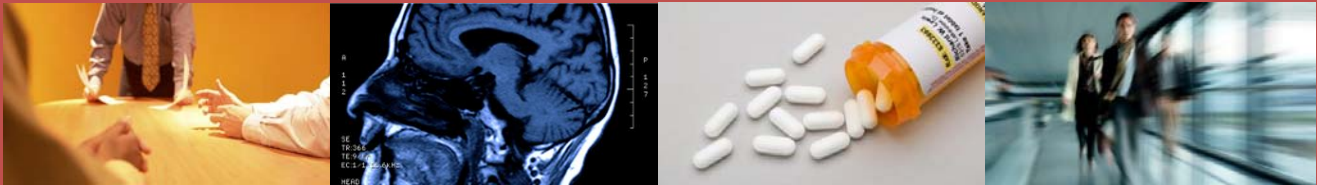




**HEART &
STROKE
FOUNDATION
OF BC & YUKON**



Acute Stroke Nursing Education Needs Assessment

Heart and Stroke Foundation of BC & Yukon

November 2010

Prepared by Helen Truran and Global Medical Services

Acknowledgements & Contributions

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INTRODUCTION

The ability to provide stroke education to registered nurses working in acute care centres across BC has been identified by stroke leaders and educators as one of the impediments to advancing a coordinated Stroke Strategy. To gain a better understanding of this issue, the Heart and Stroke Foundation of BC & Yukon commissioned Global Medical Services (GMS) to undertake a stroke education needs assessment. The results of the analysis will be used to inform relevant components of the Provincial Stroke Action Plan and will be shared with provincial stakeholders involved in the delivery of education for nurses.

The primary goals for this initiative are to:

- Identify existing stroke educational strategies and tools available to nurses within BC;
- Identify existing gaps in nursing stroke education;
- Outline the benefits of a coordinated educational strategy and;
- Develop specific recommendations to better support educators in best practice adoption.

Educating nurses remains a significant challenge, despite considerable efforts by stroke leaders and educators to support best practice adoption. With increased focus on development and implementation of the BC Stroke Strategy Provincial Stroke Action Plan, gaining a better understanding of what is required to improve stroke education for registered nurses has been identified as a priority. As stroke patients may be encountered at different points within the acute care setting and different acuity levels, all nurses working within the acute care setting must be prepared to care for stroke patients. Without a plan to train and educate this essential group of service providers, adoption of best practices in stroke care will be challenging to implement.

To explore this issue and gain insight into how nursing education could be improved within BC, Global Medical Services has been requested to undertake this stroke education needs assessment.

This report also details the process undertaken to assess stroke education needs for nurses that may be applicable to addressing educational needs of other health professionals.

BACKGROUND

Through the efforts of multiple stakeholders including Heart and Stroke Foundation of BC & Yukon and its partners in the the BC Stroke Strategy (BCSS), stroke care is now a key strategic focus area within the health system. In addition, Health Authorities (HAs) must now include stroke as one of their key result areas in acute care, reportable to the Ministry of Health. The BCSS continues as a provincially-endorsed quality improvement initiative, to assist in the dissemination of best evidence stroke practices in BC. The broader long-term goals of all stakeholders in the improvement of stroke care across the province are to:

- Reduce stroke incidence in BC;
- Improve stroke care at all levels throughout BC by implementing national standards of best practice and service delivery;
- Optimize recovery and quality of life for stroke survivors and their care givers in all health regions and;
- Reduce the financial burden of stroke in BC.

A Provincial Stroke Action Plan is currently being finalized and initial implementation is targeted to begin in 2010/11. The priorities identified in the Provincial Stroke Action Plan are more specific. It details where initial efforts and resources should be focused:

- The Plan promotes embedding best evidence clinical practices, guidelines and education guided by the Canadian Stroke Best Practice documents for optimal care;
- The Plan aligns with clinical care management / KRA objectives in BC – “high quality care and best outcomes for all”;
- The Plan builds on systemic linkages with respect to facility functional capacity and role designation, cross boundary referrals, pre-hospital assessment and transport and timely acute inpatient and rehabilitation care as the “backbone” of strategy implementation;
- The Plan addresses critical gaps in current practice and is fundamental to the expansion of technologies such as telestroke.

Any changes in clinical service delivery, whether it be at a higher policy system level, or more direct practice level will ultimately result in a change in practice for the front line nurse and therefore require an element of staff education and training to move from current to best practice care. For many of the care gaps identified, education is identified as an important strategy in addressing the disparity, facilitating change and moving to consistent application of best practice across all disciplines. As education has consistently been raised as a challenge in realizing best practices in stroke care, the results of this needs assessment will be timely in supporting the planning efforts of the HAs.

PROJECT SCOPE

To align this work with stroke planning efforts and timelines of the BC Stroke Strategy, this education needs assessment focused on the current status and next steps recommendations as they relate to stroke education for registered nurses working in a variety of acute care settings along the stroke care continuum. Key informants working on stroke at a national level recommended use of the updated list of Canadian Stroke Strategy Best Practices Recommendations to assess basic stroke knowledge and practice competencies required for caring for a stroke patient along the entire continuum. Further assessment of clinical subject matter needs at the local level will be required as not all best practices will be relevant to all nurses working within hospitals of different designations and in different clinical areas along the continuum.

Concerns with the lack of nursing education within acute care facilities was one of the most common areas raised during BCSS engagement meetings and other similar planning activities. The project scope limited the survey to those nurses responsible for planning and providing nursing education to their peers in acute care facilities, rather than surveying front line nurses directly. It was felt that nurse educators would be able to provide the most insight into any current gaps in stroke education for their front line colleagues and could provide recommendations on what was most needed to address these gaps.

METHODOLOGY

Three research strategies were used for this educational needs assessment.

1. **Literature Review** (Appendix C): In order to ensure the most appropriate needs assessment methods and processes were utilized, and to build upon any existing knowledge of nursing education needs assessments, a thorough literature review was undertaken. Where possible, literature specific to stroke education was reviewed. The following search engines were used for this literature review: Findarticles.com; CINAHL; Cochrane Library; NCBI, PubMed; MedLine; Google Scholar; Health Source/Nursing. Recognized stroke organization websites (i.e. American Heart Association and the Canadian Stroke Network) were searched for available nursing stroke education tools and any relevant information that would support the needs assessment process.
2. **Key Informant Interviews** (Appendix B): To gain a better understanding of the issues, an interview tool for key experts in stroke education was developed. Next, Stroke Leads from each HA were contacted for insight into their nursing educational issues and to identify key informants from within their respective regions. The list of key informants can be accessed in Appendix B of this document.
3. **Online Survey** (Appendix A): According to the literature, an initial needs assessment of barriers and supportive factors is required to gain insight into how to most effectively address an area such as nursing education (Purdy & Melwack 2009). Based on initial findings and examples of needs assessments previously used in Alberta and Ontario, an on-line survey was developed using the Survey Monkey tool. Due to the need to identify priority needs and issues that would align with current stroke service delivery planning, an indirect assessment was utilized as recommended by McCawley 2009. Consequently, the survey was designed to gather information from those responsible for nursing education in acute care facilities rather than directly surveying staff nurses.

Once the survey was tested on key informants and approved by HA stroke leads, the link was distributed by email via distribution lists provided by these stroke leads. The link for the online survey was sent to the stroke leads within each of the regions to be then distributed to their Clinical Nurse Educators (CNEs), Clinical Nurse Specialist (CNSs) and anyone else that might be responsible for supporting stroke education for nurses within the acute care setting. An accompanying email asked recipients to distribute the survey to others they felt would be appropriate to provide input. As a result of this dissemination strategy, it is not possible to determine the exact number of individuals who actually received the survey.

One or two follow-up reminders were sent depending on the number of responses within each of the HAs.

