Development of a Preceptorship/Mentorship Program for Endocrine Nurses in British Columbia: A Proposed Evaluation

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Table of Contents

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Introduction

British Columbia's Children's Hospital (BCCH), Child Health BC (CHBC) and their regional partners have been exploring ways to provide high quality, standardized health care closer to home to children throughout the province requiring sub-specialty health care. Many of the sub-specialty programs are providing outreach or telemedicine services as well as capacity building support to the regional areas. In the endocrinology program at BCCH, outreach activities have been ongoing for approximately seven years with a push to increase outreach activities to other regions. As an advanced practice nurse in this department, my role has been to advocate for, and support the nursing contribution to these outreach activities. This has led to the development of a capacity building and mentorship program. The goal of this program is to provide support and mentorship to nurses working with pediatric endocrine patients throughout the province. Our hope is that the program will strengthen collaboration, standardize care, further best practice and ultimately improve the health of pediatric endocrine patients throughout BC. In fulfillment of my Masters of Nursing project, I plan to describe and provide evidence based rationale for this program. As well, I will outline a plan for conducting an evaluation of the program to determine whether the program is successful in strengthening pediatric endocrine nursing care in regional clinics throughout BC and whether changes need to be made as we implement the program across regions..

Background

Pediatric sub-specialty care in BC

Pediatric endocrinology is a sub-specialty program at BCCH. Sub-specialty is defined as "a limited portion of a narrowly defined professional discipline. For example surgery is a

specialty of medicine and pediatric vascular surgery is a subspecialty (Mosby, 2005). Sub-specialty care is usually provided as a health care team including physicians, nurses, social workers, dietitians and other allied health professionals.

Regionalization has impacted access to pediatric sub-specialty care in British Columbia (BC). With the regionalization of health care in the 1990's, sub-specialty care was centralized to maintain competence and high standards (Church & Barker, 1998). In BC, regionalization efforts divided health resources into five regional health authorities and one provincial health authority. General and some specialty care, such as care from general practitioners and pediatricians, can be accessed within these health authorities; however, pediatric sub-specialty care (e.g. pediatric cardiology, pediatric endocrinology) is mainly provided at BC Children's Hospital located in Vancouver. This means that approximately half of the children and youth population in BC would need to travel a minimum of three hours to be seen at BCCH for sub-specialty care, because they live outside the Vancouver metropolitan area (Child Health BC [CHBC], 2009). A review of sub-specialty patient visits to BCCH per health authority was conducted by CHBC in 2006. See Table 1.

Table 1.
Pediatric Patient Visits to BCCH by Region

BC Region	Subspecialty Medical Clinic Visit	Regional Population
Northern Health Authority	1636	89910
Interior Health Authority	3480	163246
Vancouver Island Health Authority	2922	456416
Fraser Health Authority	18804	363989
Vancouver Coastal Health Authority	16598	204909

The limited local access to sub-specialty care causes significant burden to families of children requiring sub-specialty care living outside of metropolitan Vancouver. Families face financial strain due to the cost of time off work, transportation, accommodations, child care, and food. For example, an estimated cost for a family in Prince Rupert receiving care at BCCH can be greater than $1300/ visit (CHBC, 2007). Given that most sub-specialties require follow up a minimum of every six months, the financial burden can be extraordinary. In addition to the financial burden, travelling for medical care impacts educational success. When children and siblings miss numerous school days they are at risk for falling behind (Miller, Recsky, & Armstrong, 2004).

In an effort to improve access to pediatric care throughout BC, CHBC was established in 2003 as the Provincial Child Health Services Network, and is an initiative of BC Children's Hospital and the Provincial Health Services Authority. CHBC is a collaborative network of BC's health care authorities and health care professionals with the goal that children, no matter where they live in this province, will have access to a consistent and high standard of health care. CHBC's mandate is to bring together partners from the health authorities, the Ministry of Health, the Ministry of Children and Family Development, the Ministry of Education, and other provincial agencies and services to optimize the health of children and youth and to improve access to high quality clinical health services. CHBC has facilitated projects enabling health authorities to provide sub-specialty care to children and youth closer to home. Such projects include the building and support of regional health centers where patients can see a sub-specialty team in their own community and facilitating collaboration and communication between the health authorities. CHBC has also supported the creation of provincial standards of care and resources and assisting in making these resources readily accessible online. CHBC has facilitated

the BCCH endocrine program in providing care to endocrine patients closer to home by supporting outreach activities and funding the development and implementation of the preceptorship/mentorship program for nurses described in this paper. CHBC has also provided funding for the development of provincial patient education resources and advanced practice nurse (APN) travel to outreach sites.

Outreach

The endocrine program at BCCH has been providing outreach services to a number of areas for the last seven years. See Appendix A for details of pediatric endocrine services in these areas. There are many benefits of outreach activities to both the patients and the health care providers. Outreach can increase equity in access to specialist health services (Gruen, Bailie, Wang, Heard, & O'Rourke, 2006) and foster guideline based standards of care. With more patients receiving guideline based standards of care, patients can enjoy improved health outcomes (Gruen et al., 2004)), which may reduce inpatient admissions (Jaffa & Percival, 2004,O'Brien, et al., 2001). Outreach services also decreases or eliminates the difficulty and cost of travel (Williams & Smith, 2004) which in turn leads to cost savings to funded patient travel and accommodation. The benefits to the health care providers are efficiency of care with case management and strong community partnerships between the regional health team and the outreach specialists (Williams & Smith, 2004).

Collaboration between regional teams and outreach teams are promoted when there is appropriate interaction during outreach as well at the opportunity for professional development during training sessions or case discussion (Williams & Smith, 2004). This has been true with the outreach services provided by the BCCH endocrine program. We have built strong relationships with our regional partners and hope that with our mentorship program we can

create a network of nurses providing high quality pediatric endocrine care to patients closer to home.

For most of the BCCH endocrine outreach clinics, nursing care is provided by nurse clinicians in the regional centers. For ease, I will refer to these nurses as regional nurses. Depending on the size of the regional center, regional nurses may have responsibilities both in the inpatient and outpatient areas. The regional nurses provide nursing support to several if not all of the visiting sub-specialty services. For many of these nurses the sub-specialty of endocrinology may be a new area for them. Hayes (2007) suggests that nurses can be experts in their current area of nursing but upon changing of specialties they may revert back to a novice level of capability. She recommends mentorships to build competencies and support nurses as they move from "novice" nurses' competencies to "expert" nurses' competencies along Patricia Benner's (1984) novice to expert continuum.

