

Beyond the Clinic Walls: Stroke Prevention Nurses adopt telehealth to support best practices.

Cindy Bolton, RN MBA & Sandra Melchiorre, RN, MN, ACNP, CNN(c)

This article describes how nurses in two regions in Ontario are improving stroke prevention by connecting via telehealth to enhance professional practice and integrate best practice stroke care across two regions. The Stroke Prevention Nurses Working Group was established in January 2005 as part of the Southeastern Ontario Telestroke Pilot Project to provide an opportunity for communication, networking and education amongst the nurses working in Southeastern and Eastern Ontario stroke prevention clinics (SPCs). SPC nurses from seven centres met regularly during the pilot by continuous presence videoconference instead of teleconference or face-to-face. In a continuous presence videoconference all participants are visible on the video monitor at the same time.

Pilot results showed that the videoconferencing format reduced the professional isolation of nurses working in small communities and allowed them to share their challenges and issues. The process contributed to consistency and equity of access for patients, and enabled nurses to share and connect to continuing education opportunities regionally and provincially via telehealth. Hands-on telehealth skills were gained for future clinical applications. Post-pilot key informant interviews revealed that the SPC nurses continue to meet and that telehealth has helped them to advance and strengthen the role of the Stroke Prevention Nurse beyond the walls of the clinic.

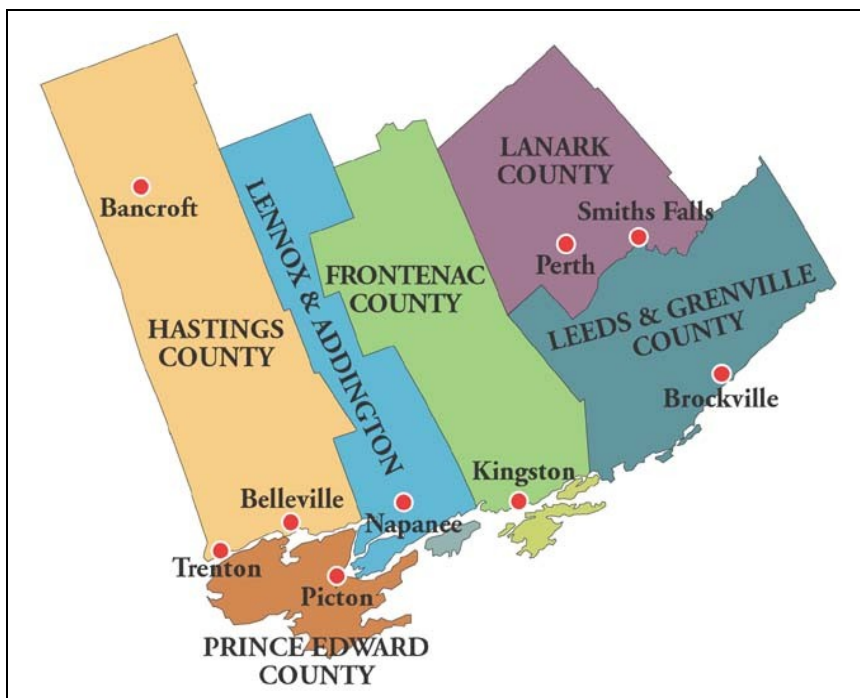
Southeastern Ontario Telestroke Pilot Project

Ontario Stroke System

The Ontario Stroke System (OSS) is a comprehensive and organized approach to providing a full continuum of stroke care services to Ontarians. The OSS aims to decrease the incidence of stroke, and improve care and outcomes for persons who experience stroke by reorganizing care delivery to ensure timely access to appropriate, quality stroke care. The four guiding principles for the OSS are comprehensiveness, integration, best practices, and province-wide. The OSS consists of a system of 11

regions in Ontario supported by Regional Stroke Centres (9 RSCs), District Stroke Centres (18 DSCs), Stroke Prevention Clinics (24 SPCs), community hospitals, rehabilitation centres and other stakeholders from across the stroke care continuum.

The Stroke Strategy of Southeastern Ontario (SEO) is one of the 11 regional systems within the Ontario Stroke Strategy. The region covers a large geographic area of approximately 20,000 square kilometres. It has a resident population of 487,984 (2001 Census Data). SEO includes four geographic planning areas comprised of (i) Hastings and Prince Edward Counties, (ii) Kingston Frontenac Lennox and Addington Counties, (iii) Lanark County, and (iv) Leeds and Grenville Counties. During the time period of the Telestroke Pilot Project, each of these areas was served by a health unit, one or more hospital corporations and a Community Care Access Centre.



