% reported exclusively breastfeeding. By six months, these rates drop to 53.9% and 14.4%, respectively (17). While the BC rates of exclusive breastfeeding at three and six months postpartum are considerably higher than the national averages, they still demonstrate similar trends and fall well below the WHO recommendations. In BC, by three months, 80.0% of women in BC self-reported any breastfeeding and 61.4% reported exclusively breastfeeding and by six months, these rates drop to 68.1% and 19.2%, respectively (17).

According to the MES, 18.1% of women in BC who breastfed or tried to breastfeed their baby had introduced liquids other than breastmilk to their baby's diet within the first week after the birth (17). This percentage is lower than the rate of partial breastfeeding, as collected by the BC Perinatal Database Registry, which found that of babies receiving any breastmilk (94.5%) in 2006/2007, 26.8% received supplementation of some kind within their birth admission. This may be a reflection of

the sample selected for the MES, poor memory recall, or social desirability response bias (whereby women report higher exclusive rates because of social pressures) leading to information misclassification.

2.3 Factors predictive of breastfeeding

Breastfeeding is a multidimensional health behaviour shaped by a complex interplay of biological, psychological, socio-cultural, and economic factors. Analysis of breastfeeding behaviours amongst Canadian women reveals socio-economic and demographic variations. From a population perspective, Canadian women are more likely to initiate, continue, and exclusively breastfeed, if they are older, married, more educated, more affluent, non-smoking, foreign-born, and returning later to paid employment (19).

Breastfeeding initiation, duration, and exclusivity rates demonstrate a gradient that increases with increasing levels of education and income. Cultural context also exerts an influence on likelihood of breastfeeding. At a population-level, immigrant women and women self-identifying as a visible minority have significantly higher breastfeeding initiation, duration, and exclusivity than their Canadian-born, non-minority counterparts (19,20). However, immigrant mothers who have lived in Canada for longer time periods (10 years or more) have lower breastfeeding rates than those who lived in Canada for a shorter time (20). In an American study, immigrants cited a variety of reasons for decreasing their rates of breastfeeding in their new country, including the transition from extended to nuclear families, western acculturation, and increased access to formula (12). Additionally, although breastfeeding may be dominant in their country of origin, the breastfeeding practices of immigrant women may be influenced by barriers such as difficulties accessing breastfeeding services in a language other than English, social isolation, and separation from extended family.

Importantly, breastfeeding rates among immigrant women are heterogeneous and often differ among immigrant and cultural groups. In several studies with small sample sizes, Vietnamese women were shown to have relatively low rates of

breastfeeding in the US (20). In another US study, Asian women had the highest rates of initiation and breastfeeding at three months, compared to other immigrant groups and the general population (21). Contrary to these findings, a recent study in Vancouver (n=196) by Janssen et al. (2009), found that only 20.8% of Chinese women planned to breastfeed exclusively and only 15.6% were doing so after two months postpartum (22). Citing anecdotal evidence, the authors report that the rate of exclusive breastfeeding among new mothers of Chinese descent (Hong Kong, China, or Taiwan) is reported to be only 25-30% compared to 70% among women overall (22). Although these cultural groups share many of the same influential factors for starting or discontinuing breastfeeding as women in the general population (e.g. education, return-to-work, support system, knowledge, and attitude), certain cultural practices, beliefs, and trends in their country of origin are likely also influential.

Health care practices and health care professionals (HCP) knowledge, attitudes, and advice also affect breastfeeding outcomes. For example, a number of maternity care practices have been shown to increase breastfeeding rates (e.g. helping mothers initiate breastfeeding within a half-hour after birth, allowing mother and newborn to room together, and encouraging breastfeeding on demand) (23). These and other best practices are outlined in the Baby-Friendly Initiative (BFI). Breastfeeding outcomes are also affected by the belief of many HCPs that supplementation with formula is an acceptable response to breastfeeding problems and that it will help a mother if she is perceived to be tired or distressed (24).

Certain delivery outcomes and maternal characteristics have also been found to be associated with breastfeeding outcomes. It is well documented that babies delivered vaginally are more likely to be exclusively breastfed, especially in the first few weeks, compared with those delivered via Cesarean section; often a result of anaesthetics/analgesics use, delayed mother-infant interaction, and/or delayed lactogenesis (16,25). Breastfeeding outcomes are also affected by the baby's gestational age at birth with those born at term being more likely to be exclusively breastfed than those born preterm (16). A woman's pre-pregnancy Body Mass Index

(BMI) has also been found to be associated with poorer breastfeeding outcomes, with women with BMIs classified as overweight or obese being less likely to initiate breastfeeding and more likely to discontinue breastfeeding earlier than normal-weight women (26).

Psychological predictive factors of breastfeeding (any or exclusive) include: beliefs and attitudes about breastfeeding in general, perceived infant satisfaction with breastfeeding (27), antenatal plan to breastfeed, and measures of breastfeeding self-efficacy (23). Breastfeeding knowledge, exposure to breastfeeding (e.g. having been breastfed, knowing someone who breastfeeds), and perceptions of social norms have also all been shown to predict infant feeding outcomes (28). Likewise, the knowledge, experience, and attitudes of friends and family also have significant influence over infant feeding outcomes (27,1).

Reasons cited by women for not initiating or continuing with breastfeeding reflect a myriad of cultural, social, economic, practical, medical, or other factors. It is likely that reasons given in surveys and interviews only reflect part of the multi-factorial story and are affected by women's perceptions of what is socially acceptable and "best" for their baby (23). Response to the 2003 CCHS revealed that for the 15% of Canadian mothers who indicated they did not breastfeed, the most prevalent reason cited by roughly a quarter of these mothers was the belief that breastfeeding was "unappealing" or "disgusting" (19). Another 22% reported that the inconvenience of breastfeeding was their reason, signalling that social norms and attitudes influence likelihood of uptake.

For those who initiated breastfeeding and then discontinued, the most commonly reported reasons were insufficient milk (23%), child weaned itself (14%), mother returned to work/school (14%), and inconvenience or fatigue (12%). It should be noted, however, that evidence indicates that only less than 5% of mothers actually have physiologic challenges with milk production and it is thought that most mothers reporting 'insufficient milk' have not been properly informed or supported with regard to breastfeeding and have a misplaced concern about milk supply (29,23). Other

frequently reported reasons for discontinuation include the reported difficulties of sore nipples, leaky breasts, engorgement, latching difficulties, infant spitting up, and breastfeeding too frequently (12).

Clearly, there has been a concerted effort within the breastfeeding literature to understand the individual-level factors associated with breastfeeding initiation, duration, and exclusivity. As with many health behaviours, there is no one single predictor or demographic profile. Whether a women breastfeeds or not is influenced by multiple layers of her socio-demographic profile.

3: METHODS

There were several methods employed to produce this capstone. First, data on breastfeeding rates were pulled from widely available national survey data or from the peer-reviewed literature. The two main national surveys include: the Canadian Community Health Survey (CCHS), and the Maternity Experiences Survey (MES). Both of these contain BC-level breastfeeding rates based on randomized samples.

Second, data on newborn feeding rates during hospital admission of newborns residing in Vancouver HSDA was obtained through a data request submitted to the British Columbia Perinatal Database Registry (BCPDR). The BCPDR contains initiation and hospital birth admission exclusive breastfeeding rates for all babies in VC. Information from fiscal years (April 1 – March 31) 2006/7, 2007/8 and 2008/9 was included. Given that the Policy applies to healthy term infants, data on a number of infant and maternal medical conditions were obtained in order to exclude newborn-mother dyads that met the medical indications for supplementation. Using the population of healthy term infants (N=16,006), profiles of newborn-mother dyads in Vancouver HSDA were completed based on stratification by demographic, health status, delivery outcome, and newborn feeding status variables.

The BCPDR contains approximately 300 variables pertaining to all births in BC. Maternity care is documented by all maternity care providers on standardized forms

issued by the province's Perinatal Health Program. These data are then abstracted into the BCPDR. Data from the BCRDR can be considered high quality in that there are few threats to accuracy and validity. However, certain variables are potentially weak in this regard, either because they have a high percentage of missing entries (e.g. maternal education level) or because of the nature of the variable (e.g. substance use). The variable included in the BCPDR called "Feeding of the newborn" has 5 categories: 1) Breastmilk and formula; 2) Breastmilk; 3) Formula; 4) N/A; and 5) Unknown. Breastfeeding initiation will be categorized as those babies who received either exclusive or partial breastmilk.

Third, the demographic profiles of Vancouver's six Local Health Authorities (LHA) were derived from census data compiled by BC Stats. Program planning regularly occurs at the LHA level and each LHA has one main community health centre. The demographic data complement the evidence about factors predictive of breastfeeding, effective interventions, and breastfeeding rates, by helping to identify populations that may benefit from targeted programming and support.

Fourth, in order to outline the VC breastfeeding personnel, support, and programs, I drew upon the VCH Community environmental scan of supports, services, and partners (2007), minutes from a PHN meeting with VC regarding policy implementation of the *Policy*, and my professional knowledge from working as a PHN in VC.

Fifth, I searched the peer-reviewed and grey literature focusing on factors predictive of breastfeeding and promotion/support initiatives that I deemed relevant to the situation in Vancouver. I focused on literature emerging from populations with similar economic, demographic, and cultural profiles as Vancouver (i.e. urban populations, developed countries, multicultural and multi-linguistic populations). When searching for literature on breastfeeding interventions, I relied on systematic reviews whenever possible. However, not all breastfeeding interventions are amenable to evaluation using RCT methodology (30). For issues without a plethora of randomized

controlled trials or quasi-experimental studies, I searched the literature focusing on community health services that are working towards becoming Baby-Friendly.

4: VCH INFANT FEEDING POLICY

With the goal of ensuring best practices in infant feeding across VCH acute and community settings, VCH developed a policy and guidelines for the feeding of healthy term infants. In order to understand the scope and applicability of the *Policy*, which applies to all sites and VCH employees, I will first begin with a description of VCH and VC.