With CHBC's help and collaboration with the regional managers, we aim to work towards providing mentorship and support to the regional nurses with the implementation of the preceptorship/mentorship program described in this paper. The ultimate goal is to strengthen pediatric endocrine nursing care throughout the province and therefore improve patient health outcomes.

Advanced Practice Nursing's Role

As an Advanced Practice Nurse (APN) in pediatric endocrinology one of my roles is providing education, mentoring, and support to nurses entering the sub-specialty and those who would care for pediatric endocrine patients in their communities or on admission to the regional hospital. The Canadian Nurses Association (CNA) (2008) defines advance practice nursing as an "advanced level of clinical nursing practice that maximizes the use of graduate educational

preparation, in-depth nursing knowledge and expertise in meeting the health needs of individuals, families, groups, communities and populations" (p.9). Another role I assume as an advanced practice nurse is to help pediatric endocrine patients and their families meet their chronic care needs.

A model developed to guide chronic care is the Chronic Care Model (CCM).The CCM originated from a synthesis of scientific literature undertaken by researchers at the MacColl Institute based in Seattle in the early 1990's. The CCM was developed in response to the deficiencies in care for persons suffering from chronic conditions. The goal of the CCM was to improve the care provided to patients with chronic conditions. An early version of the model underwent extensive review by an advisory panel of experts and was then compared with leading chronic illness management programs across the U.S. The model was then further refined and published in its current form in 1998. The basis of the model is to move away from the current system of reactive acute care to a proactive approach with a focus on keeping a person as healthy as possible.

The CCM outlines elements of a health care system that can provide high-quality chronic disease care. These elements are the community, the health system, self-management support, delivery system design, decision support and clinical information systems. Evidence-based change under each element then fosters productive interactions between informed patients who then take an active part in their care, and providers with resources and expertise (Improving Chronic Illness Care Program [ICIC], 2012). The model is designed to be applied to a variety of chronic illnesses, health care settings and target populations with the goal of healthier patients, more satisfied providers, and cost savings (ICIC,2012). British Columbia has worked with ICIC,

a national program that was launched in 1998 with the CCM at its conceptual core, to expand on this model to include health promotion and disease prevention. See Figure 1.

*Figure 1.*The Expanded Chronic Care Model (Barr et al. 2003).

Framing the role of the APN within the Chronic Care Model (CCM), the APN can be instrumental in developing a prepared, proactive practice team by providing education, mentoring and support to nurses that would care for patients in their communities or on admission, as well as to other nurses entering the specialty. For example, the mentorship program described in this paper is one project I have developed as an advanced practice nurse in pediatric endocrinology.

Within the self-management support element of the CCM the APN has a role as part of a prepared and proactive practice team. An APN can provide anticipatory guidance and patient education to develop a more informed and activated patient and family. The APN can also provide support, consultation and follow up by phone or planned nurse only visits to further

develop a patient's self-management skills. A number of studies have shown improvement of patient's selfcare when planned nursing interventions were implemented (Coster & Norman, 2009). The APN also has an important role to play in the community and health system elements of the CCM. The CNA envisions advanced practice nurses as leaders in their organizations and to act as change agents to "seek effective new ways to practice, to improve the delivery of care, to shape their organizations, to benefit the public and to influence health policy" (CNA, 2008, p.9). An APN can use clinical and professional leadership in practice or the health care system to influence health care policy and delivery decisions. Additionally the APN can identify the need for practice changes and lead the development of, and implementation of clinical procedures, practice guidelines and clinical pathways. It is thus apparent that an APN can play a very valuable role in assuring that patients with chronic conditions receive quality nursing care. The development of the preceptorship/mentorship program and initiatives to support regional nurses caring for pediatric endocrine patients described in this paper is one example of the APN role.

Theoretical Underpinnings

Overall, the basis of the Preceptorship/Mentorship Program for Regional Clinic Nurses is guided by Dorothea Orem's General Theory of Nursing and complements the Chronic Care Model's self-management and development of personal skills element described previously. It is a general nursing theory that can be applied to specialty outreach care, community health, and nursing education. Orem's theory consists of three related theories, Self-Care, Self-Care Deficit and Nursing Systems. See Figure 3 for a diagram of Orem's theory.

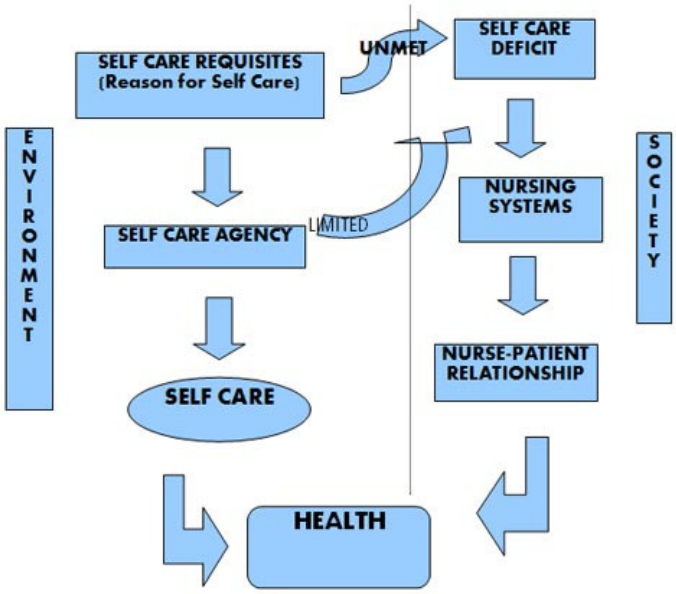

*Figure 3.*Orem's Self Care Theory (Bridge et. al, 2010).

Three main assumptions of Orem's theory are that; 1) people should be self-reliant, and responsible for their own care, as well as caring for others in their family; 2) a person's knowledge of potential health problems is needed for promoting self-care behaviors; and 3) successfully meeting universal and development self-care requisites is key to primary care prevention and ill health (Orem, 1985). Of Orem's three related theories her theory of Self Care Deficit specifies when nursing is needed and is particularly relevant in guiding the development of this program as these ideas can be applied to patients and families, communities as well as novice nurses. According to Orem, an individual requires nursing when they are incapable or limited in their ability to provide effective self-care continuously. Orem (1985) has stated that persons are nursed as members of various units. These units can be individuals, families, small groups, or large groups. In the case of pediatric endocrinology in regional areas, the unit requiring nursing are the children with endocrine conditions, the community in which they live, and the nursing caregivers in the region and the patients' families. Orem outlines five methods in which a nurse helps 1) acting and doing for others, 2) guiding others, 3) supporting another, 4)

providing an environment that fosters personal development in meeting future demands and 5) teaching another. Our program focuses on the community and uses the five methods outlined by Orem in developing the skills required by regional nurses to provide endocrine nursing care within their communities and therefore increasing the therapeutic self-care skills of the caregivers of children with endocrine conditions.

