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What's happening in Stroke Rehabilitation

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SCORE Announcement: Canadian Best Practices for Stroke Care fully Integrates SCORE recommendations in 2010 update

The Canadian Stroke Network SCORE project (Stroke Canada Optimization of Rehabilitation through Evidence)

recommendations for upper and lower limb have been the leading recommendations for stroke rehabilitation since they were first published in 2005 and revised in 2007. The SCORE recommendations have been partially included in previous releases of the Canadian Best Practice Recommendations for Stroke Care, however we are pleased to note that they have now been completely updated and integrated into the Canadian Best Practice Recommendations for 2010. This provides rehabilitation providers with a comprehensive set of guidelines that cover the continuum of care. The Canadian Best Practice Recommendations for Stroke Care strives to help people move through the stroke continuum, from symptom onset to diagnosis, treatment, management, and recovery and recognizes that proper rehabilitation after a stroke

is a critical aspect of this care.



Music as Stroke Therapy

The use of music in therapy for the brain has evolved rapidly as brain-imaging techniques have revealed the brain's plasticity—its ability to change—and have identified networks that music activates. Armed with this growing knowledge, doctors and researchers are employing music to retrain the injured brain. Studies have revealed that because music and motor control share circuits, music can improve movement in patients who have suffered a stroke or who have Parkinson's disease. Research has shown that neurologic music therapy can also help patients with language or cognitive difficulties, and researchers suggest that these techniques should become part of rehabilitative care. Future findings may well indicate that music should be included on the list of therapies for a host of other disorders as well.

Revolutionizing Stroke Rehab

Getting a jump start on his career, Dr. Sean Dukelow's HSF Investigatorship is allowing him to do the kinds of things that may at first glance appear to be the stuff of science fiction. Through his revolutionary work with robotics using the KINARM – a large robotic chair – Dr. Dukelow is developing far more advanced methods of assessing stroke, enabling better methods to treat stroke, and reduce its devastating impact. One of only a handful of specialists in the world currently working with robotics, Dr. Dukelow is amassing the resources and qualified personnel for a futuristic state-of-the-art robotics lab.

“We're playing with a time window – we need to take maximum advantage of the brain's ability to heal in the first few months post-stroke. Our innovative tool is allowing us to better monitor and understand the improvements in the patient receiving therapy. As a result, we're now beginning to uncover things we didn't even know were wrong with the brain.”



Canadian Stroke Network

Réseau canadien contre les accidents cérébrovasculaires

Helpful links within the Ontario Stroke System

Ontario Stroke Network
<http://www.ontariostroke.network.ca/>

Heart and Stroke Foundation of Ontario
www.heartandstroke.ca

Ontario Stroke System Regions

Central East Stroke Network
<http://cesnstroke.ca/>

Central South Regional Stroke Program
<http://www.hamiltonhealthsciences.ca/body.cfm?id=364>

Champlain Regional Stroke Program
<http://www.champlainstrokecentre.org/>

North and East GTA
http://sunnybrook.ca/content/?page=BSP_Stroke_home

Northeastern Stroke Network
<http://www.neostroketetwork.com/newportal/>

Northwestern Ontario Regional Stroke Network
<http://www.nwestroke.ca>

Southeast Toronto
<http://www.stmichaelshospital.com/>
 Stroke Network of Southeastern Ontario
<http://strokenetworkseo.ca/>

Southwestern Regional Stroke Strategy
<http://www.swostroke.ca/>

Toronto West Stroke Network
<http://www.tostroke.com/>



The Ontario Stroke Network Fewer Strokes, Better Outcomes

In 2000, Ontario implemented the Ontario Stroke System (OSS), a province-wide strategy of coordinated stroke care, with the goal of providing high quality stroke care across the continuum of care – from primary prevention to pre-hospital/emergency care, hospital-based acute care, rehabilitation, secondary prevention and community reengagement.

This province-wide system of coordinated stroke care was pilot tested by the Heart and Stroke Foundation of Ontario in 1998 in conjunction with four regions in Ontario. The OSS was funded and supported by the Ontario

Ministry of Health and Long Term Care in 2000 following the successful pilot. The OSS was fully implemented in 2005.

The Ontario Stroke Network (OSN) was incorporated in 2008 to provide provincial leadership and coordination for the Ontario Stroke System (OSS). The OSN recommends, implements and evaluates province-wide goals and standards for the continuum of stroke care, including health promotion and stroke prevention, acute care, recovery and reintegration processes. It also supports the evaluation of and reports on the progress of the

OSS, administers the OSS research program and leads provincial projects and initiatives.