4.1 Orientation to Vancouver Coastal Health and Vancouver Community

VCH is one of six health authorities delivering health services in BC. VCH serves 25% of BC's population and is comprised of three Health Service Delivery Areas (HSDA): Vancouver; Richmond; and North Shore/Coast Garibaldi. Vancouver, the largest of the three HSDAs, is further partitioned into six Local Health Areas (LHAs). See Appendix B for a map of Vancouver HSDA and its corresponding LHAs. Each HSDA has an 'acute' and 'community' component.

Vancouver Community (VC) delivers community health and wellness services funded by VCH in the Vancouver HSDA, the most populated HSDA in VCH. The main activities of VC include the Infant, Child & Youth Program (ICY), the Dental Program, the Adult & Older Adult Program, mental health services, addiction services, and several primary care clinics situated in community health centres. These community-based services do not include care provided in acute-care hospitals or by physicians and health care professionals (HCP) working in private practice. That said, VCH strives for seamless care and collaboration among all relevant HCPs and programs. HCPs working for VC include nurses, nurse practitioners, physicians, community nutritionists, speech and language pathologists, audiologists, dental health professionals, social workers, counsellors, mental health and addiction workers, and other workers. Other VCH staff include clerical, housekeeping, dietary, and maintenance.

Health care and service planning and delivery takes place at all four levels in the Health Authority (HSDA, LHA, community, and acute), depending on the target, scope, and HCPs involved. The *Policy*, for example, was developed at the health authority level (VCH), but planning and implementation will likely take place at all four levels. For example, the recommendations in this capstone are directed towards the community program of Vancouver, VC.

4.2 Baby-Friendly Initiative

The most widely used and comprehensive breastfeeding initiative is the Baby-Friendly Initiative (BFI), an initiative that encompasses a myriad of interventions. The BFI is a global effort launched in 1992 by the WHO and United Nations Children's Fund (UNICEF) to help countries promote, protect, and support breastfeeding by creating a favourable environment for breastfeeding in hospitals providing maternity care and their associated community institutions. The aim of this program is to increase initiation, duration, and exclusivity of breastfeeding. In 2004, the Breastfeeding Committee for Canada (BCC) developed guidelines for facilities and assessors outlining desired outcomes and what constitutes evidence of best practice in both hospitals (*The Ten Steps*) and Community Health Services (*The Seven Points*). Both the *Ten Steps* and the *Seven Points* can be found in Appendix C.

As mentioned earlier, while the BFI guidelines are evidence-based, they do not provide the exact recipe for how to reach the intended outcomes through program implementation. The BFI guidelines do not prescriptively detail the exact programs and initiatives that each hospital or community should take. While this non-prescriptive nature allows BFI to be implemented in a diversity of settings, it means that every jurisdiction needs to develop their own strategic plan for policy implementation based on their resources, economic/social/political/cultural milieu, population, and timeframe.

Internationally, over 20,000 hospitals in 156 countries have received BFI accreditation (31). In Canada, as of 2005, 18 services in Ontario and Quebec were awarded BFI status and only two hospitals outside of those provinces have achieved the

designation – BC Women and Children’s Hospital in Vancouver, BC and G.R. Baker Memorial Hospital in Quesnel, BC (32). Nationally, BCC is the non-profit, national authority tasked with supporting the implementation of the BFI and overseeing accreditation. Its BC provincial counterpart is the BC Baby-Friendly Network.

Momentum exists across Canada, with the City of Toronto and the Provinces of Ontario, Alberta, Newfoundland and Labrador, and Quebec, for example, all posting various reports, surveys, and presentations relating to their journey towards BFI designation on the Internet. Both Quebec and New Brunswick are striving to have all their facilities become designated BFI.

4.3 VCH Policy

Policy and guideline development began with the formation of the VCH Infant Feeding Policy Steering Committee in 2006. The mandate of the committee was both to create and recommend a VCH wide infant feeding policy for endorsement of the VCH Senior Executive Team and to establish and recommend ongoing steps required to attain regional Baby Friendly status in all acute and community settings.

In 2007, the Steering Committee developed guidelines for breastfeeding policy development which outlined the vision, mission, and guiding principles for policy development, and how the VCH population health framework for action applies to infant feeding through leadership, partnership, advocacy, and policy and guideline development (33). This led to the development of the draft policy and guideline entitled “Feeding of Healthy Term Infants” in 2008. This *Policy* adheres to the WHO Code of Marketing of Breastmilk Substitutes and the hospital and community tenets of the BFI. The guideline, which is embedded in the *Policy*, describes and promotes best practices for feeding of healthy term infants.

While there are many initiatives within VCH to support best practices in maternal and newborn health, many focused on breastfeeding support, the *Policy* is the first to apply to *all* VCH programs, staff, and sites and to be based explicitly on all elements of the BFI. The *Policy* is a reflection of VCH’s commitment to supporting healthy lives in

healthy communities by establishing breastfeeding as the cultural norm for women, children, and families through care, education, and research. The *Policy* clearly states that VCH endorses “exclusive breastfeeding to the age of six months and provision of safe, appropriate, and locally available foods, with continued breastfeeding for up to two years of age and beyond” (34)(p.1).

The *Policy* aims to establish and ensure that HCPs and other staff have the knowledge, skills, and attitudes required to protect, promote, and support breastfeeding as the normal feeding method for the optimal health of infants, children, and mothers. Given the varying degrees of involvement that VCH employees have with breastfeeding women, the *Policy* outlines different levels of education and orientation required for different types of employees. For example, those HCPs providing direct breastfeeding care to women will be: 1) oriented to the policy; 2) educated in basic lactation management or will have previous equivalent preparation; and 3) receive education or employee training to be kept up-to-date in the care of the breastfeeding dyad. The *Policy* applies to the feeding of healthy term infants and details supplementation guidelines and the newborn and maternal medical indications for supplementation.

The *Policy* has set out three short-term goals and three long-term goals to be used as guidelines to measure success in client and family outcomes (34).

Short Term goals

1. Maintain or improve current breastfeeding initiation rates at hospital discharge. Target is 75% EXCLUSIVE breastfeeding at discharge.
2. Accurately chart and collect data according to new Breastfeeding Committee for Canada (BCC) definitions.
3. Work with Community Health to develop a system of data collection to monitor breastfeeding rates in the community.

Long Term goals

4. Mothers initiate and exclusively breastfeed for the first 6 months of life
5. Breastfeeding continues for 2 years and beyond.
6. Recommended complementary foods are introduced according to WHO and CPS recommendations.

4.4 VCH policy process & implementation

During the summer of 2010, the draft *Policy* was in the process of review and had not been officially designated as a regional standard. The *Policy*, once approved, will require implementation and evaluation throughout the region, a process expected to take several years. Official VCH approval of the *Policy* will complete the first step in the process of becoming a Baby Friendly health authority.

In anticipation that the *Policy* would be approved, planning for implementation began in 2009 with a gap analysis across all of VCH (35). This gap analysis was informed by a provincial survey disseminated to all hospitals with a maternity unit and all community health agencies in BC. The survey asked about the agency's readiness to implement the BFI steps. Survey results for VC, represented by one survey for all six LHAs, are reported in Table 1.

Although my recommendations cover all *Seven Steps*, I will take these varying "readiness to implement" the BFI *Seven Steps* into account. Where VC does not consider themselves ready, on the whole, to implement a certain BFI Step, I will be mindful that more time, effort, or planning may be required.

Table 1: Vancouver Community’s readiness status for implementation of BFI’s Seven Steps

BFI Step	Description	Status
1	Have a written breastfeeding policy that is routinely communicated to all staff and volunteers.	Almost Ready
2	Train all healthcare providers involved in the care of mothers and babies in the skills necessary to implement the policy.	Not Ready
3	Inform all pregnant women and their families about the benefits and management of breastfeeding.	Not Ready
4	Support mothers to initiate and sustain exclusive breastfeeding.	Ready
5	Encourage sustained breastfeeding beyond 6 months with appropriate introduction of complementary foods.	Ready
6	Provide a welcoming atmosphere for breastfeeding families.	Ready
7	Promote collaboration between healthcare providers, breastfeeding support groups and the local community.	Not Ready

5: BREASTFEEDING RATES IN VANCOUVER

Baseline data are essential for program planning; they help one assess needs, set targets, evaluate process, and make programming adjustments. Unfortunately, only partial information – initiation rate and exclusive rate at hospital discharge – is known about the profile of breastfeeding in Vancouver and its LHAs; little is known about breastfeeding duration rates. This is not an uncommon situation. Vancouver and BC are not alone in their lack of mandatory, long-term, and standardized data collection system for tracking breastfeeding exclusivity and duration. In fact, there is no Canadian province with standardized breastfeeding data systems in place (36). While there is momentum in various parts of the country, including VCH, to develop such a system, development of this type of data collection is a complex undertaking that often requires multiple stakeholders, time, and creativity to orchestrate and significant resources to implement.

Although a main focus of this capstone is to make recommendations for increasing duration rates, this is the aspect of data collection that is the least information-rich. However, the other sources of data (in recognition of their limitations) help shed light on the probable breastfeeding duration profile of Vancouver.

The only duration data at the Vancouver and LHA-level is collected by PHNs and entered into PARIS, the electronic documentation system used by a variety of HCPs in VC. Although data can be retrieved from PARIS, its main purpose is to allow HCPs to meet their professional practice requirement for documentation and facilitate continuity of care. Nevertheless, these data were not available at the time of this report, and importantly, these data did not include any population-level information about breastfeeding in later time periods (e.g. 2 weeks or 3 or 6 months) (37).

At the time of this project, there was an infant feeding study underway looking at breastfeeding rates and vitamin D supplementation of 2-month old infants. The study was taking place in 5 LHAs in Vancouver and Richmond and had a 56% response rate. Findings were being analysed for reporting and publication in Fall 2010. The study will help VCH understand breastfeeding at 2 months in this sample population and may also help guide future breastfeeding duration data collection.