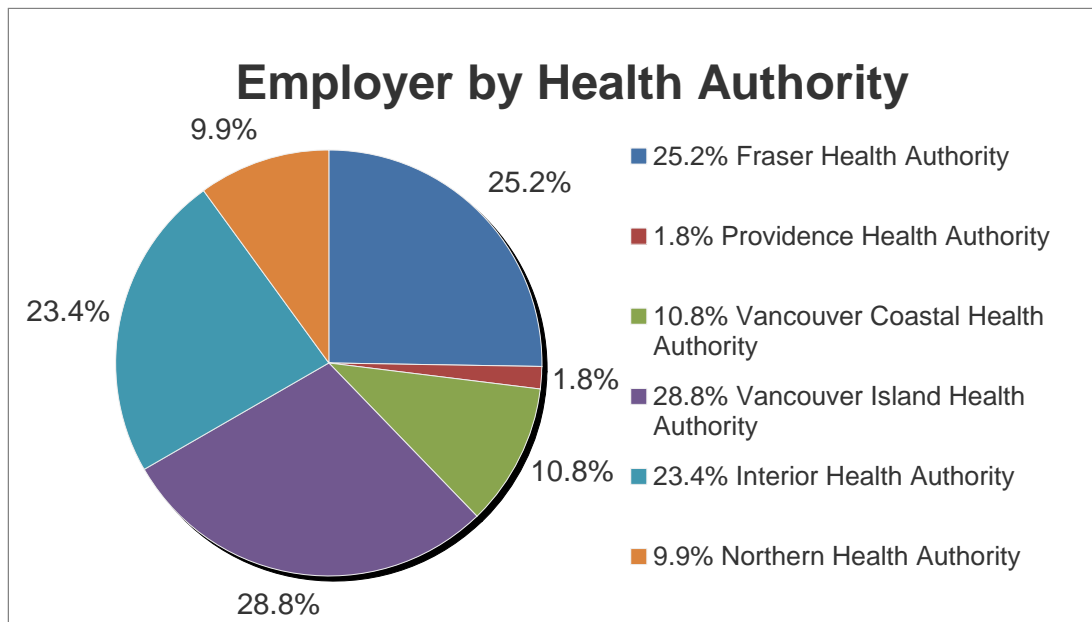
The survey was comprised of three sections:

1. Nursing Educator Demographic data
2. Clinical Subject Matter Needs
3. Current Stroke Education Resources, Gaps and Needs

The survey included a total of 27 questions and respondents were given the opportunity to provide comment on all questions.

RESULTS

The online survey was conducted from June 20th, 2010 until July 9th, 2010 with 111 nursing educators completing the survey (Appendix A). The survey was disseminated via email distribution lists with initial recipients forwarding to others who would potentially be appropriate for the survey. It is estimated that the survey was sent to approximately 500 individuals across the province. The breakdown of respondents by HA is depicted in Graph 1.



Graph 1: Employer by Health Authority

To gain a better understanding of the experience of educators at different types and sizes of facilities, respondents were asked to identify from which of the four stroke facility designations they worked in (Graph 2).

Comprehensive Stroke Centre (Level I)

Expertise of subspecialty trained stroke Neuro-Team available. Centre contributes specialist expertise to the Telestroke Consulting Pool. Includes a comprehensive stroke rehabilitation care team (E.g. – Vancouver General Hospital, Victoria General Hospital).

Regional Stroke Centres (Level II)

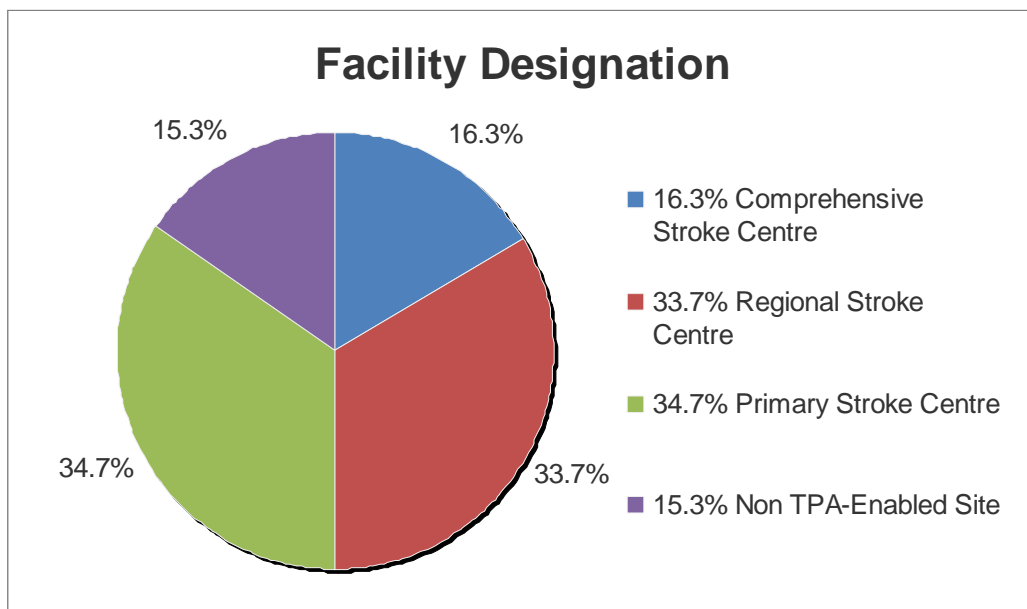
Centre is CT and tPA-enabled 24/7 and optimally has 24/7 neurologists on-call. Centre has access to multi-disciplinary rehabilitation teams and ongoing training in stroke care management (E.g. - Royal Inland, St. Paul's, Royal Columbian).

Primary Stroke Centre (Level III)

Centre is CT and tPA-enabled, has an organized emergency stroke system, and may be a referral center for local community hospitals but not for the region. Centre may be Telestroke supported. Centre has secondary, multidisciplinary rehabilitation inpatient and outpatient services available to stroke patients and to patients of varying diagnoses other than stroke (E.g. - Penticton Regional, Richmond Hospital, Peace Arch Hospital, St. Joseph's).

Non-tPA Enabled Site Level (Level IV)

No CT on site, therefore no ability to provide tPA care. Centre may provide primary rehabilitation – by a single discipline or a multidisciplinary team in a non-rehabilitation unit or in an outpatient department (E.g. - Princeton General, Squamish General, Mission Memorial, Bulkley Valley District Hospital).



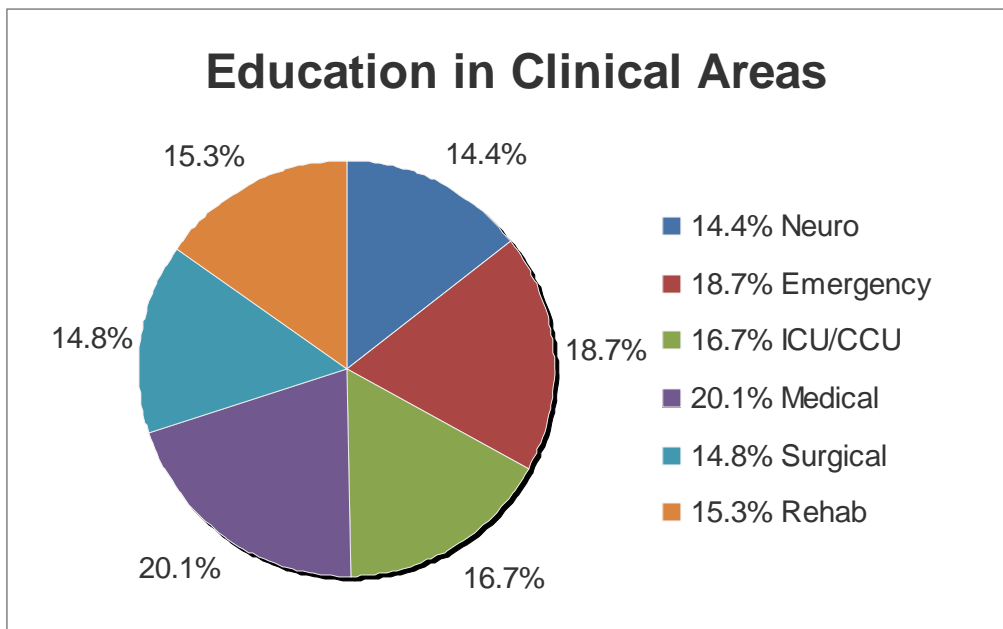
Graph 2: Facility Designation

Profile of Survey Respondents

The majority of the respondents were from Regional and Primary Stroke Centres, which is reflective of the numbers of each of these facilities across the province. The response rate for non-tPA enabled sites was satisfactory for the province but reasonably high for Vancouver Coastal Health Authority (VCHA).