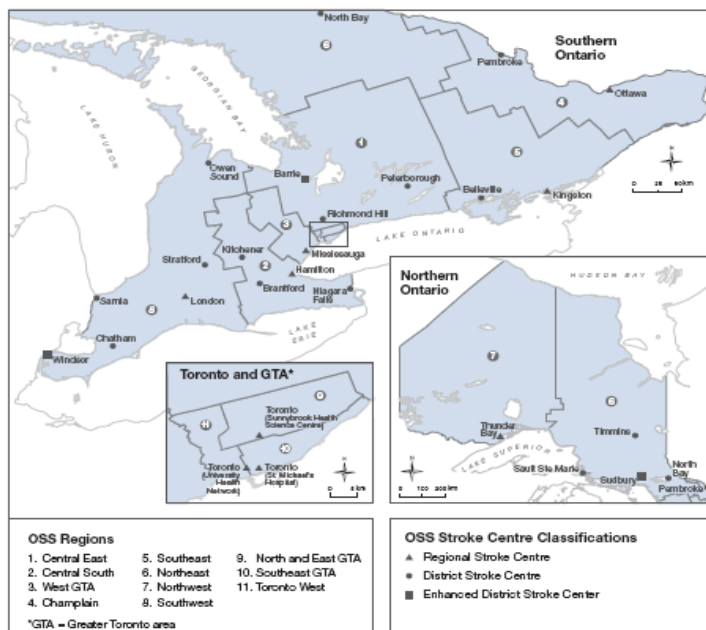
The OSN and OSS share a common vision: *Fewer Strokes Better Outcomes*. Since the inception of the OSS in 2000, significant improvements have occurred in stroke prevention, diagnosis and treatment across the continuum of care (see the article on the 2008/08 Ontario Stroke Audit). There have been positive impacts on access to stroke related services, the integration and coordination of stroke care, treatment for stroke and client and provider satisfaction.

The OSS includes 11 regions, 10 Regional Stroke Centres, 1 Enhanced Stroke Centre, 17 District Stroke Centres, 23 Secondary Prevention Clinics, community hospitals and many regional partners. The map on the left shows the OSS regions.

The sidebar on the left has links to the OSN, the Heart and Stroke Foundation of Ontario and the 11 stroke regions in Ontario.

- submitted by Cindy Bolton, Linda Kelloway and Elaine Edwards

Ontario Stroke System (OSS) Regions and Stroke Centre Classifications



Registry of the Canadian Stroke Network (RCSN) – Report on the 2008/09 Ontario Stroke Audit.

The findings from a new stroke audit conducted by the Institute for Clinical Evaluative Sciences (ICES) and the Canadian Stroke network (CSN) were released in April 2011. This audit looked at provincial trends in stroke care between 2002 and 2009. It found that there have been marked improvements since the Ontario Stroke System was initiated by the MOHLTC a decade ago.

“Since the initial investment by the provincial government in 2000 to develop an integrated stroke system, there have been significant improvements in almost all aspects of stroke care delivery. In particular, rates of use of thrombolysis (clot busting therapy) for acute stroke match or exceed those in most jurisdictions worldwide,” says principal investigator and ICES Scientist Dr. Moira Kapral.



*Dr.
Moira
Kapral
(lead
investi-
gator)*

The study of close to 4000 stroke patients arriving at Ontario's acute hospitals in 2008/09 found:

- Thrombolysis was administered to 27 per cent of patients presenting within 2.5 hours of stroke onset, a significant increase compared to 9.5 per cent in 2002/03.
- Thrombolysis rates were 42 per cent at regional stroke centres – rates that match or exceed those seen in most jurisdictions worldwide.
- Neuroimaging is required to confirm a diagnosis. In 2008/09, 93 per cent of patients received neuroimaging during hospitalization – a marked improvement from 82 per cent in 2004/05 and 77 per cent in 2002/03.
- 24 per cent of patients with stroke or TIA were admitted to a stroke unit – a significant increase compared to 3 per cent in 2002/03 but still below the recommended standards.
- Rates of discharge to inpatient rehabilitation were higher in 2008/09 compared to 2004/05 but similar to 2002/03, but remain lower than projected.

(More detailed study findings are available on the ICES website: www.ices.on.ca)

“These excellent results may be attributed to Ontario's organized system of stroke care. However, there is more work to be done. The results vary across Ontario's Local Health Integration networks and there is still a gap between the number of stroke patients who need stroke unit care and stroke rehabilitation and those who receive it. The good news is that the Ontario Stroke Network, with a focus on continuous improvement and knowledge translation, is well positioned to address these gaps,” says Chris O'Callaghan, Executive Director, Ontario Stroke Network.