5.1 Breastfeeding rates during hospital admission following birth

The most accurate breastfeeding data for Vancouver and its LHAs is the hospital discharge data on breastfeeding exclusivity from the BCPDR. These data are population-based and reliable. While the data does not provide a direct measure of breastfeeding duration, there are established links within the literature between hospital practices, initiation rates, in-hospital formula supplementation, and breastfeeding duration (37,38). These links enable initiation and hospital discharge data to be used as a predictor of breastfeeding duration.

Hospital discharge data are summarised in Table 2, Table 3, and Table 4. Table 2 reviews the profile of healthy term infant feeding by Vancouver's LHAs. Table 3 outlines the maternal characteristics and delivery outcomes by LHA for Vancouver. Table 4

shows the newborn feeding by select maternal characteristics. All tables include data combined for the fiscal years 2006/07, 2007/08, and 2008/09.

The total number of newborn records received in the dataset from BCPDR for Vancouver HSDA for fiscal years 2006/07, 2007/08, and 2008/09 was 18,759. After removing newborn records that met the exclusion criteria, listed in Appendix A, the final population of healthy term newborns was 16,006 newborns. Herein, all statistics related to the BCPDR data will be reported based on this three year time period. Caution should be taken when comparing these statistics to any other statistics because the current denominator is *healthy term* newborns over a three year period, whereas elsewhere, the denominator is often *all* newborns or *all term* newborns for one year.

Whereas breastfeeding initiation rates were similar across Vancouver LHAs, exclusive breastfeeding during hospital admissions rates were not uniform across Vancouver, as shown in Table 2. The LHAs with the highest exclusive breastfeeding rates were: West (76.1%), Downtown Eastside (75.3%), and City Centre (73.0%). These three LHAs were either above or close to the target exclusive rate during hospital admission of 75% as set out in one of the *Policy's* short-term goals. The lowest exclusive breastfeeding rates were found in Midtown (67.3%), NorthEast (59.6%), and South (59.2%), the same LHAs that had the highest rates of formula feeding. Encouragingly, every LHA had a breastfeeding initiation rate of over 95%, which may reflect high intention to breastfeed and/or supportive acute care environments, clinical practices, and HCPs. That said, by the time newborns are discharged from the hospital (typically 1-3 days post-partum) almost one third have received supplementation, usually with formula.

Table 2: Healthy term newborn feeding by Local Health Area for the combined fiscal years 2006/07, 2007/08, and 2008/09 in Vancouver, BC

	City Centre LHA 1	Downtown Eastside LHA 2	North East LHA 3	West LHA 4	Midtown LHA 5	South LHA 6	All Vancouver
Newborn Feeding							
Exclusive breastmilk	73.0%	75.3%	59.6%	76.1%	67.3%	59.2%	67.2%
Partial breastmilk	25.6%	21.9%	35.7%	22.5%	29.7%	37.0%	29.9%
Formula	1.2%	2.6%	4.4%	1.4%	2.6%	3.7%	2.7%
Unknown	0.2%	0.3%	0.3%	0.1%	0.4%	0.2%	0.2%
Breastfeeding Initiation Rate	98.6%	97.2%	95.3%	98.6%	96.9%	96.2%	97.1%

5.2 Maternal and delivery characteristics & relation to breastfeeding during hospital admission

For the most part, maternal and delivery characteristics varied across LHAs. As indicated in Table 3, the average age of mothers in Vancouver at the time of delivery was 32.7 years, over 2 years older than the average mother in BC in 2006/2007 (15). All LHAs had an average maternal age at birth of over 31 years of age. Only minor differences in exclusive breastfeeding exist between women aged 25-34 years compared to their younger and older counterparts. This finding does not follow the pattern observed in most research studies which find that older mothers have higher rates of breastfeeding initiation and exclusivity. This may reflect the chosen age categories in this analysis or the effect of potential confounding variables. That said, Table 4 shows that 4.9% of young mothers (aged 15-24) exclusively formula fed their newborns during their hospital admission as compared to less than 3% for mothers in the other two categories.

Table 3: Maternal characteristics and delivery outcomes by Local Health Area, Vancouver HSDA for the combined fiscal years 2006/07, 2007/08, and 2008/09

	City Centre LHA 1	Downtown Eastside LHA 2	NorthEast LHA 3	West LHA 4	Midtown LHA 5	South LHA 6	All Vancouver
Number of live newborns, # (%)	2,541 (15.9%)	1,088 (6.8%)	2,956 (18.5%)	3,087 (19.3%)	2,720 (17.0%)	3,614 (22.6%)	16,006 (100%)
Maternal Age, \bar{x} years, (Standard Deviation)	33.0 (4.5)	32.4 (5.6)	32.1 (5.1)	34.2 (4.5)	32.6 (5.1)	31.9 (5.3)	32.7 (5)
Primiparity, %	70.2%	57.3%	50.8%	51.6%	55.6%	47.7%	54.6%
Maternal Education, \bar{x} years, (n)¹	16.0 (n=628)	14.8, (n=295)	14.5, (n=662)	16.5, (n=946)	15.1, (n=738)	14.8, (n=768)	15.4 (n=4037)
Maternal Education, % 13+ years	91.9%	74.2%	72.2%	91.5%	79.3%	75.5%	81.9%
Vaginal delivery, %	67.8%	71.0%	71.4%	69.6%	70.1%	71.1%	70.2%
Cesarean Section delivery, %	32.2%	29.0%	28.6%	30.4%	29.9%	28.9%	29.8%
Analgesics/ Anaesthesia used during labour, %	93.8%	87.7%	90.2%	91.1%	90.7%	91.1%	91.1%
Epidural, %	53.3%	47.2%	39.5%	48.5%	45.3%	44.3%	46.0%
Group BMI (% of babies who's mother's BMI was recorded)							
% Underweight	7.5%	6.0%	10.1%	6.8%	6.7%	9.1%	8.0%
% Normal Weight	75.3%	69.2%	70.0%	76.7%	71.0%	69.1%	72.0%
% Overweight	13.7%	17.8%	14.5%	13.1%	17.2%	15.8%	15.1%
% Obese	3.4%	7.0%	5.4%	3.4%	5.1%	6.0%	4.9%
% Unknown (of all babies)	35.6%	27.8%	33.6%	31.6%	31.7%	31.1%	32.3%

¹ Given that the education variable was only complete in roughly a quarter of mothers, it cannot be reliably used to draw conclusions.

The majority (54.6%) of newborns in Vancouver had mothers who had not previously had at least one live birth (primiparous mothers). City Centre had the highest rate of primiparous women (70.2%) as compared with all other LHAs. Contrary to research evidence, parity did not seem to be associated with newborn feeding in Vancouver (Table 4).

Table 4: Newborn feeding by select maternal characteristics for the combined fiscal years 2006/07, 2007/08, and 2008/09 in Vancouver, BC

	Exclusive breastmilk	Partial breastmilk	Formula	Unknown	Breastfeeding Initiation Rate
Maternal Age, years					
15-24	65.9%	28.8%	4.9%	0.4%	94.7%
25-34	68.1%	29.3%	2.4%	0.2%	97.4%
35+	66.0%	30.9%	2.9%	0.2%	96.9%
Type of Delivery					
Vaginal	75%	22%	2%	0%	97%
Cesarean Section	49%	48%	3%	0%	97%
Analgesics/Anaesthesia Used During Labour					
Yes	66%	31%	3%	0%	97%
No	81%	16%	3%	0%	97%
Parity					
Nulliparous	67%	31%	1%	0%	98%
Multiparous	67%	28%	4%	0%	95%
Body Mass Index					
Underweight	64.5%	32.1%	3.1%	0.3%	96.6%
Normal	68.3%	29.2%	2.2%	0.2%	97.5%
Overweight	68.8%	29.6%	1.4%	0.2%	98.4%
Obese	60.0%	36.8%	2.8%	0.4%	96.8%
Unknown & N/A	66.1%	30.0%	3.7%	0.2%	96.1%

While approximately a third of all newborn records did not have a Body Mass Index (BMI) recorded for their mother, the BMI category showed some important trends. 20% of all mothers were either overweight or obese. Although overweight mothers did not seem to exclusively breastfeed less than mothers with a normal weight, obese mothers did, with 60.0% of obese mothers exclusively breastfeeding compared to 68.8% for overweight and 68.3% for normal weight. This analysis is only valid assuming that the Vancouver population of mothers with “unknown or N/A” BMI values has a distribution of BMI values similar to the population with reported values.

Consistent with the evidence, the following maternal and delivery characteristics appear to have a significant effect on exclusive breastfeeding during hospital admission: vaginal delivery (75% exclusively breastfed) vs. Cesarean section (49% exclusively breastfed) and no use of analgesics or anaesthesia (81% exclusively breastfed) vs. use (66% exclusively breastfed). While analgesics or anaesthesia use during delivery likely results in a reduction in exclusive breastfeeding rates, only 8.9% of all births used neither. Therefore, targeting those who use analgesics or anaesthesia during pregnancy would essentially amount to a universal, population-wide approach.

5.3 Vancouver demographics

Given the associations between particular demographic variables and breastfeeding exclusivity and duration rates, demographic profiles of Vancouver are useful to consider when making programming decisions regarding infant feeding because these profiles can help identify populations that may benefit from targeted programming.

As such, demographic profiles of each of the six LHAs in Vancouver, and of Vancouver as a whole, are shown in Table 5. These census data illustrate that Vancouver is a multi-ethnic heterogeneous population with a wide range of SES and geographic concentrations of high and low income families and Aboriginal Peoples. As summarized in the section 2.3, women with the following characteristics breastfeed longer and more exclusively: older, married, with higher education and income, and foreign-born. Also, a local study of 196 Chinese women found relatively low breastfeeding duration rates (22).