Respondents to the survey were responsible for providing education to nurses working in neurology, emergency, ICU/CCU, Medical, Surgical and Rehabilitation (Graph 3). The highest percentage (31%) of respondents were responsible for educating between 25-75 nurses on medical units. While most of the respondents were responsible for providing education to any

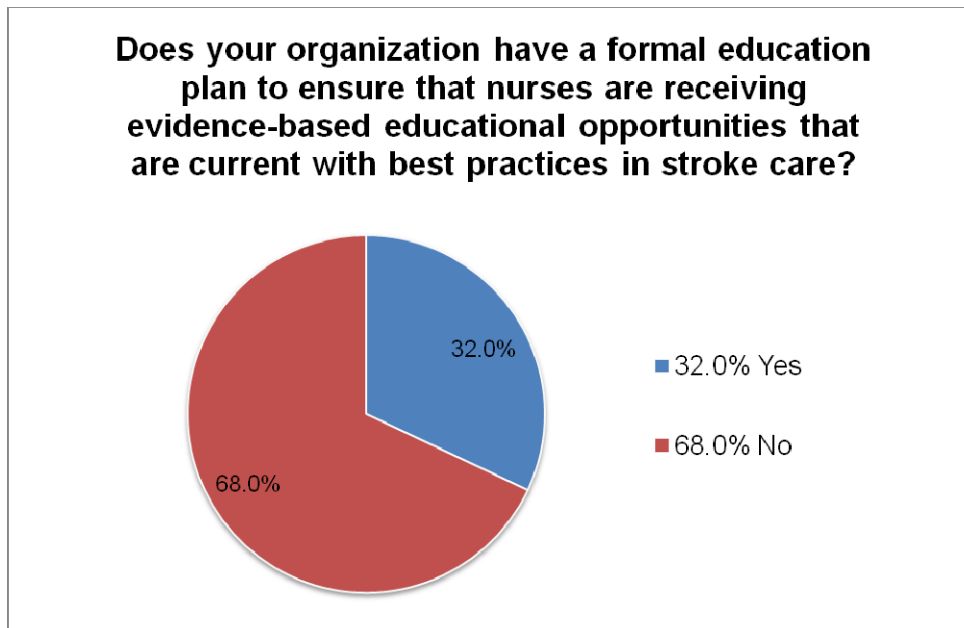
number of nurses in medical units, a relatively high number reported being responsible for a smaller number of nurses working in ICU and emergency.



Graph 3: Education in Clinical Areas

Presence of a Formal Education Plan

When asked whether their organization had a formal education plan for stroke (a defined plan outlining a strategy that ensures nurses are receiving evidence-based educational opportunities), 32% of the respondents responded "yes" while 68% responded "no" (Graph 4). This ratio appears to be consistent regardless of hospital designation. When data was analyzed for each HA, Northern Health Authority (NHA) reported no formal education planning. However, key informants suggested that there were various informal efforts utilized for gaining insight into stroke education needs. Based on recipient comments for this question, most formal education planning was isolated to local practice areas and on further examination actually appeared to be informal in nature. HA stroke leads interviewed prior to the survey were not aware of any formal education plans which further supported this finding.



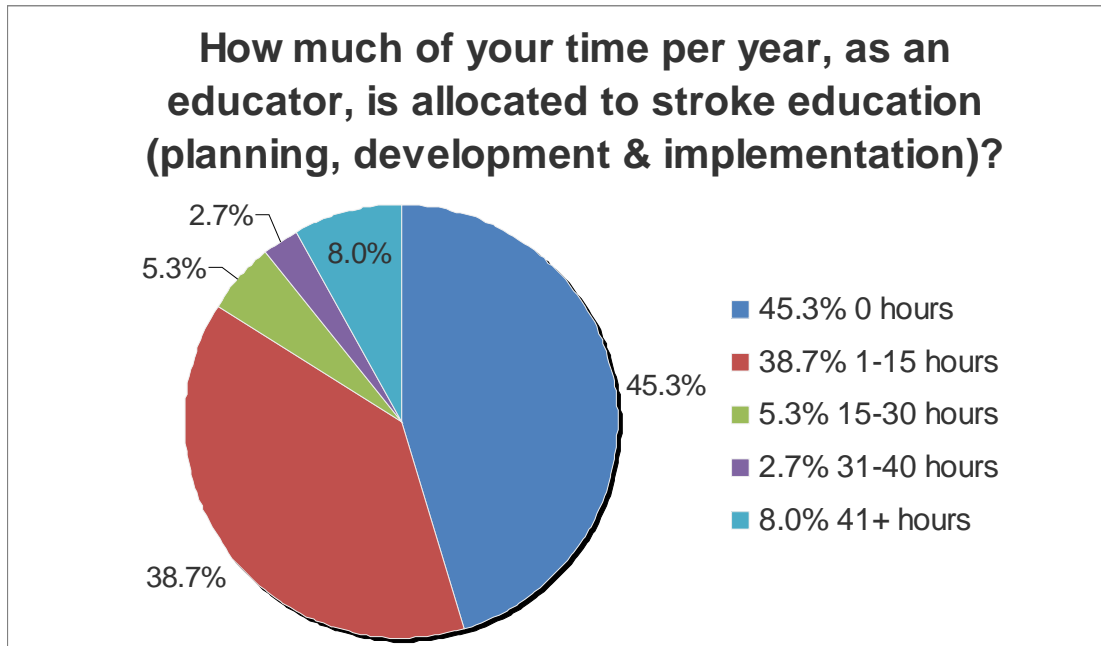
Graph 4: Prevalence of Formal Education Plan

Assessing Educational Learning Needs

With respect to how stroke education learning needs for nurses are assessed, 44% of the respondents reported no mechanism was currently available, however 33% reported some informal feedback mechanism was in place.

The Number of Hours Allocated to Stroke Education

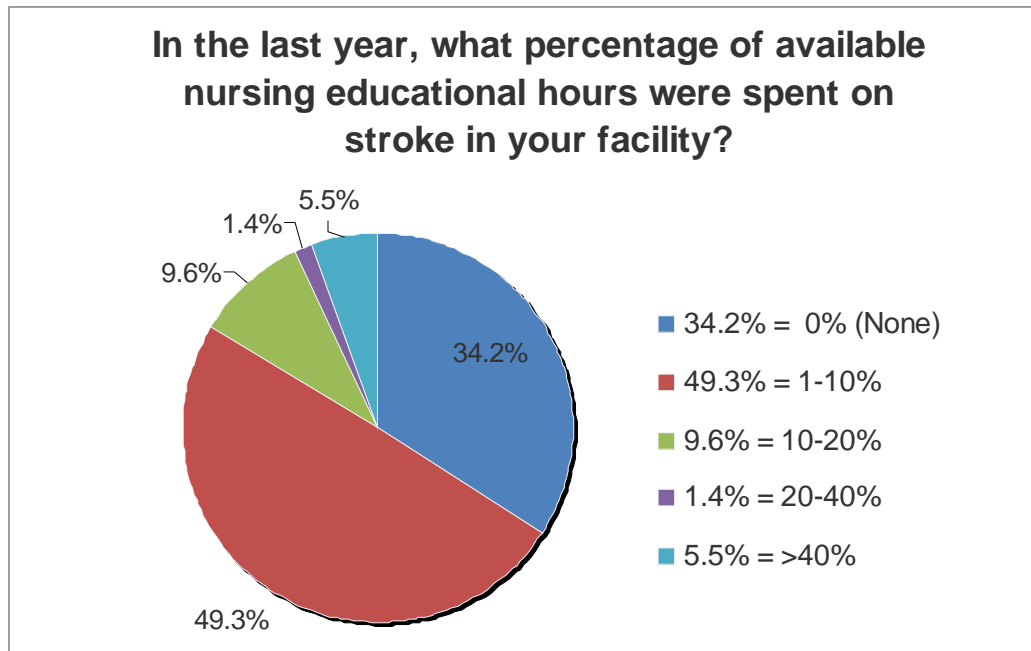
To gain a better understanding of the priority of stroke education as compared to other clinical areas, respondents were asked to indicate how many hours per year, as an educator, is allocated to stroke education (planning, development and implementation). Key informants consistently indicated that they did not have enough time to develop the resource materials and provide education owing mostly to other competing clinical priorities. The survey results verified this information with 45% of the respondents reporting “0 hours” of dedicated education time and 39% reported “1-15 hours.” Of the respondents that reported greater than 41 hours per year allocation to stroke education, most were working in a comprehensive stroke centre. These statistics are depicted in Graph 5.