*Chris
O'Callaghan,
OSN
Executive
Director*

Citation: Kapral MK, Hall R, Stamplecoski M, Meyer S., Asllani E, Fang J, Richards J, O'Callaghan C, Silver, FL. *Registry of the Canadian Stroke Network (RCSN) – Report on the 2008/09 Ontario Stroke Audit.* Toronto: Institute for Clinical Evaluative Sciences; 2011.

SAVE THE DATE!

October 17th, 2011

2011 Stroke Collaborative at the Metro Toronto Convention Centre

Some Ontario Facts:

- Ontario's population is more than 13 million
- It is home to about one in three Canadians
- More than 85 per cent live in urban centres, largely in cities on the shores of the Great Lakes
- Ontario is Canada's second largest province, covering more than one million square kilometres - an area larger than France and Spain combined.
- English is the official language, however there are entire communities where French is the primary language
- ~240,000 of Ontario's people identified themselves as Aboriginal (North American Indian, Métis or Inuit) in the 2006 Census.

Did you know that the OSS began with a Pilot Study?

In 1998, four geographic areas served as demonstration sites within the three-year pilot project "The Coordinated Stroke Strategy," which was championed by the Heart and Stroke Foundation of Ontario: London Health Sciences Centre (South West), Hamilton Health Sciences Corporation (Central West), Queen's University Care Delivery Network (South East) and the West GTA. These pilot sites are now regional networks within the OSS.

The Ontario Stroke Evaluation Program (source: www.ontariostrokenetwork.ca)

There is growing national/international interest in evaluating quality of stroke care. A number of quality indicators have been selected but challenges exist in confirmation of feasible indicators, establishment of benchmarks, and merging performance indicator data with administrative data to enhance evaluation. The Ontario Stroke Evaluation Program has been successful in addressing many of these challenges.

The Primary Purpose of the Ontario Stroke Evaluation Program is to monitor and evaluate the impact of the Ontario Stroke System (OSS) in improving the delivery of optimal stroke care (e.g., adoption of Canadian Stroke System (CSS) best practice recommendations) through the identification and assessment of specific performance metrics. This also includes assessment of specific performance metrics to be considered in the Hospital Services Accountability Agreements (HSAAs) with designated stroke centres on behalf of districts and regions. The parameters of the evaluation program are based on the following underlying principles of the OSS:

Improve stroke services across the continuum of care from prevention to care in a long-term care or community setting.

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Hamilton Health Sciences



Hamilton's role as one of the world's leading centres in cardiac, vascular and stroke research was amplified on March 11, 2010, with the grand opening of the David Braley Cardiac, Vascular and Stroke Research Institute at the Hamilton General Hospital site.

The Research Institute is a six-storey building comprised of 200,000 square feet of research space, laboratories, meeting rooms, offices and breakout spaces. It also houses Canada's largest biobank, which stores more than 1.8 million tissue and genetic research samples from approximately 250,000 participants globally.

The Research Institute brings together two world-renowned research teams - the Population Health Research Institute (PHRI) led by Executive Director Dr. Salim Yusuf, and the Thrombosis and Atherosclerosis Research Institute (TaARI) led by Director Dr. Jeffrey Weitz. Working side-by-side for the first time, these two teams will be able to share ideas and knowledge that will improve the health of millions of people around the world.

PHRI and TaARI have international reputations for innovation and excellence. PHRI conducts clinical trials in 83 countries, focusing on cardiovascular disease, diabetes, obesity and the societal influences on health such as ethnicity and geography. TaARI (formerly the Henderson Research Centre) made history almost 30 years ago with the world's first clinical trial demonstrating the effectiveness of using aspirin to prevent stroke. Since then, TaARI has become an international leader in research on vascular disease, specifically blood clots.

Implementation of an Integrated Model of Stroke Recovery

Prepared By Louise MacRae, Charmaine Martin, Rhonda Whiteman

Stroke Unit care has been recognized as a leading best practice initiative. Care on a stroke unit has been shown to increase the odds of individuals being alive, independent and living at home one year post stroke. The critical components of Stroke Unit care are a specialized geographically defined unit dedicated to the management of stroke patients staffed by an interprofessional team (nursing, medicine and allied health professionals) with expertise in stroke care¹. Stroke unit care at Hamilton Health Sciences (HHS) underwent a significant shift in January of 2011 when the concept of acute, rehabilitation and community care was completely redesigned. The new model provides a comprehensive system of stroke care ensuring that the patient receives the right care at the right time in the right place to meet his or her individual needs. This model provides a cross continuum approach to best practice stroke care for the stroke patient population at Hamilton Health Sciences. Furthermore, the model leverages the strength of its teams by locating them together as much as possible so that patients have easy access to the expertise and services they require.