The design of the preceptorship/mentorship program draws upon the works of Albert Bandura and Patricia Benner, and developed as a formal mentorship program from years of informal mentoring and orientation provided by the former nurse clinician in the BCCH endocrine program. The learning goals we have included in our program are based on the Pediatric Endocrine Nursing Society orientation checklist (1998). See Appendix B and C.

The preceptorship/mentorship program is designed to give the opportunity for the regional nurses to collaborate with the mentor to identify learning needs and provides opportunities for the mentee to observe and later demonstrate and practice the skills required to provide endocrine nursing care. Albert Bandura, the Canadian psychologist and originator of the Social Learning Theory (1986), proposed that people learn through observing others' behavior, attitudes, and outcomes of those behaviors. He posited that most human behavior is learned by observation through modeling. He suggests that when one observes the action of others, one forms an idea of how such actions are performed and on a later occasion this information serves as a guide for action. Three core concepts are at the heart of Bandura's social learning theory. First is the idea that people can learn through observation, whether it is live models, verbal instructions, or symbolic (fictional characters displaying behaviors in media). Next is the idea that internal mental states are an essential part of this process. Bandura described intrinsic reinforcement as a form of internal reward, such as pride, satisfaction, and a sense of

accomplishment. Finally, this theory recognizes that although something has been learned, it does not mean that it will result in a change in behavior. He also described four factors that influence observational learning. These factors are attention, retention, reproduction, and motivation. In order to be successful in learning by observation, one must be paying attention, one must be able to retain or store the information, one also must be able to reproduce the learned behavior and more practice improves performance and finally one must be motivated to imitate the behavior learned (Bandura, 1986).

The program is designed to allow a nurse to develop their skills from novice to expert level while allowing nurses to collaborate with their mentee to identify which skills would be most relevant. After the skill assessment, the preceptorship and mentorship program allows a nurse to observe and practice the skills desired with planned experiences and opportunities to practice the learned skills. Nursing theorist Patricia Benner (1984) introduced the concept that expert nurses develop skills and understanding of patient care over time through a sound educational base as well as a multitude of experiences. She proposed that one could gain knowledge and skills without ever learning the theory, and to become an expert, a nurse needed to draw upon her experiences. She posited that the development of knowledge in applied disciplines such as medicine and nursing is a combination of practical knowledge through research (tecne) and learned experience (phronesis). Benner (1984) outlined the steps to expert status:

> 1) Novice, in which the nurse is inflexible, and rule-based with little or no background understanding; 2) The advanced beginner in which the nurse starts to use and make sense of situational elements and depends on the context; 3) Competent, in which the nurse is knowledgeable and performs these tasks safely as a result of training and experience;4) Proficient, in which the nurse has extensive experience in

> this area/skill, able to teach and mentor others and finally, 5) Expert, where all of the above apply and where the nurse performs fluidly and ensures evidence-based practice.(pp.13-34)

Preceptorships and Mentorships

The preceptorship/mentorship program is designed as both a preceptorship and a mentorship for the benefits that both provide. Preceptorships or mentorships are role modeling programs that have been widely used in professional education. It is documented that such role modeling programs enhance job satisfaction, quality of care and recruitment and retention of staff (Wright, 2002). Most schools of learning employ preceptorships to help students gain clinical competence and prepare them for employment. An integrative literature review of preceptorships, conducted by Billay and Myrick in 2007, found that preceptorships are a common teaching and learning method used in nursing, medicine, pharmacy and dentistry and the main teaching and learning method for socializing nurses to the profession.

Internationally preceptorships and mentorships are regarded as synonymous, however within Canada there is a growing consensus that these two approaches differ. In Canada, a preceptorship generally means a formal, one to one relationship for a set period of time between an experienced nurse, and a novice nurse for the purpose of skill attainment (CNA, 1995). The novice may be a student or a practicing nurse moving into a new role and is acquiring new competencies required for safe, ethical and effective practice (CNA, 1995).

Mentorships are defined by CNA (1995) as a voluntary, long term professional relationship between a knowledgeable nurse, who supports the maturation of a less experienced nurse. The duration of a mentorship is usually longer and often not as precisely defined. Informal mentoring relationships are based on mutual identification, are unstructured, and focus on the

protégé or mentee achieving long-term career goals. In contrast, formal mentoring relationships are more structured in purpose and duration and usually involve organizational support (Kilcher & Sketris, 2003). Typically, this would be a situation where a nurse is socialized and develops competencies in a new setting by being matched with a more experienced colleague for support. Programs that have implemented preceptorship/mentorship programs have reported the following benefits: improved quality of care; increased retention of staff, decreased staff turnover; aid in the development of judgment, attainment of skills and reduction in the time taken to function independently (Almalda et al, 2004; King & Bernick, 2002, Neumann, et al., 2004; Wright, 2002).

There are numerous guidelines for developing preceptorship and mentorship programs. The guidelines used in the development of this program were *The Guide to Preceptorship and Mentoring* (CNA, 2004) and the *Orientation Programs for Registered Nurses: Best Practice Guidelines* (The Association of Registered Nurses of Newfoundland and Labrador [ARNNL], 2003). The ARNNL performed an extensive literature review and cross country scan of nursing orientation programs to determine the key elements that need to be in place to ensure that registered nurses receive a quality orientation to a practice environment (ARNNL, 2003). Nine key elements emerged from this work. These were that:

1. Supportive practice environments that nurture and value new nurses help reduce stress, ease transition, increase competence and ensure safe quality care.
2. High quality orientation programs require substantial investment in human, material and financial resources.

3. All new graduate nurses and experienced nurses in transition require a comprehensive nursing orientation with clearly defined time frames, goals and expectations.

4. Orientation programs are grounded in a competency-based assessment model and linked with ongoing continuing education programs.

5. Orientation programs are dynamic and maintain a degree of flexibility to allow for extending or shortening the orientation period as needed.