There are four stroke prevention clinics in Southeastern Ontario located at KGH, Brockville General Hospital, the Perth site of the Perth and Smiths Falls District Hospital, and the Belleville General site of Quinte Health Care. The Lennox and Addington County General Hospital (LACGH) has an expedited referral process to the Regional Stroke Prevention Clinic at KGH. The role of each clinic is to provide streamlined access to diagnostic testing, optimal medical and surgical management and counselling in lifestyle change to reduce stroke risk for those at highest risk of stroke (e.g., recent transient ischemic attack). Other roles include the following:

- “provide an integrated, comprehensive, inter-disciplinary approach to stroke prevention and case management for these high-risk patients;

- facilitate planning and implementation of primary and secondary stroke prevention strategies for the respective area of the region; and
- Work in partnership with primary care, acute care, stroke rehabilitation, community care access centres and other stakeholders in planning regional stroke prevention strategies.”

Context for the SEO Telestroke Project

In 2000 when the Ministry of Health and Long Term Care of Ontario funded the Ontario Stroke Strategy, several challenges were identified within the stroke care system, one of which was inequitable access to specialized stroke expertise. In particular, there was concern about how to maximize Ontarians’ access to the highly specialized skills of the limited number of stroke experts. Towards an Integrated Stroke Strategy for Ontario: Report of the Stroke Strategy Working Group (June 2000)¹ acknowledged the importance of “teleradiology” or “telestroke”² as a way to ensure specialized expertise is available and it recommended pilot projects to develop and test methods and guidelines for the use of telecommunication linkages in stroke. The first pilot project was initiated by the NORTHNetwork in 2002 with funding from the Canadian Stroke Network. This pilot made emergency neurological consultations available 24 hours a day, 7 days a week to physicians in referring sites in Sudbury and North Bay using real-time, two-way videoconferencing and electronic CT image transfer.

In 2003, the Heart and Stroke Foundation of Ontario had proposed a vision for telestroke whereby:

“Residents of Ontario will have enhanced access to stroke prevention and treatment by utilizing technology to link stroke expertise to remote, rural and/or under serviced areas of the province and by utilizing technology to transfer knowledge to healthcare providers on evidence-based care.”³

This vision guided the development of the Southeastern Ontario (SEO) Telestroke Pilot Project proposal which was developed to address the gaps in stroke expertise in SEO by allocating unspent Regional Stroke Centre (RSC) funds from fiscal 01/02 and 02/03 to one time project funding to build a telemedicine infrastructure.

Stroke Prevention Clinics Adopt Telehealth

One of the objectives of the SEO Telestroke Pilot Project was to build a sustainable and integrated telemedicine infrastructure to enhance expert timely stroke care across SEO for Stroke Prevention through expert consultation between community hospital stroke prevention