The average family income (2005) ranged from \$53K in the Downtown Eastside LHA to a significantly higher average of over \$140K in the West LHA. SES shows a distinct trend, with higher average family income and more adults with high school completion in the West and City Centre and lower SES in the Downtown Eastside, Northeast, and South. For 'lone parent' status, the highest and lowest lone parent status follow the SES trend, with 21.8% of families with children at home headed by a

lone parent in the West and 40.9% in the Downtown Eastside. However, the LHAs with lone parent status values between the highest and lowest do not follow the same

Table 5: Demographic characteristics of residents by Local Health Area in Vancouver, BC

	City Centre LHA 1	Downtown Eastside LHA 2	NorthEast LHA 3	West LHA 4	Midtown LHA 5	South LHA 6	All Vancouver
Census population (2006)	103,146	53,518	97,827	125,554	81,849	128,349	590,243
Average family income (2005)	\$ 88,485	\$ 59,424	\$ 67,271	\$143,288	\$ 73,637	\$ 72,264	\$ 89,165
Incidence of Low Income among Economic Families	17.6%	30.9%	22.8%	17.1%	19.5%	24.2%	21.2%
% of population age 25-54 without high school completion	3.1%	15.7%	15.1%	2.4%	10.7%	10.8%	8.6%
Lone parent families as a % of Families with children at home (2006)	31.5%	40.9%	26.7%	21.8%	27.3%	24.7%	26.6%
Total Visible Minorities	30.6%	38.2%	70.8%	32.4%	53.5%	74.3%	51.1%
Chinese	11.1%	22.9%	45.5%	21.7%	26.9%	43.6%	29.4%
South Asian	2.3%	1.4%	4.9%	1.9%	5.5%	14.4%	5.6%
Total Aboriginal People	1.3%	8.5%	1.7%	1.3%	2.1%	0.9%	2.0%

Source: BC Stats

pattern as SES. 51.1% of all residents in Vancouver self-identify as a visible minority and the majority of these report being of Chinese descent (29.4%). Two of the LHAs, South

and Northeast, have over 70% visible minority status. City Centre and the West – the LHAs with the highest SES levels – have the lowest percent of visible minorities. For all but the Downtown Eastside, residents self-identifying as Aboriginal constitute approximately 2% or less. In the Downtown Eastside (LHA 6), Aboriginal People represent 8.5% of the residents.

5.4 Vancouver Profile – demographics & breastfeeding

When analysing how the LHA demographic profiles relate to the breastfeeding data, rates of exclusive breastfeeding at hospital discharge seem to follow a SES gradient, with higher SES being associated with higher exclusive breastfeeding rates. However, there is one notable exception: the Downtown Eastside. The Downtown Eastside LHA has the lowest average family income, the highest incidence of low income among economic families, the highest percentage of adults without high school completion, and the highest rate of lone parent families. Contrary to what one might predict about breastfeeding in this LHA based on research evidence on SES, the Downtown Eastside also has the second to highest rate of exclusive breastfeeding at hospital discharge.

There are many potential explanations for this finding. From a clinical standpoint, the Downtown Eastside has the lowest rate of analgesic/anaesthetic use and a lower than average rate of cesarean section, both of which are associated with higher exclusive breastfeeding. On the other hand, it has the highest combined obese and overweight, which are generally associated with lower breastfeeding rates. It is plausible that there are cultural and social norms in the Downtown Eastside LHA that negate the SES effects on breastfeeding. Based on my personal knowledge of the neighbourhood, these cultural and social attributes may include, but are certainly not limited to: a general acceptance of breastfeeding in public, strong level of social support and community connectedness, and support for natural birthing and alternative lifestyles. Future research about this trend-bucking community is warranted. Are there characteristics of this community or neighbourhood that make it conducive to breastfeeding? Are there informal peer support networks that create a culture

supportive of breastfeeding? Also, what does the profile of breastfeeding duration look like in this area? Are there certain populations who breastfeed more or less so than the LHA, Vancouver, or BC averages? Lastly, what effect does the cost of formula have on breastfeeding outcomes?

Another relevant finding is the fact that areas with low SES and lower exclusive breastfeeding during hospital admission rates are also the areas with high percentages of visible minorities. The NorthEast and South LHAs both fit this description. Although many studies in Western countries find that immigrants and visible minorities, on the whole, have higher rates of breastfeeding than non-immigrants and visible minorities, Vancouver's multicultural heritage may not follow this general finding. The anecdotal evidence that women of Chinese descent in Vancouver have low breastfeeding rates cited by Janssen et al. (2009) may indeed reflect disparities in breastfeeding outcomes according to cultural background. That said, one cannot rule out the possibility that SES variables exert a stronger influence on breastfeeding outcomes than the variable of culture. Nevertheless, this finding highlights the importance of providing culturally-relevant and culturally sensitive programming in these communities.

5.5 Summary

Based on the preceding discussion, it can be concluded that, in Vancouver, almost all healthy term infants are breastfed initially. That said, exclusive breastfeeding at time of initiation varies by location. BC-wide data suggest that by 6 months, relatively few women are exclusively breastfeeding. Finally, the literature on predictive factors of breastfeeding, coupled with the demographic profiles of Vancouver's LHAs, supports the hypothesis that the observed geographic variation in breastfeeding is influenced by demographics (e.g. SES, ethnicity).

6: COMMUNITY BREASTFEEDING SUPPORT

In order to develop recommendations tailored to the VC context, this section covers the supports already in place in VC and evidence about effective support strategies.

6.1 Breastfeeding support in Vancouver Community

VC's commitment to supporting breastfeeding is illustrated by the myriad of breastfeeding support and promotion initiatives captured in the VC environmental scan of supports, services, and partners conducted in 2007 by the BFI Policy Development Steering Committee (see **Table 6** below). This environmental scan produced an extensive list including: policy, services internal to VC, services external to VC to which women and families are referred to, existing staff, staff education and training resources, educational resources for the public, VC partners, and the available data on breastfeeding rates (39).

Of all the VC programs, the "0-5" Infant, Child & Youth (ICY) program provides the most direct care to families and young children including infant feeding support. The "0-5" ICY program provides health promotion, disease prevention, early intervention, education, and counselling to families with infants and young children up to five years of age. The 0-5 program has a universal component delivering post-natal care and support to all babies living in Vancouver. For example, every infant living in VCH receives contact from a PHN soon after returning home after birth or after six weeks for midwifery clients. Based on client consent and need, PHNs offer early postnatal check-up via home visits or telephone calls and, if needed, referral to a lactation consultant, allied HCP, and/or to a parent-infant drop-in support group. PHNs working in the 0-5 ICY program also run Well Baby Clinics where they provide child and family assessments, including breastfeeding assessment and support, and provide routine childhood immunizations. Approximately 10-15% of all children in VCH receive all or part of their routine immunizations at these clinics (40).

The 0-5 ICY program also delivers several targeted programs for families living in different at-risk or vulnerable conditions, each containing a pre- and postnatal component. These include: Bridge Community Health Clinic which provides primary care services to refugees and refugee claimants; the Sheway program which provides health and social service supports to pregnant women and women with infants under 18 months who are experiencing current or previous issues with substance use; Healthiest Babies Possible which is a pregnancy outreach program for pregnant women and their families, with emphasis on women living in “at risk” conditions such as low income, isolation (linguistic/social/cultural), mental health issues, and violence; Youth Pregnancy and Parenting Program for youth and teens up to 22 years old; and Building Blocks which provides outreach support and advocacy to enhance families’ capacity and confidence in parenting and decreasing isolation.

Aside from these five targeted programs and primary care clinics, VC does not deliver universal or free prenatal services or classes. One-on-one prenatal services are delivered by family doctors and obstetricians/gynaecologists, and prenatal classes are offered out of various hospitals, private businesses, maternity organizations and some colleges.

There are two other notable activities that VC supports. First, VC participates in the Quintessence Breastfeeding Challenge, an event where the challenge is to see which geographic area (province, state or territory) has the most breastfeeding babies, as a percentage of the birth-rate, “latched on” at 11am local time. The event is a celebration of breastfeeding and milk-banking and a demonstration of promotion, protection, and support for breastfeeding women and their families through community collaboration. The event is publicised using social marketing and has garnered media coverage on several occasions. It is also a chance for education and peer support in a fun and social atmosphere. Second, VC offers a telephone information and referral service for parents with questions about their babies ages birth to two called the “Newborn Hotline”. The hotline is staffed by PHNs working in the ICY 0-5 Program, operates during regular business hours seven days a week, and it serves Vancouver and Richmond.

Table 6: Environmental Scan of Supports, Services, and Partners – Vancouver Community, 2007

Existing Policy Developed for service area:	<ul style="list-style-type: none"> • A draft policy was developed for Vancouver Community in 1994 and revised in 2005
Existing Staff (internal) who provide support to women:	<ul style="list-style-type: none"> • Multidisciplinary team of PHN, Nutritionist, Primary Care clinic staff (G.P., Nurse Practitioner), midwife and doula in South Community Birth project • Some PHNs are Lactation Consultants
Services (internal to Vancouver Community) for women and families:	<ul style="list-style-type: none"> • CHN contact of maternal newborn after hospital d/c • Special programs for identified population in the perinatal period: Healthiest Babies Possible, Sheway, Youth Pregnancy and Parenting, Building Blocks • Parent/infant groups all sites; parent toddler groups, some sites; breastfeeding support group (Pacific Spirit)
Services (external to VC) women and families are referred to:	<ul style="list-style-type: none"> • BCWH lactation consultant • Vancouver Breastfeeding Center
Inventory of staff education/resources:	<ul style="list-style-type: none"> • Breastfeeding self learning module for new CHNs • Half day “class room” orientation on infant feeding for new PHNs • For staff providing direct care to breastfeeding women: 3-day course • Supporting PHNs to attend Douglas College or Grant McEwon course when budget available • Ongoing continuing education on breastfeeding • Updated breastfeeding resources housed at each site • Updated list of where to rent/purchase breastfeeding equipment • Best Start Ontario: “guidelines for consultant” teaching aid
Inventory of Education material for women and families:	<ul style="list-style-type: none"> • Babies Best Chance and Toddlers First Steps • VCH print material: “How to tell if it is going well”; “Getting Started”; “Common Problems”; “How to store breastmilk”; How to clean breastfeeding equipment”. • VC is working on an internet site that will have the above information and links to BC Healthfiles
Known Breastfeeding rates:	<ul style="list-style-type: none"> • Breastfeeding initiation after birth (in the hospital) is known for all women in Vancouver. Duration data is not available. • Healthiest Babies Possible tracks duration information for clients on their program for up to 6 months.
Partners to consider in this initiative (internal):	<ul style="list-style-type: none"> • All staff in the ICY program (e.g. volunteers, Health Unit Workers, Program Assistant, Reception, CHN, Speech and Language, Audiology, Nutrition, Medical Health Officer, Manager, Educator, etc.), including staff from speciality programs like Building Blocks, HBP, Sheway. • Staff in Primary Health Care Clinic (e.g. G.P., Nurse Practitioner) • Community Developers, including Community Engagement • Mental Health • Addictions • Office of Medical Health
Partners to consider in this initiative(external):	<ul style="list-style-type: none"> • BC Women’s Hospital, St. Paul’s Hospital • Community sector – family place, neighbourhood house, etc.