6. The foundation of an effective orientation program is a quality clinical preceptorship followed by a mentorship program that supports the registered nurse beyond the formal orientation.

7. Orientation programs are developed and implemented using adult education principles.

8. Opportunities are presented throughout the orientation period to strengthen new nurses' critical thinking, clinical judgment and organizational management skills.

9. New graduates and experienced nurses in transition seek opportunities for professional growth and learning to enhance competency in the new setting. (pp. 6-10)

Pediatric Endocrine Nursing Preceptorship/Mentorship Program

The program that we have developed begins as a preceptorship but does not exclude the possibility of a mentorship following the initial knowledge and skill attainment focus. The program takes a collaborative approach and is designed to allow the participant to assess his/her learning and support needs and work with the preceptor to meet those needs. We wanted the

program to not only increase pediatric endocrine nursing knowledge and skills, but also provide guidance and support to the nurses as they developed in their role. The program is structured so that nurses may "enter" and "exit" the program based on their role within the regional clinic. Please see Appendix D for an outline of the program.

Depending on the size of the regional clinic and the number of patients seen per year, I foresee that in some regions there will always be a nurse traveling from BCCH and providing endocrine content support to the regional nurse functioning at a competent level, whereas in other areas where patient numbers are high, a regional nurse could develop to an expert level. See Appendix F for a description of competency levels.

Implementation

Implementation of the mentorship program is dependent on many factors. The main components that are required are an established outreach clinic in the region, designation of a dedicated RN within this region, and approval from regional nursing managers for this nurse to participate in the mentorship program. For clinics that have already been established we have approached the endocrinologist to introduce our program and offer our support. We have then connected with the nurses and nursing managers to assess need and feasibility and develop a plan for beginning the program. We have been very careful to maintain a collaborative approach and support the nursing expertise already established. We will be able to provide funding for backfill, travel expenses, and accommodations for nurses during their preceptorship visits to BCCH with CHBC funds or OutPEAK funding (BCCH funding source for nurses wishing to take courses or engaging in preceptorships at BCCH.)

The program consists of three “phases”. The timeline for movement through the three phases depends on frequency of outreach regional clinics but the goal is completion of the three phases within one year.

Phase One

Once a nurse has been approved to begin the preceptorship/mentorship program, the first phase will involve a site visit by a preceptor/mentor to assess endocrine nursing needs. This will serve to determine the number of endocrine patients seen annually, clarify the nursing role and learning needs and discuss resources with local nursing management (staffing etc.).

Phase Two

The second phase of the preceptorship/mentorship continues with two visits by the preceptor/mentor to the regional clinic during scheduled endocrine clinic times. During this time the mentor and regional nurse would review and make a plan to meet the nurse’s education needs.

Phase Three

The third and final phase of the program will be a preceptorship visit to BCCH where the regional clinic nurse will have the opportunity to be exposed to a variety of endocrine patients, and BCCH clinic procedures, and observe endocrine specific patient education such as diagnosis or therapy education, adrenal insufficiency education, staff nurse education, and transition planning to adult care. For those nurses that will be involved with endocrine stimulation testing, the review and application of endocrine testing procedures will be provided by the endocrine testing nurse at BCCH.

Additional Support

In efforts to standardize care and information that patients are receiving, we have developed patient care guidelines based on current consensus statements and best practice guidelines. This "manual" is available online at http://endodiab.bcchildrens.ca/pdf/chbcendorncare.htm and also provides easy access to all BCCH endocrine nursing resources and patient education materials through hyperlinks. Patient education materials that are specific to BCCH have been adapted to be useful to regional outreach clinics by removal of BCCH specific information such as contact phone numbers. See Appendix E for a sample. To further support regional nurses, telehealth in-services are planned twice a year, a contact list of BC endocrine nurses will be generated, and telephone and email support from BCCH nurse clinician will be available as needed.

Cost and Benefits

Expenses for the program include time spent for the development of the program and resources, costs for site visits (BCCH nurse to regional clinic), and costs for preceptorship visits (regional nurse to BCCH). The approximate cost per site is listed in Table 3.

Table 3
Pediatric Endocrine Clinic Nursing Preceptorship/Mentorship: Projected Expenses

Projected Expenses Per Site	Costs
Nursing hours (provided by one RN)	352 hours at DC 1, level 9, casual rate= $14227
Site/mentorship visits (BCCH RN to regional clinic)	4 visits at $450 each
Preceptorship visits (Regional RN to BCCH)	$450 covered by OutPEAKprogram
	Total: $16 477

If the program is successful in supporting the nurses providing endocrine content specific pediatric care in the regional outreach clinics to provide a strengthened level of care throughout BC and therefore facilitating patients receiving sub-specialty care closer to home, the health care system and health authorities would save the cost of subsidizing travel and accommodation,

unnecessary or prolonged treatments and hospital admissions and gain a more knowledgeable nursing staff.

The patient would also benefit if this program is successful. The patient could save the cost of traveling for sub-specialty appointments at BCCH. For example, a family traveling from Prince Rupert would save approximately $1300 according to estimates made by CHBC (2007). See Table 4.

Table 4
Estimated Cost to a Northern Family (in Prince Rupert) for Receiving Care at BC Children's Hospital

Expenses	Estimated Cost
Flights	>$738.00
Gas	>$25.00
Food	>$75.00
Time off work	>$160.00
Total	>$1298.00
Car rental	>$50.00
Hotel	>$150.00
Long distance phone calls	>$20.00
Child care	>$80.00

Challenges

We have experienced several challenges in our initial attempts in implement the program. The first challenge has been securing dedicated nurses for the endocrine outreach clinics. In many regions, the endocrinologists see both diabetes and endocrine patients during the same clinic time. Because there are a larger number of diabetes patients than endocrine patients and many of the nurses are more skilled in the care of diabetes patients, the nurses' focus and priority becomes the diabetes patients. Additionally, the regional nurses may be dividing their attention between several responsibilities (such as inpatient care needs, other outreach clinics and

administrative responsibilities). We have also had several nursing changes after initial discussions to begin preceptoring. We have resolved this somewhat successfully with many discussions about our program and its benefits with the physicians, regional managers and nurses. The physicians are very supportive; however, the challenge becomes division of duties, best use of nursing knowledge and skills, and funding to provide a nurse. Another challenge has been that the regions that receive outreach are not necessarily the regions that have the most patient visits to BCCH. This is often because there is no pediatric endocrinologist in the area and limited funding and infrastructure for a pediatric endocrinologist from BCCH to travel there. For example, patient visits to the BCCH endocrine clinic from Fraser North is approximately 750 in the last year, yet there is no outreach clinic in that region.