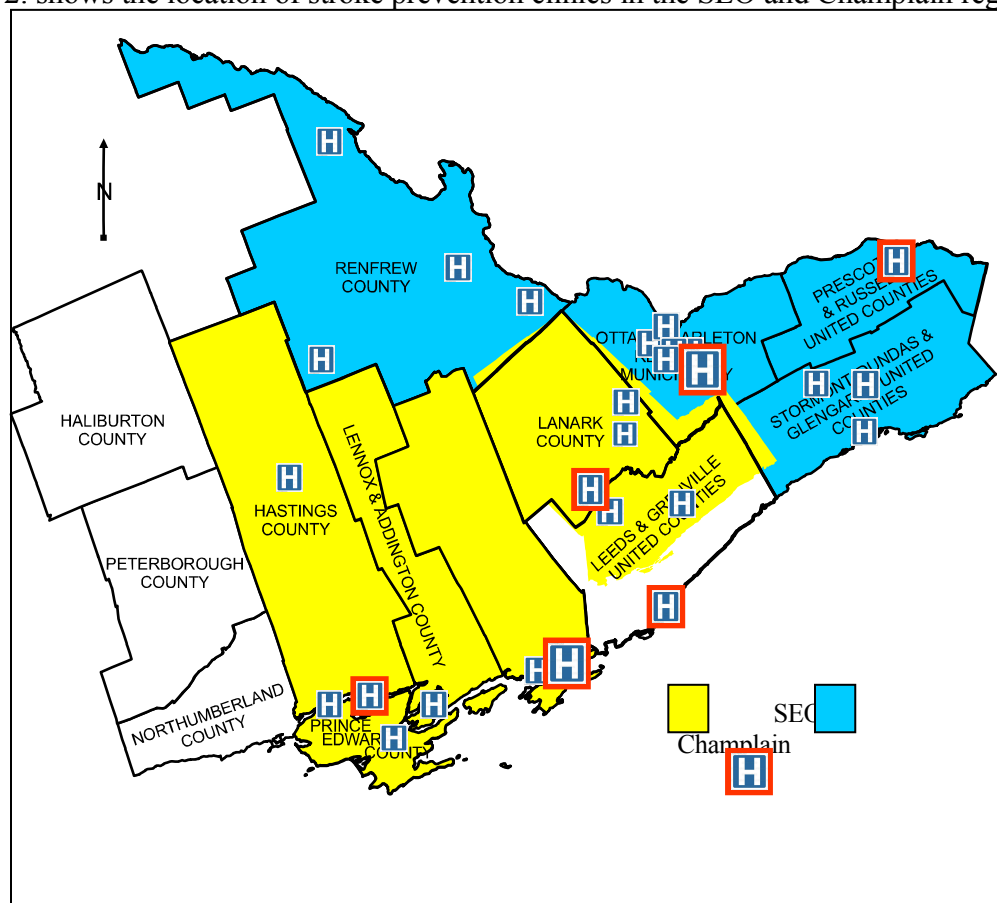
¹ Heart and Stroke Foundation of Ontario and the Ontario Ministry of Health and Long-Term Care (2000), *Towards an Integrated Stroke Strategy: The Report of the Joint Stroke Strategy Working Group*.

² The term “Telestroke” was proposed by Levine and Gorman to define the use of telemedicine in acute stroke intervention. Levine and Gorman (1999), “Telestroke: the application of Telemedicine for Stroke”, *Stroke*:20:464-469. The term telestroke is used in this report to refer to the application of telemedicine to the stroke continuum.

³ Heart and Stroke Foundation of Ontario (2003) Telestroke Vision.

clinics and the Regional Stroke Centre. The evidence driving this goal was the recent stroke literature highlighting the finding that transient ischemic stroke is under recognized and under treated. *Towards an Integrated Stroke Strategy* had noted that organized comprehensive stroke care has the potential to reduce stroke incidence by up to 50%. In the SEO region, work began in 2002 to implement a plan to reduce high levels of stroke risk through the full regionalization of stroke prevention services using a network of prevention clinics in three community hospitals and in Kingston at the Regional Stroke Centre.

Figure 2: shows the location of stroke prevention clinics in the SEO and Champlain regions.



During the formalization of the telestroke pilot proposal, members of the Regional Stroke Strategy Steering Committee, the Quinte District Advisory Committee and the Regional Prevention Task Group, discussed the need to streamline communication and consultation between the clinics. It was anticipated that a telemedicine consult between the clinics would enhance the opportunity for expert consultation with the Regional Stroke Centre and reduce the need for client travel. It was also thought that it would greatly enhance knowledge transfer

amongst clinical personnel across the region.⁴ The feasibility of telemedicine consults for prevention would be assessed as part of the Telestroke Pilot.

To facilitate this process the SPC nurses agreed to form a Working group⁵. They agreed to meet regularly by videoconference to discuss and share process issues, challenges, and ideas to begin to meet the prevention objective of the Telestroke Pilot Project. The Telestroke Project Leader would coordinate this process and would chair the initial meetings. Wherever possible, educational opportunities would be incorporated into the videoconferences. The Stroke Prevention Nurses Working Group identified the following goals for their meetings:

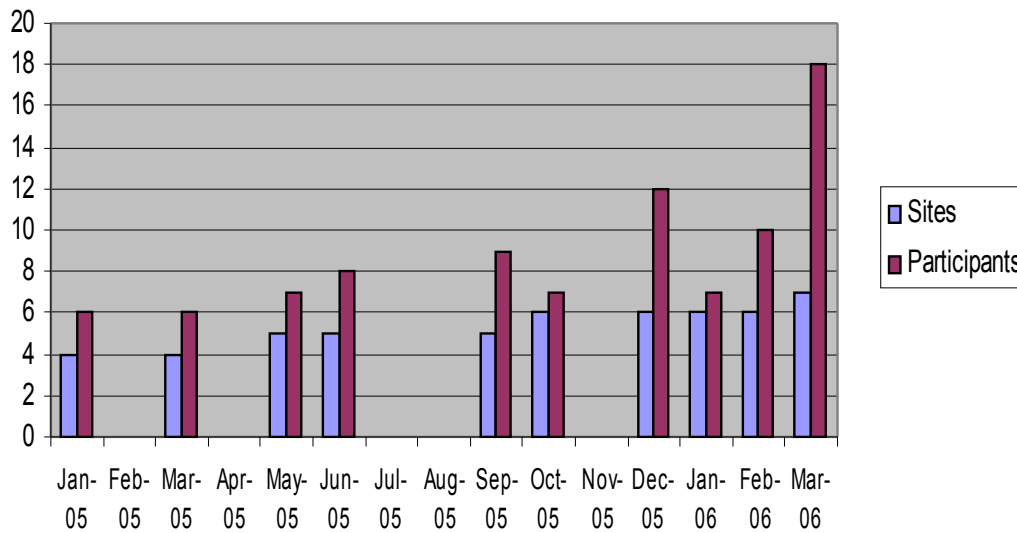
- Reduce the professional isolation
- Share the challenges and issues related to achieving best practices in stroke prevention
- Address consistency and equity of access across the region
- Continuing education opportunities including sharing amongst themselves
- Reduce the costs of telephone and in-person meetings
- Document the lessons learned for the future
- Build hands-on telehealth skills

Videoconferences began in January 2005, and initial participants included the four SEO clinics. In the spring, the Lennox and Addington County General Hospital joined when videoconferencing became available in Napanee. The prevention nurses of the Champlain Region (the Ottawa Hospital General Campus and the Hawkesbury District and General Hospital) joined in the fall to share lessons learned. The Regional Stroke Program Manager and District Stroke Coordinator were regular participants of the videoconferences.

⁴ Stroke Strategy of Southeastern Ontario Telestroke Proposal, February 2004

⁵ Formal terms of reference for the Stroke Prevention Nurses Group are found on the Stroke Strategy of SEO website at http://www.strokestrategyseo.ca/about_stercommit.php

Figure 3: Stroke Prevention Nurses Videoconferences January 2005 – March 2006



To gain a more in-depth perspective of the perceptions of the Stroke Prevention Nurses regarding the goals of the videoconferenced meetings, key informant interviews were conducted with five of the stroke prevention clinics (6 participants). The interviews assessed the views on meeting format, development of hands-on telehealth skills, networking and sharing, best practices, education, suggestions for improvements and future directions.

Results from the Pilot

Meeting Format

The Stroke Prevention Nurses experimented with a number of different types of videoconference formats for their meetings and concluded that they preferred continuous presence videoconferences because they were the most similar to face-to-face meetings. In this type of videoconference, all participants are visible on the video monitor at the same time. Figure 4 depicts a video screen during a continuous presence videoconference. The Stroke Prevention Clinics were connected using a multipoint bridged videoconference by CareConnect using the secure Smart Systems for Health Agency network.

Figure 4: Continuous Presence Videoconference



The following quote relates to the format of the meetings:

“With Videoconferencing there is sometimes a time delay... This means that the meetings were often a bit more formal because participants learned that you have to wait until the person finishes speaking or the camera will jump to the person speaking. The chair needs to outline and reinforce etiquette at the beginning of each session.”

Development of Hands-on Telehealth Skills

It was hoped that the nurses would build hands-on telehealth skills by participating in the videoconferences. They described the experience of using telehealth equipment:

“It was a bit intimidating in the beginning but less intimidating than the teleconferences.”

“It is easier to set up the videoconferences through CareConnect than when we try to do it site-to-site.”

Networking and Sharing

The SPC nurses valued the opportunity for professional dialogue and sharing. Their professional relationships were strengthened by use of videoconferencing instead of telephone. When asked if the videoconferences had facilitated networking the nurses shared the following comments:

“This type of meeting was helpful because the larger institutions have resources that the smaller centres don’t.”

“We are not part of the SEO region but it is good to listen to some of the challenges.”