6.2 Evidence for effectiveness of breastfeeding promotion & support programs

To assess any potential gaps in service and make evidence-informed recommendations about “next steps” for policy implementation in VC, this section reviews the evidence about the effectiveness of several breastfeeding support programs and initiatives aimed at increasing breastfeeding exclusivity and duration. This review of interventions is not exhaustive; rather, it covers many of the most commonly studied types of interventions and those interventions which I think are relevant to the VC context.

It should be noted that there exists vibrant discussion in the breastfeeding literature about the unintended consequences and feminist implications of breastfeeding promotion. It has been argued that some forms of breastfeeding promotion have stigmatized mothers who cannot or choose not to breastfeed. Debate also exists about whether or not breastfeeding and its promotion contribute to the inequality between men and women or whether it is the structural conditions unsupportive of breastfeeding (e.g. working conditions/expectations, child care system, conceptions of adult autonomy, and lack of accommodation of lactating women) that are at the root of gender inequality (41,42). Without entering into this debate, this paper attempts to address the issue of breastfeeding sensitively, in recognition of the often-times personal and political nature of the subject.

Over the past several decades, numerous hospital and community-based breastfeeding promotion and support interventions have been developed, implemented, and many have been studied empirically. Community-based interventions can be classified according to timing (pre-natal, perinatal, post-natal), level of prevention (prevention or treatment of complications), audience (targeted or universal, mothers, families, partners, community members, employers, employees, health care staff, policy makers, health care management, or school children), duration (brief, limited, or on-going), location (school, media, clinics, community centres and hubs, workplaces, and in the home), by method of delivery (pamphlets, telephone

support lines, groups, one-on-one hands-on, policy reforms, advocacy, and structural supports), and personnel (lay workers, peer support, health care professionals, community leaders/celebrities). The combinations are endless, making it exciting, yet challenging for program planners to decide on a plan of action.

It is thought that recent increases in breastfeeding initiation are a testament to successful interventions, primarily in the hospital setting, and changes in HCPs' attitudes and practices. However, fewer gains have been made towards increasing exclusivity and duration. This reality is reflected in the research findings on interventions targeted at increasing exclusivity and duration which have demonstrated few or moderate effects. Additionally, there are specific challenges faced when evaluating population-based and duration-focused programs; it is understandably easier to evaluate the impact of hospital-based interventions involving a specific clinical change, such as "rooming in", on breastfeeding initiation rates in comparison to studying the effects of supportive breastfeeding environments on breastfeeding duration.

In a large review of the evidence of effective strategies to increase overall breastfeeding, Dyson et al. (2009) postulate that the reason for the gaps in evidence of more complex and national policy interventions exist because of "cost implications for evaluation of such strategies, or possibly because breastfeeding promotion is not always a priority for health and research agencies" (30) (p.141). As is the case with many population-based and policy-based health promotion programs, it is challenging to evaluate effectiveness because of the many interconnected influential factors along the causation pathway.

Additionally, several researchers conducting systematic reviews on the subject of breastfeeding promotion noted that evaluating the evidence about interventions to support breastfeeding was challenging because they found "substantial heterogeneity across eligible trials in the actual breastfeeding promotion interventions and their implementation, timing, and intensity" (43) (p.569). Variations also existed in the definitions of "usual" or "routine" care to which the intervention was being compared

as did the types of background social support, health care systems, and socio-demographic characteristics of the study population.

Importantly, there are several Cochrane systematic reviews currently underway that may help guide policy implementation in VC over the coming years, all of which have published protocols for their review process. Four relevant topics include: antenatal breastfeeding education for increasing breastfeeding duration; interventions for treating painful nipples among breastfeeding mothers; effect of pacifier use in healthy term newborns whose mothers have initiated breastfeeding; and effectiveness of interventions to prevent mastitis after childbirth.

Despite the limitations of the existing literature, there are several research findings that can inform breastfeeding support and promotion in VC from the perspective of the PHN role. The majority of the following findings are derived from systematic reviews. As will become apparent, there are gaps in the RCT literature on effective strategies involving public policy, supportive environments, and community action (23).

6.2.1 Breastfeeding Support, of any kind

In a large systematic review on support for breastfeeding mothers, Britton et al. (2007) found a beneficial effect on the duration of any breastfeeding (up to 6 months) with the implementation of any form of extra support. Extra support included interventions delivered by a variety of medical, nursing, and allied HCPs, as well as lay support people. The interventions took place either during the postnatal period alone or with a prenatal component. However, positive effects on breastfeeding duration were only found in areas with intermediate levels of breastfeeding initiation (between 60-80%), whereas there was no significant effect on any breastfeeding where there were low (less than 40%) or high (greater than 80%) initiation rates (44). Chung et al. (2008), who isolated breastfeeding intervention studies from developed countries in a subgroup analysis, did not find an effect on duration rates, although they did not stratify analyses by initiation rates. However, they found significant intervention effects on short and long-term exclusive breastfeeding (45). Likewise, Britton et al. (2007) found

that breastfeeding support (any form) had a greater impact on exclusive breastfeeding rates than on duration rates. While there is mixed evidence from the various studies, it appears that when various types of breastfeeding support interventions are assessed, they have a greater impact on exclusive rates than on duration rates and that in areas with high initiation rates, positive effects on duration may not be observed (or not be as strong) as when assessed in areas with intermediate initiation rates.

6.2.2 Support from a Professional or Peer

There is mixed evidence about the effect of professional support on breastfeeding. While Britton et al. (2007) found that professional support resulted in a beneficial effect on exclusive breastfeeding, the overall effect of extra professional support on breastfeeding duration was not statistically significant, except in those trials that measured breastfeeding at four months (44). That said, professional support has been shown to be effective when the HCP's attitude towards breastfeeding is positive, when they have appropriate knowledge and skills, and particularly effective for certain groups of women (e.g. those who identify themselves as being without support for the first month postpartum and those with low income) (46,47). On the other hand, lay support interventions (e.g. peer support or peer counselling), with or without professional supports, were found to have a significant effect on duration of *any* breastfeeding and on increasing exclusive rates at all the times tested (at 3, 4, and 6 months) (44,45). Lay support (used interchangeably with "peer support"), may be particularly effective in reaching and influencing women with low income and from disadvantaged groups (48,1). It is thought that peer counselling support programs are successful because mothers benefit from role models who possess experiential knowledge, share a common way of communicating and demographic profiles, and have an understanding of the community environment related to breastfeeding.

6.2.3 Timing & Mode

The timing (i.e. pre-natal, perinatal, post-natal) and mode (i.e. pamphlets, telephone support lines, groups, one-on-one hands-on, policy reforms, advocacy, and structural supports) of interventions has been the focus of many studies. Not

surprisingly, combining pre- and postnatal interventions has been shown to have a larger effect on increasing breastfeeding duration and on short-term exclusive breastfeeding compared with either pre- or postnatal interventions alone (45). With regard to the mode of delivery, face-to-face (in person) support has proven beneficial to breastfeeding duration rates, whereas the evidence about telephone support alone is mixed, with some reviews showing effects and others not (49). However, telephone support has been found to strengthen the effect of prenatal education, leading to an additional 5% to 10% increase in short-term breastfeeding duration (up to 2 months) (49). However, this finding was refuted in a study with high-income women in the US, whereby the combination of prenatal education and postnatal telephone support was shown not to be effective (23). These findings further demonstrate the heterogeneity of the populations being served and support the need for context-specific programming. A local Vancouver study involving 250 immigrant women of Chinese descent found that of the 20% of mothers who indicated that they used a new Chinese infant feeding hotline, 44.1% were exclusively breastfeeding at two months, which was three times higher than other women in the study. The authors of the study conclude that the language-specific feeding telephone hotline reached a previously underserved population and may have contributed to improved rates of exclusive breastfeeding (22).

The location in which in-person post-partum support is delivered has also been studied and has a demonstrated affect on breastfeeding outcomes. In a study comparing the effects of support offered in home versus hospital clinics on breastfeeding outcomes and maternal satisfaction for mothers who experienced standard or early discharge (leaving hospital less than 48 hours), in-home lactation support was associated with positive breastfeeding outcomes for mothers and term newborns. Additionally, mothers considered particularly valuable the 1:1 breastfeeding support and the nurses' flexibility and knowledge of breastfeeding (23).

Finally, while written information about breastfeeding may be useful as a teaching aid for health care practitioners when combined with other strategies, the studies reviewed by Renfrew et al. (2005) showed that the isolated use of written

materials in either the pre- or postnatal periods did not prove effective at increasing breastfeeding duration among women with low or high incomes (23,1).

6.2.4 Training of HCPs

As Spiby et al. (2009) explain, the development of evidenced-based policy guidelines alone will not usually produce changes in professional practice; policy and professional practice guidelines are usually more effective when accompanied by an interactive educational programme (50). The staff education programs that sees to affect the most change in breastfeeding exclusivity and duration are the 18- and 40-hour WHO/UNICEF breastfeeding training courses (44,50). However, the majority of studies used in this review were conducted in middle-income countries. Therefore, it is unclear whether these training courses would have the same effect in high-income countries including Canada.