Evaluation

In the current environment of fiscal constraints and health care reform, organizations, public, and government are seeking greater accountability for the health outcomes of programs they fund. Patton (2002) defines evaluation in health and social sciences as the "systemic collection of information about the activities, characteristics, and outcomes of programs" (p. 10). An evaluation can identify problems and opportunities in a program and provide staff and stakeholders with reliable information from which to address problems and build on strengths and opportunities (Kellogg Foundation, 2004)

The focus of this evaluation is whether the mentorship/preceptorship program is successful in strengthening pediatric endocrine nursing care in the regional clinics and whether changes need to be made as we implement to other regions. The plan for evaluating this program was developed as the program was in its planning phase. It was important to me as a developer to ascertain whether the program is effective in reaching its goal of strengthening pediatric

endocrine nursing care throughout the province, and whether changes need to be made as it is implemented across other regions. Often programs are developed and implemented with no thought of evaluation until much later (Patton, 2002). Although it is never too late to perform an evaluation, planning for evaluation during the development of the program ensures that the right data is collected at the right time (Public Health Agency of Canada [PHAC], 2008). Planning for evaluation during program development allows the developer to anticipate data collection needs (Mizell, 2005). For example, to ascertain whether this program has made a difference in strengthening pediatric endocrine nursing care in the regional clinics, it is necessary for me, the developer, to establish a baseline to make comparisons. The evaluation of the program also provides evidence to the stakeholders about whether the program is successful and whether the funding they have provided should be continued.

Evaluation Framework

To evaluate the program, I intend to use the *Program Evaluation Tool Kit* developed by the Public Health Agency of Canada (PHAC) (2008). The tool kit is a practical, step-by-step guide to evaluating programs and was designed specifically for managers of public health programs. The creators of the tool kit developed the tool kit to be easy to use and free of technical jargon to encourage its use and integration in program development and management.

The first phase of the evaluation tool kit is to focus the evaluation. It is recommended that a logic model be developed. A logic model is a simplified picture of a program, initiative, or intervention and shows the logical relationships among the resources that are invested, the activities that take place and the benefits or changes that result (W.K Kellogg Foundation, 2004, University of Wisconsin Cooperative, 2003). The process of building a logic model for an existing program can reveal gaps in logic, incomplete implementation, inadequate resources

available, misunderstandings about the program among stakeholders, or dynamics from the external environment that were not considered. Engaging in logic model creation helps clarify and improve programs (University of Wisconsin Cooperative, 2003). See Appendix F for the draft of the logic model for this program. This logic model may still require some refinement.

Stakeholder Analysis

The second step in focusing the evaluation is to perform a stakeholder analysis. A stakeholder analysis is a technique to identify and analyze the stakeholders surrounding a project. It provides information on stakeholders and their relationships, interests, and expectations (University of Wisconsin, 2007).Stakeholders of an evaluation are individuals or groups that will benefit from or are potential users of the findings (Patton, 2008). Clearly identifying the stakeholders for an evaluation is extremely important to focus the evaluation to collect relevant data that the stakeholders are interested in and will use. The following is a stakeholder analysis for the proposed program.

Table 5
Stakeholder Analysis of the Preceptorship/Mentorship Program for Regional Endocrine Nurses.

	Low-Power Stakeholders	**High-Power Stakeholders**
High-Interest Stakeholders	BC Children's Pediatric endocrine nurses BC endocrine outreach patients -clerical staff	Endocrinologists BC Children's Endo Nurse Clinician Child Health BC Regional Clinic Nursing manager Regional clinic nurses
Low-Interest Stakeholders	Local GPs and Pediatricians Tax Payers	BC Children's nursing manager Health Authorities

High interest/high power. The endocrinologists are in this category because a knowledgeable and skilled nurse is very valuable to an endocrinologists' clinic, the outreach endocrinologist also has the power to request the appointment of a nurse. The nurse clinician falls in this category because she is the one that will create and implement the preceptorship/mentorship program. Child Health BC is in this category because their mandate is to create a standard of specialty care across BC, and hold the purse strings. The regional nurse managers are in this category because they are crucial in the logistics of the program in terms of backfilling, hiring regional nurses etc.

High interest/low power. The high interest/low power group includes the regional nurses, the BC Children's clinic nurses, and clerical staff. These members' work will be impacted by the training of regional nurses. The regional nurses will gain skill and knowledge but do not have much power in the creation or funding of the program. The outreach patients are also in this category because they have great interest in that they will receive high standard care within their communities but do not have much power in the implementation of the program.

Low interest/high power. This group includes individuals and groups that have a say in the funding of the program or the staffing but do not much care about the program and how it is implemented. The health authorities and the BC Children's nurse manager fall in this category.

Low interest/low power. This group contains the tax payers and the other health care professionals that will have little benefit or impact on the program. I have included the GPs and pediatricians, and general population.

Based on this analysis, it would be important to consult with Child Health BC for the formative evaluation as they would be interested in the program implementation. CHBC, the endocrinologists and the regional nursing managers would be more appropriately consulted for a

summative evaluation to establish the goals of the program and whether the program met its goals.

Data Collection Plan

I have chosen to use a mixed method qualitative and quantitative design as it promotes greater understanding of the evaluation results. As Patton (2008) notes, a mixed method design is effective in addressing quantitative differences such as pre and post program skill attainment as well as qualitative questions that are unique to the participants and the site as the program is implemented. Quantitative data can therefore show that change occurred and how much change took place, while qualitative data can help evaluators understand what happened and why. A mixed method design offers something for everyone; certain stakeholders may respond more favorably to a presentation featuring charts and graphs while others may prefer anecdotes and stories (Patton, 2002).

Descriptive interviews and a pre and post self-assessment of competency will be used to determine the effectiveness of the program and initiatives in a) increasing the knowledge and skill of regional clinic RNs in endocrine care, b) increasing the support from BCCH to regional clinic RNs, c) standardizing the quality and increasing accessibility of resources provincially, and d) standardizing the care and teaching nurses are providing provincially.

Evaluation points will occur pre and post program and then yearly. Post program will be considered one year after starting the mentorship program.