Graph 5: Hours Per Year Allocated to Stroke Education

Percentage of Available Nursing Educational Hours Targeted to Stroke

According to the literature and key informant interviews, one of the greatest challenges in providing stroke education is accessing protected time for front line nurses to receive education. To verify this information and to gain a better understanding of the amount of time spent on stroke education as compared to other nursing education, respondents were asked to identify what percentage of available nursing educational hours were spent on stroke in their facility within the last year as visualised in Graph 6. Consistent with the hours allocated to nursing education, 34% reported “none” and 49% reported “1-10%.” Only those working in Regional Stroke Centres reported greater than 40% of the education hours being allocated to stroke.



Graph 6: Percentage of Available Nursing Educational Hours

If stroke specific education hours were allocated, respondents felt that the following educational opportunities would be reasonable for a nurse to participate on a yearly basis:

- **2-3** 10-20 minute sessions on-site clinical and practical teaching
- **1 session** 1-2 hour in length organized continuing professional development opportunity
- **1** Half-day session/workshop or collaborative community of practice session
- **1** Full day conference

Potential Barriers

Key informant interviews noted a list of barriers impacting their ability to provide stroke education. To gain insight into these barriers and identify which might be more common across the province, respondents were asked to select from a list of potential barriers that impact their ability to provide stroke education. The following is a summary of the responses.

Most Significant Barriers

	% of respondents
• Lack of time available for stroke education	74.7%
• Other competing clinical learning priorities	73.3%
• Lack of time to develop training materials	62.7%
• Lack of funding	61.3%

Least Significant Barriers

	% of respondents
• Lack of internet access at work	4.0%
• Technical Skills	12.0%

Additional barriers identified by survey respondents in the comment section included:

- Lack of neurology engagement
- Lack of physician buy-in to best practices
- Lack of a clinical educator
- Lack of applicability of knowledge and procedures due to remoteness
- Lack of funding for nurses to attend education and few are willing to come on their days off
- Lack of resources to get nurses off the floor and to education sessions
- Lack of space for education
- No coordination of education material

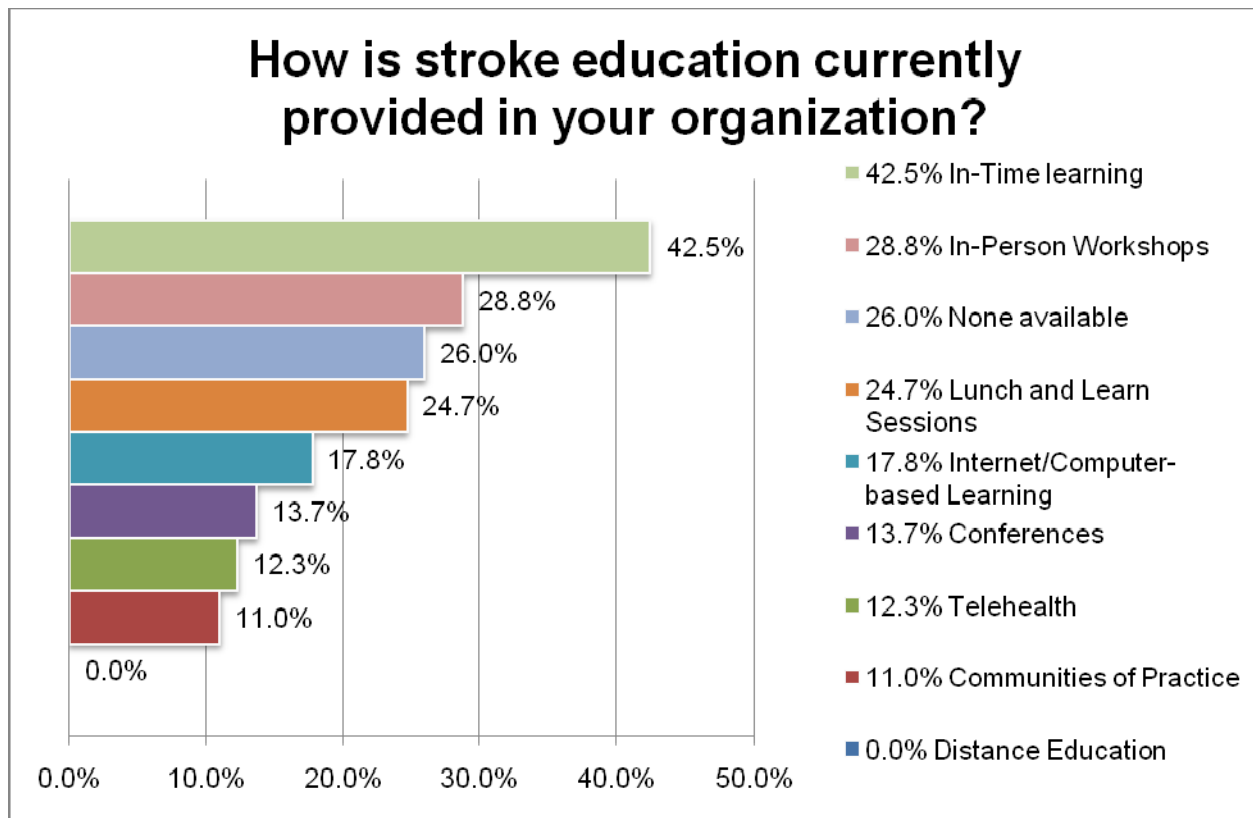
Within Northern Health Authority (NHA), 100% of the respondents reported staffing shortages as a significant barrier. While lack of technical skills (i.e. using a computer and access learning modules on-line) was identified by a few respondents within each of the HAs, more respondents from NHA (43%) indicated lack of technical skills as being a barrier together with 25% of the respondents within Comprehensive Stroke Centers, significantly higher than other designations. As would be expected, lack of in-house expertise was identified as less of a barrier for Comprehensive Stroke Centres (13%) and gradually increased as an identified barrier for Regional Stroke Centres (30%), Primary Stroke Centers (56%), and Non-tPA Enabled Sites (75%).

Current State of Stroke Educational Resources

Respondents were asked to identify which educational resources are currently lacking. The following were consistently identified as the most significant resources missing. These resources appear to be insufficient for all designations and HAs.

- Stroke Education Toolkits
- Stroke Learning Modules
- CNS/CNE-led continuing professional development education.

Delivery of Stroke Education



Graph 7: Stroke Education Delivery Methods

Currently the most common method of delivering stroke education is while nurses are on shift (E.g. 15 minutes during the shift with no back-fill). This method is most likely chosen as there are no additional staffing costs. Key informants indicated that this was not the most ideal form of learning because of potential risk to patients, lack of readiness to learn due to impromptu timing and poor concentration due to need to focus on other duties. Lunch and learns and in-person workshops are also used. A summary of methods of delivery for all health authorities is shown in Graph 7.

While conferences are common for Comprehensive Stroke Centres, Telehealth is not used by these centres. Lunch and learns seem to be common for non-tPA enabled sites but less so for the other centres. Internet and computer based learning appear to be more common for educators within Primary Stroke Centres (29%) and Non-tPA Enabled sites (25%), and less so for Comprehensive Stroke Centres (13%) and Regional Stroke Centres (12%). Telehealth was reported as being more commonly used within NHA than any other HA.