6.2.5 Mass Media Campaigns and Social Marketing

Mass media campaigns are valuable strategies because they can help to shift social and cultural norms and understanding. In this light, although media campaigns may not result in short-term measurable increases in breastfeeding, their impact on attitudes and perceptions are invaluable and their potential to reach a wide audience is advantageous (1). As such, they are often incorporated into multi-faceted interventions and designed using the large body of evidence about attitudes and beliefs about breastfeeding (23).

Mass media campaigns are often part of sophisticated social marketing programs designed not only to alter knowledge and attitudes but also to influence behaviour. Social marketing incorporates the traditional 'marketing' tenants of consumer research and targeting of messages to sub-populations and adds a focus on understanding and addressing the external and internal influences of behaviour (40). For example, in the case of breastfeeding promotion, some internal and external factors to take into account when planning for a social marketing program would include consideration of the costs (social, emotional, monetary, and temporal) of breastfeeding and the

competition provided by formula feeding and developing clever and persuasive messages to motivate women to breastfeed. Despite the potential benefits of social marketing for achieving social change, it appears to be an underutilized strategy that, when used, is not often evaluated as a tool for promoting breastfeeding in developed countries (30).

6.2.6 Structural Supports

Structural supports include socio-cultural support and labour market, health, and early childhood policies. These policies and programs have some of the greatest potential to increase breastfeeding rates up to the WHO/UNICEF recommendations, especially duration and exclusive breastfeeding rates, because of the documented relationships between socio-cultural and demographic factors with breastfeeding outcomes. Unfortunately, few studies have evaluated structural supports (23,51). However, breastfeeding education and social marketing in the absence of structural supports cannot succeed. Consider a situation in which a woman, who plans to breastfeed, needs to return to work a few weeks or months after delivery and does not have working conditions that allow her to maintain lactation during work hours; breastfeeding, let alone exclusively, would be very difficult in this scenario. This scenario is reflective of the fact that the breastfeeding outcome is not always a choice, let alone an *informed* or *feasible* choice. Indeed, decreases in breastfeeding duration have been associated with earlier return to maternal employment post-birth (52). Workplace strategies to support breastfeeding include: maternity leave provisions; lactation breaks; and physical facilities such as private rooms and access to refrigeration (51). Unfortunately, a Cochrane review was unable to identify RCTS or quasi-RCTs comparing workplace interventions to support and promote breastfeeding among women returning to paid work after the birth of their children (51).

In Canada, maternity/paternity (henceforth “maternity”) leave entitlements increased from six months to about one year in most provinces in 2001. This lengthening of leave entitlements had significant impacts on mother’s time away from work post-birth (estimated increase of 3-3.5 months) and the length of time they

breastfed. Breastfeeding duration increased by over a month and the proportion of mothers exclusively breastfeeding at six months increased by nearly 40% (from 20% to 28%). Baker and Milligan (2008) found that, among those eligible for leave, breastfeeding duration rates increase by one-third of a month for every additional month a woman is not at work (52).

While this extension of maternity leave entitlements has benefitted the majority of Canadian mothers, not all mothers are eligible for benefits because eligibility depends on a mother's attachment to the labour force. Data from the Survey of Employment Insurance Coverage conducted by Statistics Canada showed that the proportion of mothers with children aged less than 1 year who had insured employment in the 12 months preceding childbirth was 70% in 2000 and between 74-75% from 2001 through 2005. Of these eligible mothers, only a portion claim their benefits, with 80% claiming in 2000-2001 and 85% in 2002-2005 (52). The MES found that younger women with lower levels of education living in households at or below the low income cut-off (LICO) who worked during pregnancy were less likely to have received maternity or parental benefits. Of women who worked during pregnancy and returned to work within six months after their delivery, 42% reported "because of finances" as the main reason for returning to work (17).

Structural supports also include provision of safe, comfortable, and accessible spaces and environments for women to breastfeed in public spaces (e.g. malls, parks, restaurants, community centres). However, very little evidence could be found about effects on breastfeeding rates of these policies and interventions designed to promote supportive environments. Nevertheless, research on negative attitudes towards breastfeeding in public and news reports about hostility shown to mothers who breastfeed in public abound (23). For example, findings from a survey of female undergraduate students at the University of British Columbia indicate that although students had more positive attitudes towards visual depictions of breastfeeding than bottle-feeding, they had less positive views about breastfeeding in public compared with bottle-feeding in public (28). These and other such findings lead many to believe

that interventions to support mothers to breastfeed in public are an important part of a breastfeeding promotion and protection strategy. Examples of exemplary interventions include: laws to protect the right of breastfeeding women and children in public spaces, social marketing programs to shift cultural norms and behaviours, regulations or incentives for breastfeeding-friendly amenities in public spaces, and appropriate industry and retail codes related to the marketing and promotion of infant formula (1).

6.2.7 Clinical interventions

Clinical interventions, delivered in the hospital or community, have been shown to prevent, treat, or lessen the effects of breastfeeding complications such as nipple pain, infected nipples, engorgement, or “insufficient milk” (1). However, the evidence base about whether or not these clinical interventions translate into the prolongation of breastfeeding duration is weak. This is unfortunate given the fact that some of the most commonly cited reasons for discontinuing breastfeeding include the clinical issues of “insufficient milk” and nipple pain.

These last few sections have summarized the key research findings regarding breastfeeding exclusivity and duration. It is evident that there is a wide range of approaches available for program planners to consider, each requiring differing levels of resources, time, and effort.

7: DISCUSSION & RECOMMENDATIONS

The following includes a discussion about several community health-based strategies that I think would contribute to increased exclusivity and duration rates in Vancouver with specific recommendations.

There are many reasons to celebrate the accomplishments made in recent decades in breastfeeding promotion, protection, and support in Vancouver. Vancouver has breastfeeding rates much higher than the Canadian average, a well-established system to provide breastfeeding support in the immediate postpartum period, is home to the only breast milk bank/program in Canada, actively participates in the yearly

Quintessence Breastfeeding Challenge, and has a large maternity hospital with the BFI designation. However, this exemplary situation cannot be taken for granted because there is no guarantee that these assets and outcomes will continue, let alone increase, without strategic planning and sustained support and resources. Additionally, although breastfeeding rates are higher than the Canadian average, breastfeeding exclusivity and duration rates in Vancouver do not meet national and international guidelines, leaving room for improvement.

An important assumption that influenced the following recommendations was the assumption of no new resources, human or financial, allocated to implementation of the VCH *Policy*. BC health authorities are operating under fiscal restraint, especially since Health Minister Kevin Falcon announced in April 2010 that health authorities should find ways to reduce their public health budget by 10%. Childhood vaccination programming was the only program singled out as not being at risk of being affected by the future cuts (53).

Also, it should be noted that the recommendations and analysis in this capstone do not represent the opinions of VC, VCH, or any one member of the VCH Breastfeeding Steering Committee; they reflect the ideas of the capstone's author.

7.1 Targeted support programs with professional and lay support

The Vancouver data on breastfeeding initiation (any and exclusive) during hospital admission, together with the epidemiological evidence about breastfeeding exclusivity and duration rates in Canada and BC, indicate that it is important to use a combination of universal strategies as well as targeted programs specifically focused on subpopulations of women less likely to exclusively breastfeed during the early postpartum period or to six months postpartum. Targeted programs fit within the VCH population health approach because they aim to reduce health inequities among population groups, thereby ultimately improving the health of the entire population.

The Vancouver data on breastfeeding during hospital admission following birth indicate that it is important to focus on supporting and developing targeted programs

for women having a Cesaerean birth, women living in NorthEast (LHA 3) and South (LHA 6), and obese women. Both LHAs 3 and 6 have relatively high percentages of visible minorities and lower SES compared to most of the other LHAs.

One such targeted program is the Chinese Newborn Hotline (22) described in the Janssen study. Despite the fact that telephone support was not found to be effective in prolonging breastfeeding in the Britton (2007) systematic review, this hotline showed promising results in the Vancouver context. Another approach that may be effective in the Vancouver context is that of lay or peer support, which has been shown to have positive effects on exclusive and long-term breastfeeding. Peer support has also shown to be effective at reaching and influencing women with low income and from disadvantaged groups. However, VC is likely not realising the full potential of this type of support through its current programs and initiatives. Peer support warrants emphasis and further attention.

7.1.1 Recommendations

- a. Support and develop targeted programs or interventions for women having a Cesaerean birth, women living in NorthEast (LHA 3) and South (LHA 6), and obese women.
- b. Develop and support the delivery of culturally relevant programs (e.g. Chinese Newborn Hotline).
- c. Actively support the development and continuation of peer support activities including La Leche League groups and the incorporation of peer support personnel into targeted programs and universal programs alike.
- d. Develop a universal, or population-wide strategy, to address the common concerns about milk supply. For example, strategies could include an education pamphlet and a memo with teaching points for physicians and PHNs.

7.2 Advocacy for action on the social determinants of health

The social determinants of health (SDOH) have a role to play in breastfeeding outcomes. When addressing the SDOH, there are two main approaches one can take to achieve the desired outcome. The first approach was described in the previous section – to target those at risk for the less desirable behaviour – in this case, formula feeding –

and provide extra support and targeted programs to these women and families. The second approach aims “more upstream” by altering the sources of inequity among groups and changing socio-cultural norms, an approach that often involves changing public policy. This second approach, a type of primordial prevention, often requires a long-term commitment. Therefore, although the first approach has limitations, both approaches are necessary in the short, medium, and long-term.

In the case of breastfeeding in BC and Vancouver, individual-level SDOH, including income and education levels, influence breastfeeding outcomes. However, SES is not the only factor influencing infant feeding outcomes. This is evidenced by the fact that a large percentage of women in BC, including women from all SES levels, do not exclusively breastfeed (or breastfeed at all) for the recommended first six months of their baby’s life. As with many health behaviours, such as physical activity and smoking, infant feeding outcomes are influenced by many important socio-cultural and structural factors related to the public policy environment. In the case of breastfeeding, these socio-cultural and structural factors include, but are not limited to the following: quality of supportive social environments, working conditions, gender equity, and the relative value placed on child rearing and child care – forms of social care – as compared to other activities.