Nursing Competence

Nursing competence is the ability of a registered nurse to integrate and apply the knowledge, skills, judgment and personal attributes required to practice safely and ethically in a designated role or setting (CNA, 2000). Evaluation of nursing competence will be performed by

self-assessment using a tool guided by Patricia Benner's novice to expert theory and based on the competency framework of the Pediatric Endocrine Nursing Society. This will be conducted pre and post program and yearly thereafter. This self-assessment tool will be adapted to be relevant to pediatric endocrine nursing in Canada and will be consistent with the Canadian Nurses Association standards. The self-assessment tool will be reviewed by two APNs in pediatric endocrinology and a pediatric endocrinologist to establish face validity. Face validity refers to whether the tool "looks like" it will measure what it is intended to measure (Patton, 2002). This is important to establish to ensure that the self assessment tool is in fact measuring pediatric endocrine nursing competencies. The pre and post test is only applied to the participants in the program. This method provides information on changes in knowledge, attitudes, or behavior of the program participants that occurred during the time in which the intervention took place. All things being equal, this design can provide some evidence that the intervention produced these changes (Patton, 2002). This method is less rigorous than the pre and post test design using a control group of non participants and would not definitively inform us of whether any increase in competency post program is related to the program. The information is still valuable as a formative evaluation however, as it would allow us to make adjustments to the preceptorship and mentorship activities to provide the participant with better learning experiences.

The pre-preceptorship self-assessments will be reviewed with the preceptor/mentor for planning the preceptorship. Post preceptorship, a post self-assessment will be performed and discussed with the preceptor to plan additional support, learning needs and opportunities. The nurses will perform a self-assessment yearly to be reviewed with the preceptor for maintenance of competencies and plan for further development.

The regional nurses will also be interviewed to evaluate the program in meeting their needs. A qualitative interview method was chosen as it is useful for the evaluations aimed at individualized outcomes, capturing and describing the progress of the program, exploring individual differences between participants' experiences and outcomes, evaluating programs that are seen as dynamic or evolving, understanding the meaning of a program to its participants and documenting variations in program implementation at different sites (Patton, 2002)

An evaluation of long term outcomes such as patient outcomes and a cost analysis would be better evaluated at a more distant time point approximately two years after the regional nurses have completed the preceptorship portion of the program. See Appendix G and H for samples of the self-assessment tool and program evaluation interview questions.

Interpretation of Data

Data collected will be analyzed with descriptive statistics such as thematic analysis. Descriptive statistics are a way of analyzing data in a way that helps describe, show or summarize data in a meaningful way *(*Quartaroli, 2011). Although this type of data analysis may not be scientifically rigorous because of the small sample size, it is valuable in this formative evaluation to inform us of areas of improvement as we provide the program to other nurses and across regions (Patton, 2002)

To interpret the data gathered by the self-assessments, we make the assumption that each response on the self-assessment tool is an ordinal measurement. This is done by assigning a numeric score to each of the measures of the tool. Comparing an ordinal measurement allows us to determine equality but also degrees of the attributes being measured (Carroll, 2012). Responses on the self-assessment tool will be coded as such: 1=novice, 2=advanced beginner, 3=competent, 4=proficient 5= expert. The data can then be presented in a frequency table pre and

post for all participants and further analyzed to compare an individual's frequency distribution pre and post preceptorship as well as yearly. The interview questions will be derived from the *CNA Preceptorship Resource Guide* (1995) and reviewed and tested on two content experts to establish face validity. The interviews will be recorded with the permission of the participant. To ensure that the participants feel comfortable sharing their opinions, the interviewer will be a trained person that was not involved in the implementation of the program. Participants will then be contacted to set up a day and time for a telephone interview that is convenient for them. The interview questions will elicit information on: strengths and weaknesses of the preceptorship program, ways in which the program could be improved and their overall opinion of the program. Participants do not have to answer any questions that they do not want to answer. The responses will be analyzed using thematic analysis, a commonly used method of qualitative data analysis (Patton, 2002). The responses will be transcribed verbatim into a Microsoft Word document and analyzed to draw out common themes and will be summarized in a report.

The evaluation plan has been screened through the *ARECCI Ethics Screening Tool* developed by the Alberta Research Ethics Community Consensus Initiative (ARECCI) Network (2005, revised 2010) and indicates that the evaluation poses minimal risk to participants and would not require ethics approval. Ethics is an important consideration when studying human subjects. Ethics ensures that there is no potential harm to the subjects being studied (ARECCI, 2005). The ARECCI Ethics Screening Tool is a questionnaire that helps one determine whether the study being planned requires review by an ethics committee. The information collected from this evaluation will be presented to the stakeholders by reports written post initial evaluation point and subsequent evaluation points.

Strengths and Weaknesses

Because the participants of the program are colleagues and we are striving to maintain a collaborative relationship, we accept the subjectivity of self-assessments in favor of the formative benefits. Self-assessment has been shown to enhance learning and achievement, if used as a formative assessment and the assessments are reviewed with the instructor (Schunk, 2003).

The interview would provide us with a richer evaluation of the preceptorship program itself and provide us with the participants' opinions on the program, its delivery and helpfulness. We chose a telephone interview over a written survey because the sample is very small and an interview would allow us to probe in a more meaningful way as well as increase our chances of response (Center for Disease Control (CDC), 2012).

Nursing Implications

As mentioned previously in this paper there are numerous benefits of preceptorship/mentorship programs not only for preceptees and preceptors. For the preceptee, effective preceptorship programs have been found to facilitate successful entry into the nursing profession or new area of practice, reduce the time taken to function independently, and help with the development of judgment and skills (CNA, 2004). For preceptors, the benefits include enhancement of self-esteem and confidence, personal and professional satisfaction, and preparation for leadership roles (CNA, 2004).

It is hoped that this program will benefit the individual nurses in increasing their pediatric endocrine knowledge and skills and establish a network of skilled nurses with enhanced endocrine nurses knowledge throughout the province. This would then be beneficial in strengthening collaboration, improving standards of care, furthering best practice and ultimately improving the health of pediatric patients throughout BC.

The development and implementation of the nursing mentorship program has largely been funded by CHBC. At this point funding for this nurse will come from CHBC and is not part of the BCCH endocrine nursing workload. The nurse that will travel to the outreach programs and be providing the preceptorships is retired and providing this service contractually. Regional clinics are continuing to develop, for example the Interior Health Authority (Kelowna) and the Fraser Health Authority (Fraser South, Surrey) are in early phases of developing nursing capacity for their endocrine program. The concern becomes program sustainability. For example, whether CHBC will continue to fund this program long term and how this program will impact the current workload of the BCCH nurse clinician and the BCCH endocrine program if the current nurse consultant is no longer available.