Effective Educational Resources and Methods

When asked to rank the most effective and efficient method for delivery of nursing education, in person workshops were reported as the most effective and efficient, with all others being identified by the majority as somewhat effective and efficient.

When asked to comment on what tools would help provide better stroke education within their facility (e.g. Stroke PowerPoint Education Presentation), respondents provided the following examples:

- On-line material (e.g. neurology/stroke webinars like cardiac webinars)
- PowerPoint Presentations applicable to BC context
- Learning modules
- In-service by stroke professionals
- Stroke guidelines
- Anything that is individual based learning that staff can do on their own time
- Regular short informational email updates on stroke care, like what is done for drug reviews

When asked to provide specific examples of resources or tools that the respondents would recommend to other educators for stroke specific education, like the Canadian Stroke Strategy Prevention Workshop Toolkit, the following were listed:

- AHA NIHSS Course
- IHA Stroke Toolkit
- Stroke Conferences
- Journal Stroke
- CNS for Stroke

Twenty-two respondents indicated that they or someone within their facility had developed stroke-specific educational material. These ranged from PowerPoint presentations to an entire stroke toolkit and resource binder. When asked whether respondents would use an online user-friendly collaborative resource, that allowed them to see, use and share stroke educational tools between health authorities and regions, 95% of the respondents reported “yes.”

Priority Clinical Content Areas

To gain insight into the highest priority clinical education content areas, respondents were asked to review the Canadian Stroke Strategy Stroke Best Practices.¹ Using a four point scale ranging from high priority-required in 1 year, medium priority-required within 2 years, low priority-required within 3 years to not a priority-no pressing need, respondents were asked to indicate how important the clinical topic was for their area. For all best practices, the majority of the respondents rated them as high to medium priority, which further emphasized the need for nursing education and the work required to bring nurses up to best practices in stroke care. Surprisingly, there was little variation in priority areas across HAs or designations except where obvious (E.g. Stroke Unit Care Management ranked lower for Comprehensive Stroke Centres, than for Regional Stroke Centres). These results also emphasize the need for local needs assessments and further alignment with stroke service changes, as there was some variation in responses from individuals from the same HA and from the same designation.

Lastly, respondents were asked to indicate which of the foundational stroke education components, 1) brain anatomy and physiology and 2) stroke pathophysiology, was needed for the nurses within their facility. 61% of the respondents felt brain anatomy and physiology were needed and 89% felt that stroke pathophysiology was needed.

Clearly there is a need for stroke education. The challenge is to narrow the content priority areas into an education plan that considers the needs and priorities of the different HAs and facilities depending on their designation. Regional and collaborative provincial stroke service planning could inform much of this requirement.

¹ The Canadian Stroke Strategy. "Canadian Best Practice Recommendations for Stroke Care: Summary." *Canadian Medical Association Journal* 179, no. 2 (2008): 1-25.

DISCUSSION

The results of this stroke education needs assessment strongly supports the importance of conducting this work and verifies many of the gaps identified during consultation with stakeholders. It is evident by the number of completed surveys at a typically busy time of the year that stroke education for nurses is a significant issue. Although there are examples of progressive work in the area of stroke education within BC, gaps in stroke education for nurses are significant as are the barriers to addressing these gaps.

Gaps in Stroke Knowledge

Despite evidence of best practice in stroke education in select locations across the province, a significantly high number of respondents rated all of the Canadian Stroke Strategy Best Practices as being of high (required within 1 year) to medium priority (required within 2 years). Considering the time frame requirements of high and medium priority ranking, these results suggest that there is considerable work required to bring nurses up to date with best practices in stroke care. Additional assessment at a local level and alignment with service delivery planning is required to further prioritise education and training within a manageable time frame.

Making educational tools available that cover the full spectrum of stroke specific content, such as learning modules and toolkits, would provide the additional utility and adaptability for educators across the province and should be considered for addressing this broad need. Teaching strategies such as an annual conference and Telehealth should also be considered as opportunities to educate a larger audience on high priority topic areas. These strategies would have the added benefits of supporting communities of practice, BCSS communications and engagement in best practice in stroke care.

Lack of Formal Education Planning

Considering the identified gaps in stroke education for practicing nurses in BC and the fact that only 32% of the respondents reported a formal education plan, there is clearly a demonstrated need to formalize a strategy to meet stroke educational needs within the province.

Key informant interviews and the results of the survey reveal BC as lacking in the way of professional stroke education strategies for nurses. Although not formally assessed, there was no mention of stroke education strategies for other service providers either. This finding was not surprising considering the limited attention that stroke has received compared to other conditions, such as cardiac care for example. With more focus on coordinated stroke service delivery, the Provincial Stroke Action Plan is driving the need for standardized care and improved best practice adoption. This is further impetus to support the educational needs of nursing and allied health workers at the frontlines. Based on the experience of the Alberta Provincial Stroke Strategy (APSS), “[a] health care provider education initiative is one of the most important components of the stroke strategy directly contributing to evidence-based practice change in stroke prevention and management.”

Considering the heavy load that many educators are currently carrying across the province and the broad scope of their work, the creation of more central stroke education coordinator positions, like what has been done in Alberta and Ontario would create the vital roles required for such an active engagement process. The current system does not have the human resources to drive the development and implementation of a comprehensive stroke education plan.

Barriers

Before gaps in stroke best practices can be addressed a number of important barriers must be overcome, otherwise efforts will be stalled.

1. Lack of Time Dedicated to Stroke Education

One of the greatest barriers in addressing the need for improvements in stroke education appears to be lack of time allocated to stroke education planning and implementation. Nearly half of the respondents reported 0 hours of their time being dedicated to stroke education and almost 40% dedicated only 1-15 hours in an entire year. Competing clinical priorities, funding and lack of a stroke education plan were reported as the primary reasons for this. As a result, educators have very little time to assess educational needs and to develop, implement and manage education plans. With no provincial leadership in stroke education planning, development or delivery, even educators who have 1-15 hours a year to provide stroke education to their staff are challenged to meet the outstanding educational requirements.

Not only is there little time to educate, front line nurses have even less time to receive the stroke education according to the results of the survey. Competing clinical pressures, human resource shortages and fiscal restraints create significant limitations on the ability of nurses to receive education during working hours. With demanding family and personal lives and the desire to live a balanced life, efforts to attract nurses off shift, either with or without compensation, have proven to be unsuccessful. On the job training strategies that strive to maximize down times during work hours without influencing patient care were reported as ineffective and less desirable by educators. In order to make available sufficient nursing time for stroke education, creative resourcing solutions are required which compensate nurses for their time and ensure that staffing levels remain manageable for their patients and colleagues.

2. Access to Educational Resources and Tools

Despite a variety of stroke educational resources and tools developed by well recognized organizations such as the Canadian Stroke Strategy and by educators within the province, current awareness and access to these resources limits utility by educators. Provincial stroke education resources and tools have been developed and do exist; the extent to

which they align with best practices is unknown as is their applicability to other areas. Gathering an inventory of all stroke education resources within BC would facilitate greater utility of existing resources, particularly if approved and updated tools were made accessible to stakeholders via an on-line website. Development of an inventory of stroke education that aligns with best practices would require ongoing updating and therefore would require dedicated time on an ongoing basis to ensure material remains current. Stroke education resources that have been proven successful in other jurisdictions such as Alberta and Ontario should be utilized and referenced where appropriate to maximize their utility.

Appendix D lists a number Canadian and American educational tools and resources that are also accessible to BC. For example, Hemispheres is an interactive online stroke education series that will soon be adapted from the American context to the Canadian and is being considered for Ontario. Alberta has developed their own stroke learning modules and has made them accessible to educators and learners via their central stroke education website. Increasing access to standardized stroke educational resources and tools would optimize their utility and free up educators to focus on educating their staff.

3. Leadership and Coordination in Stroke Education

An important barrier underlying the main results of this assessment is the overall need for greater leadership in stroke education planning, development and implementation. The inefficiencies of the current stroke education system are costly, ineffective and unsustainable. Too many individuals are working on the development and implementation of the same stroke education resources. Greater efficiencies could be achieved with the development of standardized resources that are accessible to all.