Until 2009, stroke care was provided at 4 of the 6 HHS sites. Acute care was provided at 3 sites and rehabilitation care was provided at 1 acute care site and 1 stand alone rehabilitation site. As of April 2011, all stroke patients are admitted to a 24 bed stroke unit at one acute care site to begin their stroke recovery and then are transferred either to a 28 bed specialized stroke rehabilitation unit or 10 bed restorative care unit. This change aligns with the Canadian Best Practice Recommendations for Stroke

Care (Update 2010) that identified that stroke patients should receive care on acute and rehabilitation stroke units. This Integrated System of Stroke Care is unique and ensures that all patients will be assessed and triaged into the stroke recovery band of care that will optimize their recovery. This model provides an opportunity to further enhance the clustering of stroke resources, providing a more comprehensive approach to stroke care. The model involves all health care team members completing a comprehensive assessment of the stroke patient utilizing standardized assessment tools to determine the patient's stroke recovery needs. Based on this assessment, the patient moves seamlessly to the next level of care to begin their ongoing recovery. The Stroke Care Navigator works with the teams, ensuring early discharge planning and care coordination throughout the continuum of care to allow seamless patient flow within the system. All disciplines work to enable community transitions and community re-integration. Nursing plays a significant role in supporting patient adjustment along the continuum.

This new and innovative model crosses the boundaries of acute, rehabilitative and complex continuing care, breaking down the silo approach to stroke care. The inpatient care teams, nurses included, have been reconfigured from the 3 previously separate teams to create 1 large expert interdisciplinary stroke team who facilitate patient transfers through all phases of care to minimize patient 'handoffs' and maintain continuity of care for patients and families. The model has been developed to ensure that some disciplines follow patients along the


continuum of care and others rotated between the units to ensure the consistency in practice and a focus on stroke recovery, not silos of stroke care. The system builds upon the assessments completed in one area to inform the treatment planning in the next level of care. Furthermore, the philosophy within the model is that stroke recovery is a process, not a place. This has resulted in the implementation of rehabilitation approaches on the acute stroke unit with the nursing team promoting independence and enabling patient and family members to be partners in care. This model enables patients to transition from a focus on illness to recovery earlier in the continuum. The nursing skill mix on the specialized rehabilitation unit was changed to support the increased acuity of the patients. Furthermore, stroke best practice education across the continuum has been a focus for all clinical areas to support the management of the changing needs of the patients as they transition to the next level of care.


1. Lindsay, M.P., Gubitz, G., Bayley, M., Hill, M.D., Davies-Schinkel, C., Singh, S., Phillips, S. *Canadian Best Practice Recommendations for Stroke Care (Update 2010)*. On behalf of the Canadian Stroke Strategy Best Practices and Standards Writing Group. 2010; Ottawa, Ottawa Canada: Canadian Stroke Network.




Provincial Updates

provided by the members of the NSNC


 The Board of Alberta Health Services has appointed Dr. Chris Eagle as President and CEO. Dr. Eagle will serve a five-year term, effective April 1, 2011. Discussions continue around a province-wide Clinical Network for Neuro/Stroke.

 Dr. Dale Corbett, CEO and Scientific Director of the Heart and Stroke Foundation Centre for Stroke Recovery in Ontario visited the University of Saskatchewan in April to explore opportunities for expanding the scope of stroke research in Saskatchewan. The Heart and Stroke Foundation of Saskatchewan and the Office of the VP, Research, U of S hosted an evening with Dr. Corbett which was attended by health region administrators, researchers and HSFS. While Dr. Corbett's presentation focused primarily on stroke research, the discussion covered the need to transform stroke prevention and treatment in Saskatchewan as well.


The Sunrise regional stroke pilot has entered its final year with a major focus on implementation of the stroke prevention clinic. The clinic, situated in the regional hospital, is supported via Telehealth by a team of neurologists based in Regina. An interim pilot evaluation in February, 2011 provided a very favourable review of the first year of operation of the new stroke in-patient/out-patient rehabilitation program. Following completion of the final pilot evaluation in February 2012, the Heart and Stroke Foundation will present the Minister of Health with a proposal for the implementation of a province-wide stroke strategy in Saskatchewan.