In researching the development of the program, I was able to consult with and gain insight from similar programs of outreach and competency building developed by the Gastroenterology (GI) and Oncology programs at BCCH. It is apparent that there will be many other programs with the same goals to provide strengthened nursing care to their patients closer to home. It would be beneficial for the nurses within these programs to network and share successes and challenges.

In conclusion, our ultimate goal is better health outcomes for all children with pediatric endocrine conditions throughout BC. Despite the challenges, we hope that by making efforts to strengthen endocrine specific care, increase nursing capacity and improve access to support and standardized resources that these children and their families will be able to receive high quality, standardized care closer to home. This proposed evaluation will help guide us as we implement this program across regions.

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Appendix A

Summary of Regional Endocrine Services in BC

Regional Endocrine Clinic	Number Of Patients per Year	Clinic Frequency	Physician	Nursing/ Allied Health (social worker, dietitian)	Diagnostic Testing
Victoria	~300/year	Monthly	Non-BCCH pediatric endocrinologist	Two full time regional RNs Regional allied health	Performed by two full time regional RNs as requested
Nanaimo	~120/year	Everytwo months	Same endocrinologist as Victoria	One of two RNs from Victoria Regional allied health	Performed in Victoria
Prince George	30-45/year	~ Every six months	BCCH endocrinologist	One regional RN. Consultation with BCCH RN for complex cases Regional allied health	Regional RN beginning to perform basic testing. More complex testing performed at BCCH
Abbotsford	~80/year	Every two weeks	BCCH endocrinologist	No regional nursing support Consultation with BCCH RN for complex cases	Regional RN beginning to perform basic testing
Terrace	18/year	Annually	Same endocrinologist as Victoria	No nursing support Regional allied health	Performed at BCCH
Kelowna	~75/year	Every two weeks	Non- BCCH pediatric endocrinologist	No nursing support No allied health	Training of RN initiated to provide testing.

Appendix B

BCCH Endocrine Nursing Preceptorship Goals

Skill/Knowledge	Desired	Acquired
1. Availability of resources re: a. Endocrine pathophysiology b. Educational materials c. Condition specific nursing guidelines d. Test protocols		
2. Orientation to Endocrine Clinic a. Endocrine patient assessment b. Measurements of growth c. Utilizing growth charts d. Calculating growth velocity: BMI e. Obtaining endocrine related information		
3. Nursing Management of: a. Conditions/syndromes related to growth b. Conditions of thyroid/parathyroid hormones c. Conditions related to sexual development d. Conditions of adrenal insufficiency/excess e. Conditions of hypo/hyperglycemia f. Conditions of ADH deficiency g. Syndromes with endocrine implications		
4. Endocrine Medications a. Growth hormone b. Cortisol replacement c. Thyroid replacement/suppression d. Sex hormone replacement/suppression e. ADH replacement		
5. Teaching Strategies a. Skills teaching b. Complex conditions: new patient teaching c. Follow-up teaching d. Transition teaching		
6. Documentation a. For families b. For nursing records and follow up c. For health records/legal records		
7. Stimulation Testing		

Planned Date for Preceptorship _____

Appendix C

BCCH Endocrine Nursing Preceptorship Goals for Stimulation Testing

Planned Date for Preceptorship…….

Skill/Knowledge	Desired	Acquired
8. Availability of resources re: a. Endocrine pathophysiology b. Educational materials c. Test protocols		
9. Orientation to Testing Room a. Patient baseline assessment b. Equipment and set up c. Calculating drug dosage d. Booking considerations		
10. Nursing Management of: a. ACTH simulation tests b. Growth Hormone stimulation tests c. GNRH stimulations tests d. Oral glucose tolerance tests e. Water deprivation tests f. Prolonged Fasts		
11. Stimulating Drug a. Side effects b. Effects c. Rescue protocols d. Dosage calculations		
12. Documentation a. For families b. For nursing records and follow up c. For health records/legal records		
13. Other		

Preceptee……. **Preceptor**…….

Appendix D

Pediatric Endocrine NursingPreceptorship/Mentorship Program Outline

<table>
<tr>
<td rowspan="2">Initial Stakeholder discussions:
CHBC
EDU Nursing Endocrinologist
Regional Clinic Nursing Management
Local nurses</td>
<td>Orientation/Site Visit

BCCH RN at regional Clinic</td>
<td>2 days

BCCH RN
At regional clinic during scheduled clinics</td>
<td>2 Days

Regional Clinic RN at BCCH</td>
<td rowspan="2">Evaluation
With all stakeholders:

EDU Team
Endocrinologist
Site RN
Site Management
CHBC</td>
</tr>
<tr>
<td>Self-Assessment
Learning Needs Assessment
Facility &equipment
Review available resources.

Review basic skills-Anthropometrics

-Utilizing growth charts</td>
<td>apply basic skills:
- Anthropometrics
- Use online resources

Learn intermediate skills:
-admin of endo meds: GH; DDAVP; Solu-cortef; Lupron Depot; testosterone.
initiate GH as needed
Utilize Standard Care Plans for in-pt. /Emerg management.</td>
<td>Select goals, utilizing guidelines adapted from Pediatric Endocrinology Nursing Society (PENS)

▪ Observe clinic management
▪ Observe advanced teaching skills (adrenal insufficiency; transition process)
▪ Observe stim testing; use of protocols (if needed)</td>
</tr>
</table>

-Endocrine Nurse Educator Role Description: (Orientation Individualized to Need)
-Teaching families and caregivers knowledge and skills related to the management of complex diagnoses such as: all conditions of adrenal insufficiency (Hypopituitarism, Congenital Adrenal Hyperplasia, Addison's, adrenal suppression etc.) diabetes insipidus, growth hormone deficiency, hyperinsulinism, syndromes with lifetime endocrine implications (Turner, Klinefelters, PraderWilli) Gender Identity Disorder.
-Facilitating inservice for staff and other health care professionals for the above complex conditions.
-Providing assistance to the Clinic Nurse and her community by telephone, televideo and in person as needed.