A comprehensive educational plan requires recognized leadership in its development and execution, particularly when striving to overcome such barriers as the need for standardization of order-sets across regions. Stroke education coordinators that work closely with stroke leaders and planners have successfully lead stroke education plans in Alberta and Ontario. A similar model in BC would address the need for greater leadership, as well as provide the human power behind the plan and various components of it (i.e. Online User-Friendly Community of Practice Website).

To be most effective, these positions must be fully endorsed by the HAs and supported by the required educational tools and resources necessary to address the barriers and needs identified through this needs assessment process.

RECOMMENDATIONS

To address the barriers identified through this assessment and to support best practice adoption in stroke care within BC, the following recommendations specific to stroke education for nursing should be considered by provincial stroke planners in the development of the Stroke Action plan. The resource implications of these recommendations will have to be considered within the context of the broader provincial strategy.

1. A Comprehensive Provincial Stroke Education Plan should be developed based on HA input and implemented

A comprehensive stroke education plan for nursing that considers the entire continuum of stroke care is essential to the success of stroke service delivery planning and implementation. Initially, this plan must be aligned with the seven-year Stroke Action Plan to ensure that clinical changes are realized and priority areas are addressed. As this needs assessment focused on educators, further regional needs assessments to capture the knowledge gaps and learning needs of individual site nurses working at the front line are recommended. Both the literature and comments from key informants and survey respondents suggest a need to include physicians and other allied health care professionals within this plan, however further analysis would be required to confirm this need. The results of the survey specified that the educational needs and requirements of nurses should be incorporated into a comprehensive stroke education plan.

This plan should include the following components:

- **Development and Utilization of Stroke Learning Modules**

Findings strongly support the need for a comprehensive yet flexible on-line learning tool that is accessible and adaptable to educators and nurses working in different areas. The modules must focus on key areas of best practice stroke care but also include foundational content to support all levels of learners. As clinical change is inevitable and technological skills vary, these modules must be supported and as recommended by the Stroke Education Team. The Stroke Education Team should also be assigned to selecting the best solution. Selection criteria should include: ability to meet the Canadian Stroke Strategy Best Practice content areas, adaptability to the provincial context, flexibility, user friendliness/acceptance and costs associated with development and regular updates. Existing modules should be reviewed and where appropriate considered for BC, for example the Alberta Provincial Stroke Strategy Education Program Learning Modules and Hemispheres.

- **Hosting of an Annual Provincial Stroke Conference**

The results of this assessment suggest a need to create many opportunities for networking, sharing and learning. An annual conference would create an opportunity to

bring stroke leaders, service providers and administrators from all over the province to share cutting edge stroke service delivery innovations and solutions. A component of this conference should be dedicated to stroke education resources and tools, and their evaluation. Coordination of this event could be the responsibility of the Provincial Stroke Education Coordinator.

- **Continuing to invest in the BCSS TeleLearning Series**

The use of videoconferencing to support education, team building and community of practice has been very successful in other jurisdictions like Alberta and Ontario. Using videoconferencing for educational purposes reduces costs associated with travel, builds a community of learning and addresses the issues of lack of expertise in more rural and remote communities. As much work has already been invested into the development of the successful BCSS TeleLearning series, it makes sense to continue to invest in this educational tool particularly as little investment is required.

- **Creation of an Online User-Friendly Community of Practice Website**

To support the sharing of clinical practices and access to educational tools such as PowerPoint presentations and learning modules developed within BC, a centralized website dedicated to stroke education for healthcare providers is recommended. This website would form one element of a Stroke Community of Practice (COP) with a similar structure to the Emergency Evidence to Excellence (E2E). Additionally, resources should be considered to provide the opportunity for learning sessions through a formal collaborative.

Alberta hosts a section for professional education on their Alberta Provincial Stroke Strategy Website and Ontario hosts one on their central Ontario Stroke Strategy Website as well as on regional stroke websites (Appendix D). The BCSS website could be the linking site for this COP initiative. Content should be coordinated by the Provincial Stroke Education Coordinator and could include the following:

- Contact information of Education Coordinators and Stroke Leads.
- Recognized Stroke links.
- On-line educational resources (Appendix D).
- Provincial education tools and resources and how to access them if not available online, such as the IHA Toolkit.
- Important learning opportunities, like stroke conferences and professional development courses, telelearning sessions specific to stroke, CME specific to stroke, Stroke Rounds, COPs.
- A section for self-directed learning modules (E.g. Hemispheres).
- Educational needs assessment templates and planning tools.

2. Allocation of Regional Stroke Education Funding to Support Nursing Participation

To support the execution of a comprehensive stroke education plan, regional funding must be in place to support nursing participation in educational opportunities. Without a sustainable process to support attendance and compensate nurses for participating in educational opportunities, the full benefits of the educational plan and ultimately the Stroke Action Plan will not be realized. As barriers to accessing education are varied across the province, a flexible and HA specific funding model must be employed that allows for creative and innovative education solutions.

3. Creation of a Stroke Education Team (Change Agents)

To facilitate stroke education planning and implementation, the creation of a provincial stroke education team is recommended. This team should be centrally coordinated and comprised of a Provincial Stroke Education Coordinator and five Regional Stroke Education Coordinators.

- **Provincial Stroke Education Coordinator (1)** would be responsible for the development and implementation of the provincial stroke education plan which would be developed and supported together with the Regional Stroke Education Coordinators. This individual would work closely with the BC Stroke Strategy to ensure education needs are considered within all stroke planning activities. This individual should be a member of the National Stroke Nursing Council and chair the Provincial Professional Development and Training Working Group.
- **Regional Stroke Education Coordinator (5)** would be responsible for coordinating stroke educational activities within their respective Health Authority. In addition they would lead an annual stroke education needs assessment for nurses. The individual would work closely with the Regional Stroke Leads to support the implementation of stroke plans and support clinical educators in providing stroke education to their staff.

4. Standardization of Stroke Order-sets and Policy and Procedures across the Province

Experts agree that the way to improve care and efficiencies in service delivery is through the standardization of policy and procedures; and that the successful adoption of best practices in stroke care will be achieved through the standardization of order sets across regions and hospital designations. Standard order sets would significantly increase the utility of educational resources being shared across jurisdictions. If one on-line learning module could be utilized for the entire province, educators could spend more time educating nurses and other health care professionals, and less time getting approval on order sets and developing educational tools.

CONCLUSION

In summary, the current stroke service delivery infrastructure as it stands today, does not have the capacity to address current educational requirements, let alone the education requirements of the Provincial Stroke Action Plan. Based on the results of the education needs assessment, four primary recommendations have been presented. Although each recommendation on its own would address components of the stroke education needs outlined in this report, they are not mutually exclusive. Each recommendation is interrelated with the other and therefore their success in supporting educators in best practice adoption is dependent on all four being implemented.

APPENDIX A – ONLINE SURVEY QUESTIONS

BC Heart & Stroke Foundation CNE Questionnaire 2010

1. Introduction

Thank you for taking the time to participate in this stroke education needs assessment for nurses working in BC.

The Heart and Stroke Foundation of BC and Yukon has identified stroke education for nurses as a significant challenge in realizing best practices in stroke care. To gain a better understanding of this issue and identify effective solutions, a small group of individuals has been tasked with conducting a comprehensive educational needs assessment specific to stroke education for nurses working primarily in the acute care setting.

To assist us with this analysis, we are asking that all clinical nurse educators, clinical nurse specialists, and those responsible for planning and providing education for nurses working in areas of stroke care complete this on-line survey.

By completing this survey you will contribute to recommendations that will improve stroke education for nurses. It will take you no longer than 15 minutes to complete. It is completely anonymous. No identifying information will be associated with the data.

Upon completion of the survey, you have the choice to participate in a chance to win a copy of ["The Best of HeartSmart Cooking" by Bonnie Stern](#).

If you have any questions regarding this survey, please contact Helen Truran @ 250-370-0373/ [email](#), or Nano Hawa at @ 604-885-4747/ [email](#).

BC Heart & Stroke Foundation CNE Questionnaire 2010**3. Current Stroke Education Resources**

These questions are designed to gain a better understanding of how stroke education for nurses is supported and resourced within BC.