Best Practices

The nurses offered several examples of where their discussions during the videoconferences had contributed to improved equity of access and best practices. These included the following:

- Regional protocol for urgent vascular surgery consults
- Development of a triage tool
- Sharing of an insulin protocol

Education

Education was an underlying objective of the Stroke Prevention Nurses meeting. Several formal educational presentations were offered by videoconference within the Stroke Prevention Nurses meeting including topics on anticoagulation and the management of hyperglycemia in the hospital patient.

Suggestions for Improvements

The nurses suggested the following improvements based on their experience with the pilot:

“Having the papers and PowerPoint presentations disseminated in advance of the meeting is important.”

“Setting the schedule for the meetings well in advance helps with room and equipment scheduling.”

SPC Nurses’ Accomplishments during the Pilot

The SPC nurses developed processes for sharing information during the meetings. Discussion focused on sharing of ideas and specific clinic educational strategies and tools (e.g., tools to monitor risk factors such as hypertension). The videoconferenced meetings enabled the nurses to:

- Discuss key challenges e.g., diagnostic testing delays, urgent neurosurgical consults, and triaging of patients, and develop strategies to address them.
- Develop a common stroke prevention brochure for use in all of the clinics in Southeastern Ontario.
- Participate in the planning and implementation of regional education events such as the *Hypertension: Ups and Downs Workshops*, a Stroke Nurse Champion workshop and Motivational Interviewing workshop.
- Develop an evidence-based clinic triage tool for clinic patients to bring forward to the Stroke Prevention Physicians' Group and the SEO Stroke Prevention Subcommittee for discussion.
- Share lessons learned across two LHINs within Eastern Ontario.

Conclusions from the Pilot

While the SPC nurses did build hands-on skills, telehealth activity did not progress to clinical consults during the timeframe of the pilot project. The QHC Stroke Prevention Clinic explored doing clinical consults with QHC North Hastings; however clinical consults were not feasible due to human resource issues at that time. In Napanee, the LACGH is planning clinical consults with Kingston General Hospital for expert echocardiogram interpretation to support their expedited stroke prevention clinic referral process. This project was in early development when the Telestroke Pilot Project concluded.

The SPC nurses committed to the process of meeting by videoconference beyond the pilot project. The Regional Stroke Advanced Practice Nurse assumed the role of Chair of the Working Group and the videoconferences were scheduled for the 2006-07 calendar year. More education was identified as an issue for the future. Some of the suggested topics included focusing on antiplatelet agents, motivational interviewing, smoking cessation and physical activity. The nurses also suggested the need for more discussion of the following best practice/clinical process issues:

- Triage
- How the nurses use their clinical time (and what the individual challenges are)
- Handling volumes and inappropriate referrals
- Virtual clinical rounds with case discussions and chart reviews
- Sharing what the individual clinics/nurses do in their practice and an overview of the processes of the clinics.
- Discussion of current links with family physicians and the Community Care Access Centres

Post Pilot

A key informant interview was held with the chair of the group early in January 2007 to discuss the experience post pilot and to understand the accomplishments and future directions for the group. The Chair was asked to reflect on her perceptions of the advantages, challenges, key accomplishments and future directions for the

videoconferences to support the Stroke Prevention Nurses Group. The following is a summary of her perceptions:

Advantages

- The videoconferencing promotes a team process and a group identity. The technology has enabled the group to come together on the video rather than in person. It has helped to promote team work and allows people who work alone to bring questions and issues to the table. *“It has helped to create a group without walls.”*
- New members have joined the Stroke Prevention Nurses’ group due to a change in Clinic Nurse in Perth and the recent hiring of the Clinic Nurse in Hawkesbury.

“The use of videoconferencing has been wonderful for the new people joining the stroke strategy. By having a pre-existing group the new member immediately has a cohort that meets on a monthly basis and can ask questions.”

- *“By continuing to build on the skill sets at the table the region benefits and it gives greater support and stability for the region as a whole.”*

Challenges

The spontaneity of conversation is lost because of the way the technology works. While this is sometimes a challenge it is also an advantage in that it forces the members to be mindful and requires that the chair look to the quiet members of the group to include them in the conversation. *“It is challenging to build but it is inclusive and facilitates the development of relationships and forces engagement.”*

The other challenge reported was the difficulty getting busy clinical people to attend the meetings and the new meeting schedule is now bimonthly. *“The group is only as good as the people who come to the table – there is value in attending so people come.”*

Accomplishments

The videoconferencing has allowed us to create opportunities for mentorship of members to be co-chairs.