Appendix E

Example Of Patient Care Guideline

ADRENAL INSUFFICIENCY (AI)

Description: Insufficient amount of the adrenal hormone, cortisol, to enable cellular function. Cortisol is one of the hormones that sustain blood pressure and blood sugar in the normal range

Possible Etiology: Hypopituitarism; congenital adrenal hyperplasia; Addison disease; post adrenalectomy; adrenal suppression from high dose glucocorticoid use

Anthropometrics	Nursing Considerations	Documentation	Teaching
As per specific condition	Common hormone replacement: one of the following glucocorticoids: hydrocortisone (Cortef®) prednisolone(Pediapred®) prednisone	As per specific condition. Utilize Learning Pathway for ongoing recording. - Illness management details. - Medic Alert? - Flu shot?	Age specific anticipatory guidance for illness management. Review IM skills annually. Repeat teaching for alternate caregivers.

New Patient Information:

Inpatient: Ensure Standard Care Plan, "Adrenal Insufficiency" is available to bedside nurses.

Give diagnosis specific information (see Guidelines for specific condition).

Utilize the following on-line forms:

Learning Pathway: Adrenal Insufficiency

Teaching Checklist: Hydrocortisone Replacement

Management of Hydrocortisone Replacement annually and for dosage changes.

Travel Letter

School Letter

Community Health Services Referral prior to school entry (include link)

Influenza Vaccine

Vaccinations Information

Medic Alert to say "Adrenal Insufficiency: steroid dependent

Appendix F

Logic Model for Mentorship Program for Regional Endocrine Nurses

Resources Inputs	**Strategies/Activities**	**Outputs**	**Outcomes: Shorterm 6-12 months**	**Outcomes: Intermediate1-2 years**	**Impact: 5+ years.**
Budgetary Resources CHBC funding RN mentors willing to travel Outpeak funding	Develop standardized orientation program. Site visit to conduct needs assessment andevaluation of facility and equipment Facilitate a mentorship experience at regional clinics and BCCH	Standardized orientation program with ability to adapt to individual needs of regional clinic. Regional clinics have optimal environment and equipment for providing pt. care	Improved/ increased comfort of regional clinic nurses in providing care, teaching and monitoring of patients. Improved referral or consultation to BCCH nurse clinician for complex teaching and follow up. Improved knowledge of regional clinic nurses in care of paediatric endocrine conditions Patient education in regional clinics and BCCH standardized Reduced reliance on BCCH RN travel to regional clinics	RNs gain competence in care of complex pts. Families have increased knowledge and coping skills in caring for their child Patients seen in regional endocrine clinics receive standardized care to that of BCCH patient	**Ultimate Goal** Children and families throughout BC will have improved health outcomes (prevention of severe illness episodes, stability of condition, and increased knowledge to manage the care of their child's condition across their lifespan).

Resources Inputs	**Strategies/Activities**	**Outputs**	**Outcomes: Shorterm 6-12 months**	**Outcomes: Intermediate1-2 years**	**Impact: 5+ years.**
Contact info of BC paediatric regional clinic RNs working or beginning to work in endocrine clinics.	Create a contact list of paediatric endocrine nurses within BC	Network of BC paediatric endocrine nurses	Increased networking and sharing of knowledge, ideas and support Regional RNs feel increased support from BCCH RNs	Skilled network of BC Ped Endo nurses.	
	Facilitate preceptorships and on-going support for diagnostic testing	Basic diagnostic testing performed regionally	Decreased wait time for dx and tx		

Appendix G

Pediatric Endocrine Nursing Competency Self-Assessment Tool

Competency Ratings:

1 Novice, in which the nurse is inflexible, and rule-based with little or no background understanding
2 The advanced beginner in which the nurse starts to use and make sense of situational elements and depends on the context
3 Competent, in which the nurse is knowledgeable and performs these tasks safely as a result of training and experience
4 Proficient, in which the nurse has extensive experience in this area/skill, able to teach and mentor others and finally
5 Expert, where all of the above apply and where the nurse performs fluidly and ensures evidence-based practice.

CRNBC Standard Met	Criteria	1	2	3	4	5	Learning activities
2,3	Perform assessment of patient and family relevant to endocrine condition.						-Review measurements of growth -utilizing growth charts -calculating growth velocity and body mass index -obtaining endocrine related history -review family's management of condition

CRNBC Standard Met	**Criteria**	**1**	**2**	**3**	**4**	**5**	**Learning activities**
23	Plan, individualize, implement, and evaluate care for patients with the endocrine conditions.						-Review pathophysiology and care guidelines for endocrine conditions. - Conditions of adrenal insufficiency -Conditions/syndromes related to growth -Conditions of thyroid/parathyroid -Conditions related to sexual development -Conditions of hypo/hyperglycemia Conditions of ADH deficiency Syndromes with endocrine implications

CRNBC Standard Met	**Criteria**	**1**	**2**	**3**	**4**	**5**	**Learning activities**
1,2,3	Identify and access relevant resources for endocrine care						-Review patient educational materials -Condition specific nursing guidelines -Test protocols
1,3	Identify endocrine specific medications, methods of administration and patient counseling						-Review -growth hormone replacement -cortisol replacement -thyroid replacement/suppression, -ADH replacement
1,3	Identify equipment, supplies and maintenance procedures required to provide care to patients with endocrine conditions.						-Review anthropometric equipment -maintenance -calibration

CRNBC Standard Met	**Criteria**	**1**	**2**	**3**	**4**	**5**	**Learning activities**
1,5	Provide care to patients undergoing diagnostic endocrine tests						-Review: -Test protocols -Stimulation testing medications
1,3,5	Responds to acute or emergent endocrine situations in an appropriate and timely manner						-Review standard inpatient care plans for: -adrenal insufficiency -diabetes insipidus -hypoglycemia
2,5	Provides patient and family teaching specific to the condition and plan of care						Observe/perform teaching: -skills e.g. medication administration, use of glucose meter etc. -new diagnosis -follow up teaching -transition teaching

CRNBC Standard Met	**Criteria**	**1**	**2**	**3**	**4**	**5**	**Learning activities**
3	Document						Review appropriate and required documentation of care: For families Nursing records and follow up Health records/legal records

Appendix H

Evaluation Interview Questions

1. Did the program meet your personal learning objectives?

2. How did the program help you meet your personal learning objectives?

3. What can we do better?

4. What have you learned as a result of this program?

5. What hindered your learning? How could you have overcome this factor?

6. Describe how you plan to use this newly learned information?

7. What have you learned that will benefit your practice, patients and community?

8. Are the online resources helpful?

9. If yes, how are you using the online resources and patient care guide?

10. Do you feel well supported by BCCH?

11. If yes, in what way? If no, what could BCCH do to provide more support?