- * 1. Does your organization have a formal education plan to ensure that nurses are receiving evidence-based educational opportunities that are current with best practices in stroke care?**

If Yes, please elaborate.

- * 2. What type of educational resources do you feel are lacking with your current state of resource availability?**

- Journals (E.g. - Journal of Neuroscience Nursing)
- Tool Kits and Learning Modules for Stroke (E.g. - CSS Secondary Prevention Workshop Toolkit)
- CNS/CNE-led Continuing Professional Development (CPD) sessions , Collaboratives, Lunch and Learns
- Conferences
- Distance Learning (E.g. - College or University Courses)
- Telehealth (E.g. - Videoconference-enabled learning)
- Online learning opportunities (E.g. - Webinars/Webcasts)
- Other (please specify)

- 3. What tools would help you provide better stroke education at your facility? (E.g. - Stroke PowerPoint Educational Presentation)**

- 4. Please provide specific examples of resources or tools you would recommend to other educators for stroke specific education? e.g - [CSS Secondary Prevention Workshop Toolkit](#)**

BC Heart & Stroke Foundation CNE Questionnaire 2010**3. Current Stroke Education Resources**

These questions are designed to gain a better understanding of how stroke education for nurses is supported and resourced within BC.

- * 1. Does your organization have a formal education plan to ensure that nurses are receiving evidence-based educational opportunities that are current with best practices in stroke care?**

If Yes, please elaborate.

- * 2. What type of educational resources do you feel are lacking with your current state of resource availability?**

- Journals (E.g. - Journal of Neuroscience Nursing)
- Tool Kits and Learning Modules for Stroke (E.g. - CSS Secondary Prevention Workshop Toolkit)
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- Conferences
- Distance Learning (E.g. - College or University Courses)
- Telehealth (E.g. - Videoconference-enabled learning)
- Online learning opportunities (E.g. - Webinars/Webcasts)
- Other (please specify)

- 3. What tools would help you provide better stroke education at your facility? (E.g. - Stroke PowerPoint Educational Presentation)**

- 4. Please provide specific examples of resources or tools you would recommend to other educators for stroke specific education? e.g - [CSS Secondary Prevention Workshop Toolkit](#)**

BC Heart & Stroke Foundation CNE Questionnaire 2010

5. Have you developed your own stroke-specific educational tool/kit/workshop?

If Yes, please describe.

*6. If an online user-friendly collaborative resource were made available, that allowed you to see, use, and share stroke educational tools between health authorities and regions would you potentially use it?

Comments:

*7. Please indicate barriers that impact your ability to provide stroke education: (Please select all that apply)

<input type="checkbox"/> Lack of an educational plan specific to stroke	<input type="checkbox"/> Lack of educational teaching resources
<input type="checkbox"/> Other competing clinical learning priorities	<input type="checkbox"/> Lack of time to develop training materials
<input type="checkbox"/> Lack of in-house stroke-specific expertise	<input type="checkbox"/> Lack of Internet access at work
<input type="checkbox"/> Lack of funding	<input type="checkbox"/> Technical Skills lacking
<input type="checkbox"/> Lack of time available for stroke education	<input type="checkbox"/> Staffing shortages/inability to back fill
<input type="checkbox"/> Other (please specify)	

*8. How much of your time per year, as an educator, is allocated to stroke education (planning, development & implementation)?

*9. How has your organization assessed stroke education learning needs of nurses within your facility? (Please select all that apply)

<input type="checkbox"/> Formal Needs Assessment	<input type="checkbox"/> Informal feedback mechanism
<input type="checkbox"/> Evaluation forms at educational events	<input type="checkbox"/> Stroke Committee
<input type="checkbox"/> Feedback Form (either paper form or electronic)	<input type="checkbox"/> No mechanism currently available
<input type="checkbox"/> Availability of a stroke education representative	
<input type="checkbox"/> Other (please specify)	

BC Heart & Stroke Foundation CNE Questionnaire 2010

4. Nursing Education Recipient Information

These questions are designed to gather information regarding the educational needs and preferences of nurses working in your areas of responsibility.

- * 1. Please indicate the number of nurses you are responsible for providing stroke-specific education to within each clinical area?**

	# of Nurses
Neuro	<input type="text"/>
Emergency	<input type="text"/>
ICU/CCU	<input type="text"/>
Medical	<input type="text"/>
Surgical	<input type="text"/>
Rehab	<input type="text"/>

- * 2. In the last year, what percentage of the available nursing educational hours were spent on stroke in your facility?**

Comments:

- 3. How is stroke education currently provided in your organization? (Please select all that apply)**

- Communities of Practice (Collaboratives)
- Lunch and Learns
- In Time learning (E.g. - 15 minute on the job In-services with no back-fill)
- In-Person Workshops
- Conferences
- Telehealth (E.g. - Videoconference-enabled learning)
- Distance Learning (E.g. - Online College University Courses)
- Internet/Computer-based Learning
- None available

BC Heart & Stroke Foundation CNE Questionnaire 2010

*** 4. If stroke-specific educational hours are allocated, in your opinion how much time per year would be reasonable for a nurse to participate in the following stroke specific educational opportunities.**

	Times Per Year
10 - 20 minutes On-site Clinical and Practical Teaching	<input type="text"/>
1 - 2 hours Organized Continuing Professional Development (CPD) Opportunities	<input type="text"/>
Half-Day Sessions Workshops & Collaborative Community of Practice Session	<input type="text"/>
Full Day Conference	<input type="text"/>
Other (please specify)	
<input type="text"/>	
<input type="text"/>	

*** 5. In your opinion, please rank the most effective & efficient method for the delivery of nursing education.**

	Most effective & efficient	Somewhat effective & efficient	Somewhat ineffective & inefficient	Not at all effective or efficient
Communities of Practice (Collaboratives)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch and Learns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In-Person Workshops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telehealth (E.g. - Videoconference-enabled learning)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Directed Learning (E.g. - Distance Learning course)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet/Computer-based Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)				
<input type="text"/>				

*** 6. Does your front line staff have access to the Internet at work for educational and research purposes?**

Comments:

*** 7. What percentage of your staff do you feel are comfortable utilizing technology for learning purposes (i.e. webcasting, online discussion boards)?**

Comments:

BC Heart & Stroke Foundation CNE Questionnaire 2010

5. Clinical Subject Matter Needs

The following Section and subsections were derived from the 2010 Canadian Best Practice Recommendations for Stroke Care.

Please indicate your desired level of interest and development of these practices by choosing whether or not the item is **High Priority** (Should be addressed within the next year), **Medium Priority** (Should be addressed within the next 1-2 years), **Low Priority** (Should be addressed within the next 2-3 years), and **Not a Priority** (No pressing concern).

* 1. Section 1: Public Awareness of Stroke

	High priority	Medium priority	Low priority	Not a priority
1.1 Symptom Recognition and Reaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.2 NIH Stroke Scale/Canadian Neurological Scale (CNS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 2. Section 2: Prevention of Stroke

	High priority	Medium priority	Low priority	Not a priority
2.1 Lifestyle And Risk Factor Management: Diet, Sodium, Exercise, Weight, Smoking, Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 Blood Pressure Assessment and Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3 Lipid Assessment and Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Diabetes Assessment and Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.5 Antiplatelet Therapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.6 Antithrombotic Therapy for Patients with Atrial Fibrillation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.7 Carotid Intervention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 3. Section 3: Hyperacute Stroke Management

	High priority	Medium priority	Low priority	Not a priority
3.1 Emergency Medical Services Management Of Acute Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.2 Emergency Department Evaluation and Management of Transient Ischemic Attack and Ischemic Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.3 Acute Thrombolytic Therapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.4 Acute Aspirin Therapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.5 Management Of Subarachnoid Hemorrhage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.6 Management Of Intracerebral Hemorrhage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.7 Outpatient Management of Transient Ischemic Attack and Non-Disabling Ischemic Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 4. Section 4: Acute Stroke Management