The information and presentations that have come about through this process have helped to give value and identity to the role of the stroke prevention nurse. It has contributed to the strengthening of the voice from the nursing perspective as it relates to stroke prevention within the region through representation at the Stroke Prevention Physicians’ group and at a Provincial level.

“It was validating that at the Stroke Prevention Roundtable in Toronto [held in October 2006] the priority issues that were identified by our group were the priority issues

identified by the province – the group helps to give the region a voice – it is not just one person and it helps to strengthen the voice from the rural area.”

The educational initiatives within the meeting time have been continuing. The SPC Nurses have been able to connect with other members of the Regional Team, for example, the Regional Rehabilitation Coordinator attended a meeting to talk to the clinic nurses about strategies for assessing cognitive function in the clinics.

Other accomplishments for the group include numerous presentations and posters to share lessons learned at regional, provincial and national conferences. These are summarized in Table 2.

Table 2: Presentations and Posters

Conference	Location and Date
Oral Presentation, Ontario Association of Rehabilitation Nurses	Toronto, April 2006
Oral Presentation, InterUrban Stroke Conference	Ottawa, May 2006
Poster Presentation, SEO Nursing Research Day	Kingston, June 2006
Poster and oral presentation, Canadian Association of Neuroscience Nurses (CANN)	Montreal, June 2006
Poster Presentation, OHA Achieve International Best Practices	Toronto, November 2006
Paper, Nursing Research Journal,	Kingston, November 2006
Poster and oral presentation, Regional Stroke symposium	Kingston, December 2006

The oral presentation that was developed for the CANN conference has become an orientation for nurses in the stroke prevention clinic.

The Ontario Telemedicine Network profiled the work of the Stroke Prevention Nurses Group in an e Health Newsletter published by the Registered Nurses' Association of Ontario in November 2006.

“There has been no competition – it is a true collaboration.”

“It has really helped to put emphasis on prevention and the front end of the stroke continuum”.

Future Directions

- The nurses plan to do some research on the triage tool. Quinte Health Care is leading this initiative.
- One of the stroke prevention nurses attended the Ottawa Heart Institute's smoking cessation training program. She shared her learning and this has inspired others to learn. The nurses have investigated the option of expanding the training for the region and making smoking cessation a broader initiative. This is still being investigated.

- The Champlain region stroke prevention nurses will be forming their own stroke prevention nurses group beginning in early 2007. While they now have enough people to be able to support each other they valued and appreciated the opportunity to meet with the Southeast for a year.
- Clinical consults are still being considered as part of the future directions for telemedicine within the stroke program particularly within Quinte Health Care. To date, these consults are still in the early planning phases.
- The Lennox and Addington County General Hospital and Kingston General Hospital undertook technical planning for KGH to interpret LACGH's echocardiograms using telehealth. This would support the LACGH's expedited referral process to the Regional Stroke Prevention clinic. The technical test was successful and a protocol was drafted. Although this project had not moved forward it is technically possible and may be revisited in the future.

Conclusions

This article focused on the objective of the SEO Telestroke Pilot Project to build a sustainable and integrated telemedicine infrastructure to enhance expert timely stroke care across SEO for Stroke Prevention through expert consultation between community hospital stroke prevention clinics and the Regional Stroke Centre. To that end, the SEO Stroke Prevention Clinic nurses formed a working group which met monthly by videoconference to share challenges and issues related to achieving best practices in stroke prevention.

The process helped to reduce SPC nurses' professional isolation and provided a venue for them to share their challenges and issues openly. The discussions at these meetings contributed to consistent adoption and implementation of best practices in SEO and the Champlain region. It provided an opportunity to share and further knowledge through continuing education. The videoconference format reduced the costs of teleconference and in-person meetings and the format was described as the "*next best thing to meeting face-to-face*". One of the SPC nurses summarized her view of the meetings in the following quote:

"There is definite value in meeting. It became more and more important to be there at the table"

The Stroke Strategy of SEO achieved the goal of the Telestroke Pilot. It has built a sustainable and integrated telehealth infrastructure to enhance expert timely stroke care across SEO and access to expert consultation and education for the regional professionals across the continuum of stroke care. Knowledge transfer and uptake occurred throughout the project and through the many peer reviewed presentations and posters that were developed to share the lessons learned. It was clear from the SEO Pilot that there is tremendous value in the addition of telemedicine across the continuum of stroke care, and through the lessons learned in the pilot and post pilot period, this potential is beginning to be understood at a regional and provincial level.