Although change to these SDOH requires action both in and outside of the health care sector, HCPs can play a role in supporting and advocating for multi-sectoral action and healthy public policies. Fortunately, primordial prevention activities are highlighted and supported in the BC Core Public Health Function Framework and associated evidence reviews and model core program papers (13,54). VCH also supports a population health promotion approach including action in the following four areas: leadership, partnerships, advocacy, and policy development. VCH specifically recognizes that “advocacy can be one of the most effective population health strategies, with the end result being the development and implementation of policy that directly impacts health outcomes on a sustained basis” (55), p.7) and has a separate document dedicated to advocacy guidelines and resources (56).

At a provincial and national level, many players, including professional societies and Medical Health Officers (MHOs), have important roles to play in advocating for healthy public policy. At the VC-level, although all HCPs within VC can engage in advocacy, PHNs are well positioned to do so because of historical, theoretical, and professional supports. As Cohen and Reutter (57) explain, the historical roots of public health and of public health nursing lie in struggles for human rights and social justice. There is also theoretical support for PHNs to address the SDOH in the health promotion and population health literature and in critical social theory and feminist theories. Current professional standards and position statements at the international and national level also support the role of nurses in addressing the SDOH. The Canadian Nurses Association (CNA) has released several position papers which propose various strategies including advocating for healthy public policy “using stories from patients to help advocate for policies that address SDOH [and] making decision-makers aware of the research on the links between socioeconomic factors and health” (57), p.99). Social justice advocacy is also supported in the CNA’s *Code of Ethics* and in the Community Health Nurses Association of Canada’s *Standards of Practice*.

However, there is a “theory-practice” gap. While PHNs often work with vulnerable populations and individuals to improve their health outcomes and recognize the importance of the SDOH, there is sparse research evidence about PHNs engaging in policy advocacy and social action strategies (57). Therefore, this is an arena that warrants further attention and focus.

7.2.1 Recommendations - Advocacy for action on the Social Determinants of Health

- a. Explore realistic avenues for advocacy on the SDOH related to breastfeeding, including advocating for supportive labour market policies for all Canadian women, including job-protected leave from employment after birth and tax reform to reduce income inequalities.
- b. Promote an understanding and adherence to the sections of the Canadian Charter of Rights and Freedoms and the BC Human Rights Commission that protect women against sexual discrimination related to breastfeeding and the expression of breast milk in public and in the workplace.

- c. Continue to work with key stakeholders to develop and implement strategies to engage public facilities (i.e. malls, restaurants, recreational facilities, parks, and the workplace) in breastfeeding friendly initiatives, thereby increasing the number of breastfeeding friendly places that are supportive a women’s right to breastfeed in public.

7.3 Data collection

Developing a system of data collection to monitor breastfeeding duration rates in accordance with the BCC definitions is a priority of the *Policy*. However, there is no single way to achieve this goal given the present system. While VC staff do work with mothers and children in a variety of contexts, there is no consistent or predictable pattern of care, other than the initial PHN contact and assessment in the immediate post-partum period, during which VC staff could collect high quality population-level breastfeeding duration rates. However, there are several potential strategies VC could adopt to collect duration rates.

7.3.1 Recommendation – Data Collection

The most important aspect of creating a data collection and surveillance system is to make it as easy as possible for service providers to collect and report data. A data collection system that requires a lot of effort or time on behalf of the service providers will not gain traction and not produce reliable or complete data. There are a number of potential data collection strategies relevant to the VC context. The VCH Breastfeeding Steering Committee and VC program planners are best positioned to identify the most feasible strategies from the following suggestions:

- a. Explore options for breastfeeding data collection from GP offices. A typical entry point for the majority of infants and children into the health care system is for routine childhood immunizations at 2, 4, 6, 12, and 18 months, timing which coincides with data collection time periods recommended by the BCC (58). While some children receive their immunizations at a VC child health clinic, the majority visit their family doctor at these intervals, presenting an opportunity for systematic data collection of breastfeeding rates.

- b. Connect with other national or international jurisdictions and community health services that have implemented BFI policies to learn about their successes and challenges in data collection.
- c. Make simple changes in the PARIS system to enhance data collection already in place (e.g. add infant feeding variable to PARIS assessments for older infants/toddlers to begin gathering this data at Child Health Clinics) (58).
- d. Introduce breastfeeding surveys in parent-infant drop-in groups.
- e. When developing a system of data collection, include key socio-demographic and socio-cultural variables to enable identification of subpopulations in Vancouver at risk for low breastfeeding rates.
- f. Consider a routine 6-week (or other interval) telephone call by PHNs to provide post-partum and infant feeding support, a universal service that would be documented in the PARIS system.
- g. Partner with researchers at the VCH Research Institute and/or local academic institutions to conduct infant feeding studies. Faculty and graduate students in a number of faculties could be approached (nursing, medicine, public health, psychology). Studies have the potential to generate high quality data that may be less time consuming for front-line staff. A good example of an in-house study was the recent multi-component study by Toronto Public Health (2010) that assessed a range of factors associated with breastfeeding initiation and duration in a large diverse sample of first-time mothers in Toronto.

7.4 Prenatal education

Prenatal education is an integral part of reproductive health and has been shown to increase the effectiveness of post-natal interventions to support breastfeeding duration. Ideally, prenatal education would be delivered in a comprehensive and inclusive fashion, ensuring that all prenatal women and families' needs were met. However, the current delivery structure of prenatal education in Vancouver is a patchwork services that is often difficult to access. This reality is reflected in VCH gap analysis survey in which VC indicated that they were "not ready" to implement Step 3 of the BFI in community services – the step involving prenatal care. While it would be ideal for VC to offer a universal prenatal support program, this is unrealistic because providing universal prenatal support would require a major investment in resources and

funding during a time of fiscal restraint and/or a significant reorientation of the health care system.

7.5 Limitations

This capstone has several limitations. First, the literature review on breastfeeding support initiatives is not exhaustive. Time and space constraints limited my ability to perform a thorough literature review, particularly within the grey literature. Second, there is limited discussion about Vancouver's political, economic, and cultural context which may limit the relevance and scope of my recommendations. Third, because there is no available data on breastfeeding rates within Vancouver's six local health areas that have individual breastfeeding outcomes linked directly to individual-level SES variables, inferences drawn between breastfeeding rates and demographic profiles of Vancouver's local health areas (LHAs) may be affected by the ecological inference fallacy. The ecologic inference fallacy is the error in the interpretation of data whereby inferences about individuals are based upon aggregate statistics of the group to which the individual belong. Lastly, reliance on the inventory of breastfeeding supports in VC compiled in 2007 may mean that this capstone did not capture all the important work being done to support breastfeeding in VC which may, in turn, affect the discussion and conclusions.

8: CONCLUSION

VCH is committed to supporting healthy lives in healthy communities by establishing breastfeeding as the cultural norm for women, children, and families. Reflective of this commitment, VCH provides a myriad of support services and programs and is getting ready to implement their new infant feeding policy. In preparation for policy implementation, VC is taking stock of its resources, experiences, and population needs. This capstone will hopefully contribute to this planning process, to the successful implementation of the infant feeding policy, and ultimately, to the health and well-being of the whole Vancouver population. Analysis of Vancouver's breastfeeding rates and demographic profile revealed that, in general:

7. Almost all women initiate breastfeeding, although not all exclusively.
8. Exclusive breastfeeding at time of initiation varies by location (local health area level).
9. Based on BC data, by 6 months, relatively few women are exclusively breastfeeding.
10. Evidence from other studies supports the hypothesis that the observed geographic variation in breastfeeding is influenced by demographics.

These observations, coupled with current VC services and evidence about effective interventions were used to develop the following recommendations for implementation of the *Policy* in VC health services:

11. Maintain and enhance targeted programs with an emphasis on lay support and culturally relevant programming.
12. Develop advocacy strategies on the social determinants of health including the promotion of supportive labour market policies for all Canadian women.
13. Collaborate on data collection strategies.

APPENDICES

APPENDIX A: CHARACTERISTICS OF NEWBORNS IN VANCOUVER BC

Table A.1: Population of healthy term newborns and prevalence of exclusion variables in Vancouver HSDA for the combined fiscal years 2006/07, 2007/08, and 2008/09