	High priority	Medium priority	Low priority	Not a priority
4.1 Stroke Unit Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.2 Prevention and Management of Complications Following Acute Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.3 End Of Life And Palliative Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BC Heart & Stroke Foundation CNE Questionnaire 2010				
* 5. Section 5: Stroke Rehabilitation				
	High priority	Medium priority	Low priority	Not a priority
5.1 Initial Stroke Rehabilitation Assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.2 Stroke Rehabilitation Unit Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.3 Delivery of Inpatient Stroke Rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.4 (a) Rehabilitation of the Upper Limb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.4 (b) Management of Shoulder Pain following Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.5 Rehabilitation of the Lower Limb and Gait	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.6 Outpatient and Community-Based Stroke Rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 6. Section 6: Collaborations between Healthcare Professionals, Patients, Families & Caregivers				
	High priority	Medium priority	Low priority	Not a priority
6.1 Interprofessional Collaboration and Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.2 Patient And Family Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.3 Patient, Family And Caregiver Support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.4 Discharge Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.5 Early Supported Discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.6 Community Reintegration Following Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 7. Section 7: Cross-continuum Topics in Stroke Management				
	High priority	Medium priority	Low priority	Not a priority
7.1 Telestroke (New For 2010)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.2 Dysphagia Assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.3 Identification And Management Of Post-Stroke Depression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.4 Vascular Cognitive Impairment And Dementia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.5 Fall Prevention Following Stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 8. Please indicate which of the following foundational stroke education components is a needed for the nurses within in your facility. (Select all that apply)				
<input type="checkbox"/>	Brain Anatomy and Physiology			
<input type="checkbox"/>	Stroke Pathophysiology			
<input type="checkbox"/>	Neither educational component is needed			

APPENDIX B – LIST OF KEY INFORMANTS

Region	Key Informants	Affiliation
Outside of BC	Rosa Sourial - National Stroke Leadership Group (2007 – current) Portfolio	Canadian Association of Neuroscience Nurses
	Terri Green, Council Co-Chair - Foothills Medical Centre, Calgary	Calgary Health Region - Stroke Council
	Dr. Linda Kelloway - Best Practices Leader	Ontario Stroke Network
	Dr. Patty Lindsay - Performance & Standards Specialist	Canadian Stroke Network
NHA	Rita Sweeney - Stroke Services Coordinator	Northern Health Authority (BC)
	Judy Bala - Clinical Nurse Educator	University Hospital of Northern BC
	Jerry Causier - Director of Care	Bulkley Valley District Hospital (BC)
	Annie Leong - Clinical Practice Lead	DCDH & South Peace (BC)
IHA	Kathy Yeulet - Director of Patient Care Services	Interior Health Authority (BC)
	Lori Seeley – IH Clinical Lead, Stroke and ABI	Interior Health Authority (BC)
FHA	Kevin Harrison – FH Stroke Lead	Fraser Health Authority (BC)
	Trudy Robertson – Clinical Nurse Specialist	Royal Columbian Hospital (BC)
	Coralie R. Still – Project Leader for Medicine Program	Surrey Outpatient Care and Surgery Centre (BC)
VCHA	Dixie Butts – VCHA Stroke Lead	Vancouver Coastal Health Authority (BC)
	Judy Wilson - Stroke Program Educator	Providence Health Care (BC)
	Barb Barham - Neuroscience Clinician	Lions Gate Hospital (BC)
	David Brewster - Clinical Nurse Educator - Neuroscience Program	Vancouver Coastal Health Authority (BC)
VIHA	Leighanne MacKenzie - Stroke Lead	Vancouver Island Health Authority (BC)

APPENDIX C – LITERATURE REVIEW

Literature Reviewed
Ali, N., Hodson-Carlton, K., and M. Ryan. "Students' Perceptions of Online Learning: Implications for Teaching." <i>Nurse Educator</i> 29, no. 3 (2004): 111-115.
Canadian Nurses Association. "Education for Canadian Registered Nurses Using Distance Strategies." < http://www.cna-nurses.ca/CNA/nursing/education/distance/default_e.aspx > (1999).
Carter, L., Rukholm, E., and L. Kelloway. "Stroke Education For Nurses Through A Technology-Enabled Program." <i>Journal of Neuroscience Nursing</i> 41, no. 6 (2009): 336-343.
Daley, L.K., Spalla, T.L., Arndt, M.J., and A.M. Warnes. "Educational Innovations Videoconferencing and Web-Based Conferencing to Enhance Learning Communities." <i>Journal of Nursing Education</i> 47, no. 2 (2008): 79-81.
Gould, D. et Al. "Training Needs Analysis: An Evaluation Frame Work". <i>The Nursing Standard</i> 18, no. 2 (2004): 33-36.
Green, D. "A Synergy Model of Nursing Education." <i>Journal for Nurses in Staff Development</i> 2, no. 6 (2006): 277-283.
Grol, R. "Beliefs and Evidence in Changing Clinical Practice." <i>BMJ</i> 315 (1997): 418-421.
Lindsay, E., Davis, D., Fallis, F., Willison, D., and J Biggar. "Continuing Education Through Telemedicine for Ontario." <i>CMAJ</i> 137, no. 6 (1987): 503–506.
McCawley, P.F. "Methods for Conducting an Educational Needs Assessment." <i>University of Idaho Press</i> (2009): 1-23.
McPeck, Phil. "Nurse Week: Series on Nursing Education." http://www.nurseweek.com/nursingstudents/ (2001).
O'Connell, B., Baker, L., and A. Prosser. "The Educational Needs of Caregivers of Stroke Survivors in Acute and Community Settings." <i>Journal of Neuroscience Nursing</i> 35, no. 1 (2008): 21-8.
O'Niel, C., Fisher, C., and S. Newbold. "Developing Online Learning Environments in Nursing Education." <i>Springer Publications</i> 2, (2009): 1-27.
Purdy, I., and A. Melwak. "Implementing Evidence-Based Practice: A Mantra for Clinical Change." <i>Journal of Prenatal and Neonatal Nursing</i> 23, no. 3 (2009): 263-269.
Van Geest, J., and G. Cummins. "Educational Needs Assessment for improving Patient Safety." <i>National Patient Safety Foundation</i> (2003): 1-28.

APPENDIX D – ONLINE ORGANIZATIONAL RESOURCES

Region	Organization	Link
American Organizations	American Heart Association	www.americanheart.org
	American Stroke Association	http://www.strokeassociation.org
	Brain Attack Coalition	http://www.stroke-site.org/
	Montana Stroke Foundation	http://www.montanastroke.org/
Canadian Organizations	National Stroke Association (US)	http://nsa.convio.net/site/PageServer?pagename=strokenurse
	NIHSS & Nat. Stroke Association (US)	http://nihssenglish.trainingcampus.net/uas/modules/trees/windex.aspx
	BC Stroke Strategy	http://www.bcstrokestrategy.ca/
	Canadian Association of Schools of Nursing	http://www.casn.ca/
	Canadian Stroke Consortium	http://www.strokeconsortium.ca/
	Canadian Stroke Network	http://www.canadianstrokenetwork.ca/
	Canadian Stroke Strategy	http://www.canadianstrokestrategy.ca/
	Central East Stroke Network	http://cesnstroke.ca/cesn/index.php
	Heart & Stroke Foundation of Alberta	www.heartandstroke.ab.ca
	Heart & Stroke Foundation of BC & Yukon	http://www.hsf.bc.ca/
	Heart & Stroke Foundation of Canada	http://www.heartandstroke.com
	Heart & Stroke Foundation of Manitoba	www.heartandstroke.mb.ca
	Heart & Stroke Foundation of New Brunswick	http://www.ahsc.health.nb.ca
	Heart & Stroke Foundation of Ontario	http://www.heartandstroke.on.ca/
	Heart & Stroke Foundation of Saskatchewan	http://www.hsf.sk.ca/
	Hemispheres Stroke Competency Series	http://www.apexinnovations.com/Products.php
	Internet Stroke Centre	http://www.strokecenter.org/prof/
	Self Learning Portal	http://strokecontinencecare.ca/
	South Western Ontario Stroke Strategy	http://www.swostroke.ca/show_record.php?load_record=1&record_id=8