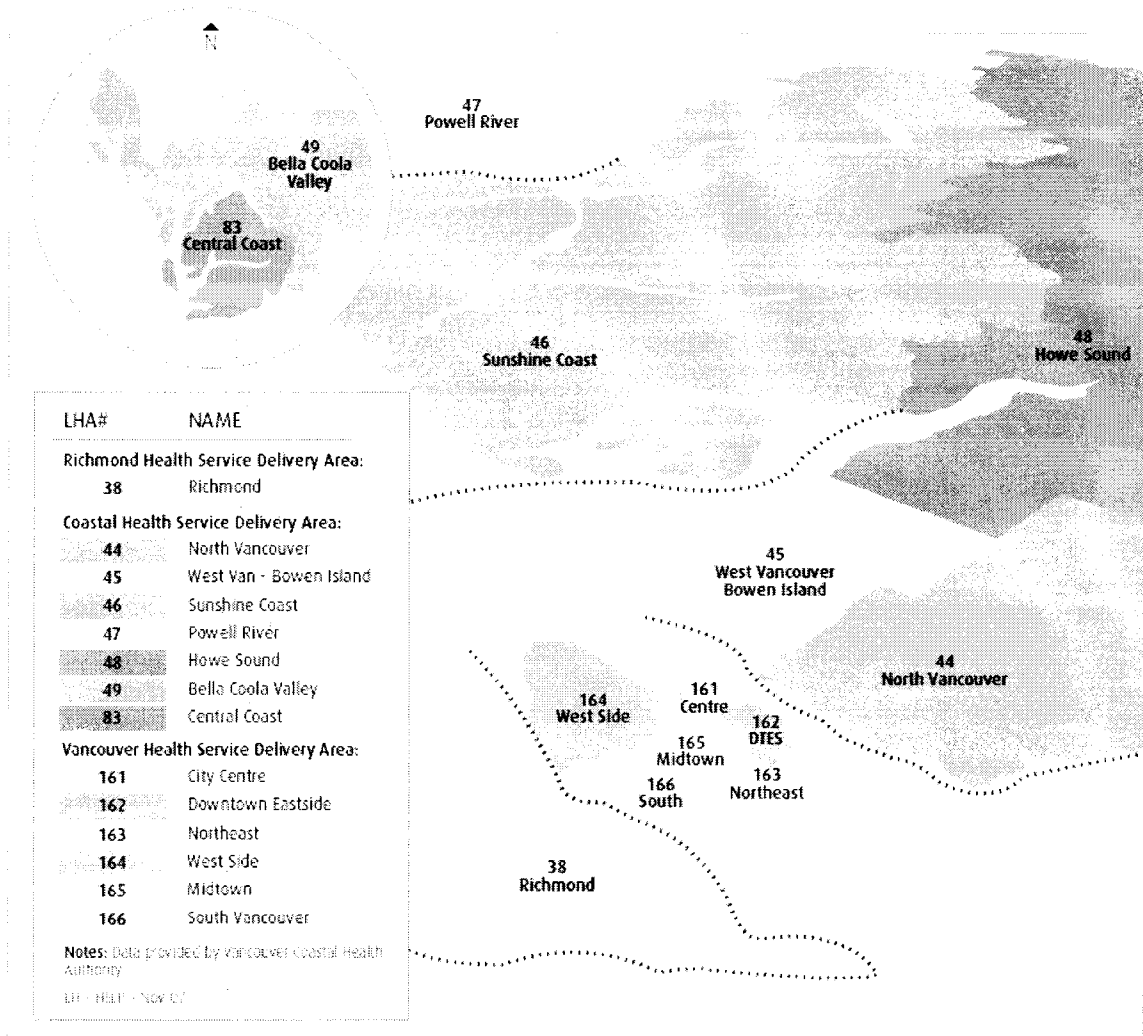
N=18,759 Variable from BCPDR	Definition	Count	% of total
"N/A" for Newborn Feeding	The baby was immediately transferred to another hospital, was a stillbirth or neonatal death or a midwife case	73	0.4%
Newborn final gestational age			
Under 37 weeks		1,760	9.4%
Over 42 weeks		39	0.2%
Under 37 & over 42		1,799	9.6%
Newborn Diagnoses codes¹			
P04.1	Fetus and newborn affected by other maternal medication - Cancer chemotherapy, Cytotoxic drugs	9	<0.1%
P70.0 – P70.9	Transitory disorders of carbohydrate metabolism specific to fetus and newborn	263	1.4%
P74.0 – P74.9	Other transitory neonatal electrolyte and metabolic disturbances	113	0.6%
E742	Galactosemia	0	0
E7000	Phenylketonuria	0	0
E710	Maple Syrup Disease	0	0
Total Newborn Diagnoses		356	1.9%
Maternal "Drugs risk" ¹	Physician lists mother's use of drugs (prescription, non-prescription, illicit) as a risk factor in this pregnancy	265	1.4%
Maternal Diagnoses¹			
F10 – F19	Mental and behavioural disorders due to psychoactive substance use	200	1.1%
O85	Puerperal sepsis	28	0.1%
B20-B24	HIV	0	0
Total Maternal Diagnoses		225	1.2%
Newborn – Very Low Birthweight (<1500g) ¹		167	0.9%
Newborn Weight loss over 12% ¹		68	0.4%
Home births ²		459	2.4%
Total newborns to remove from original population		2,753	14.7%
Revised population	Number of 'healthy' term newborns	16,006	

¹ High likelihood that this would constitute a medical indication for supplementation.

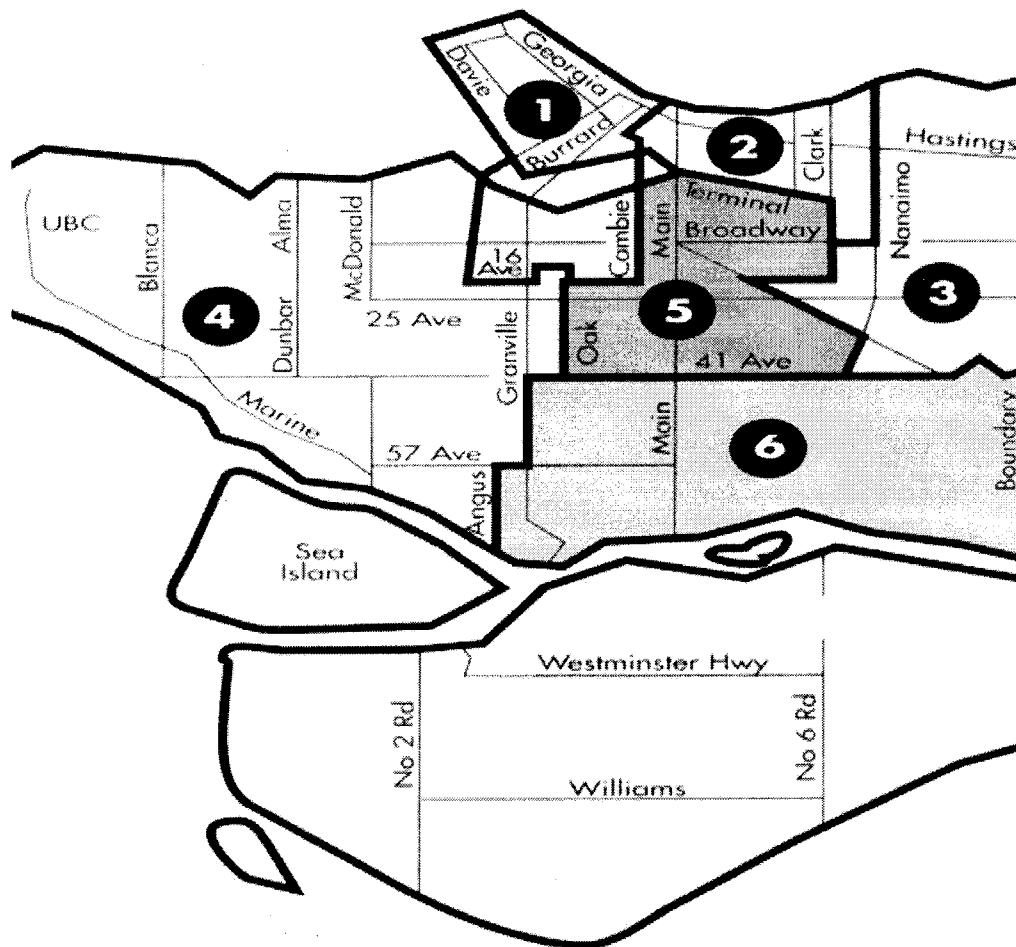
² Definition of infant feeding specifies "at hospital".

It should be noted that women using prescription, non-prescription, or illicit drugs during pregnancy are not necessarily unable to breastfeed after delivery. However, a decision was made to exclude their newborns because untreated drug dependence or psychosis are considered severe illness causing disruption of breastfeeding. Although most newborns born at home can, and do, breastfeed, the data for breastfeeding for newborns born at home was incomplete. Lastly, although it is normal for healthy term newborns to lose up to 10% of their birthweight, weight loss greater than 10% does not necessarily result in supplementation. Rather, after clinical assessment, consideration for supplementation takes place. It was decided that babies over 12% weight loss present a more clear clinical presentation with a high likelihood of supplementation. Therefore, newborns with over 12% weight loss were removed from the sample of healthy term infants.

APPENDIX B: MAPS OF LOCAL HEALTH AREAS (LHA) IN VANCOUVER



Source: Vancouver Coastal Health Early Child Development Council. (March 2009). *Vancouver Coastal Health Early Childhood Profile*. Available from www.vch.ca/media/VCH_Early_Childhood_Profile_March2009.pdf



Legend – Local Health Areas (LHAs)

- LHA 1 – City Centre
- LHA 2 – Downtown Eastside
- LHA 3 – Northeast
- LHA 4 – West Side
- LHA 5 – Midtown
- LHA 6 – South

Source: Healthiest Babies Possible Annual Report 2008-2009

APPENDIX C: BFI TEN STEPS AND SEVEN POINTS

Ten Steps to Successful Breastfeeding in Hospitals* *Breastfeeding Committee for Canada, 2002*

- Step 1:** Have a written policy that is routinely communicated to all health care staff.
- Step 2:** Train all health care staff in skills necessary to implement policy.
- Step 3:** Inform all pregnant women about the benefits and management of breastfeeding.
- Step 4:** Help mothers initiate breastfeeding within a half-hour of birth
- Step 5:** Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
- Step 6:** Give newborns no food or drink other than breast milk unless medically indicated.
- Step 7:** Practice 24-hour rooming in.
- Step 8:** Encourage breastfeeding on demand.
- Step 9:** Give no artificial nipples or pacifiers to breastfeeding infants.
- Step 10:** Foster the establishment of breast-feeding support groups and refer mothers to them on discharge from hospital or clinic.

Seven Points to Successful Breastfeeding in Community Health Units *Breastfeeding
Committee of Canada, 2002

Point 1: Have a written policy that is routinely communicated to all health care staff.

Point 2: Train all health care staff in skills necessary to implement the breast-feeding policy

Point 3: Inform pregnant women and their families about the benefits and management of breast-feeding,

Point 4: Support mothers to establish and maintain exclusive breastfeeding to six months.

Point 5: Encourage sustained breastfeeding beyond six months with appropriate introduction of complementary foods

Point 6: Provide a welcoming atmosphere for breastfeeding families.

Point 7: Promote collaboration between health care providers, breastfeeding support groups and the local community.

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