 The MOHLTC Emergency Health Services (EHS) Branch signaled the implementation of the Provincial Paramedic Prompt Card by issuing a Training Bulletin in February 2011. This prompt card is based on revisions to the thrombolysis protocol that incorporates the expansion of the thrombolysis time window of 4.5 hours.

The OSN is liaising with MOH EHS leads on communication, education and dissemination of the paramedic prompt card. A research project entitled "Evaluation of the Implementation of the Revised Acute Stroke Medical Redirect Paramedic Protocol in Urban and Rural Settings in Eastern Ontario" is in progress.

 Organized stroke care continues to be a strategic initiative for Health PEI. In the April budget address, government approved funding to move forward with phase two. Phase two will see the implementation of Provincial Ambulatory Stroke Rehabilitation Services and two District Ambulatory Stroke Rehabilitation Teams at the Queen Elizabeth Hospital in Charlottetown and the Prince County Hospital in Summerside. During phase two we will also be planning for the expansion of Secondary Stroke Prevention Services provincially.

Phase one saw the implementation of a Provincial Acute Stroke Unit and a Provincial Stroke Rehabilitation Unit. Early results show a positive trend towards decreasing acute inpatient length of stay. Contributing factors include: access to enhanced stroke team care and decreased wait time to access inpatient stroke rehabilitation. Patients report satisfaction with stroke care, example quote: "We were more than pleased with the care given by all the staff especially in the stroke unit. ER was also very efficient and caring. Thanks from a jealous US citizen."

 The dedicated stroke unit at the St. Clare's site in St. John's has been opened since January 2011. The bed count for this unit changes on a daily basis according to the number of stroke clients admitted. The St. Clare's stroke team continues to offer care and expertise as implicated from the 2010 Canadian Stroke National Guidelines. The ongoing assessment of this unit, with emphasis on its success and rewards, has been evaluated by the stroke steering committee. This committee is based out of the St. Clare's site, and consists of members from the entire stroke team. Educational opportunities for those involved in the unit, and others who maybe interested, are available through lunch and learn sessions supported by a Lighthouse Grant that the stroke steering committee has been awarded. This grant will also allow the purchasing of stroke related equipment and other educational materials benefitting clients with a stroke.

The stroke nursing education program will operate again in Fall of 2011 with much anticipation and support. This undertaking will not only involve nursing groups from the immediate area but will be open to the entire province for the first time, with teleconferencing and webinar used to assist this initiative. Its aim is to discuss stroke and related complications while giving aspects that the client may experience in the different continuums of care. The interest from nurses has helped push this program forward into another year. The stroke coordinator for the Eastern region has helped in continuing this program.

On-going Clinic Trial:

Study protocol of the YOU CALL - WE CALL TRIAL: impact of a multimodal support intervention after a "mild" stroke

Annie Rochette, Nicol Korner-Bitensky, Duane Bishop, Robert Teasell, Carole White, Gina Bravo, Robert Côté, Jean Lachaine, Teri Green, Louise-Hélène Lebrun, Sylvain Lanthier, Moira Kapral, Sharon Wood-Dauphinee

Abstract

Background: More than 60% of new strokes each year are "mild" in severity and this proportion is expected to rise in the years to come. Within our current health care system those with "mild" stroke are typically discharged home within days, without further referral to health or rehabilitation services other than advice to see their family physician. Those with mild stroke often have limited access to support from health professionals with stroke-specific knowledge who would typically provide critical information on topics such as secondary stroke prevention, community reintegration, medication counseling and problem solving with regard to specific concerns that arise. Isolation and lack of knowledge may lead to a worsening of health problems including stroke recurrence and unnecessary and costly health care utilization.

The purpose of this study is to assess the effectiveness, for individuals who experience a first "mild" stroke, of a sustainable, low cost, multimodal support intervention (comprising information, education and telephone support) - "WE CALL" compared to a passive intervention (providing the name and phone number of a resource person available if they feel the need to) - "YOU CALL", on two primary outcomes: unplanned-use of health services for negative events and quality of life.

Method/Design: We will recruit 384 adults who meet inclusion criteria for a first mild stroke across six Canadian sites. Baseline measures will be taken within the first month after stroke onset. Participants will be stratified according to comorbidity level and randomized to one of two groups: YOU CALL or WE CALL. Both interventions will be offered over a six months period. Primary outcomes include unplanned use of health services for negative event (frequency calendar) and quality of life (EQ-5D and Quality of Life Index). Secondary outcomes include participation level (LIFE-H), depression (Beck Depression Inventory II) and use of health services for health promotion or prevention (frequency calendar). Blind assessors will gather data at mid-intervention, end of intervention and one year follow up.

Discussion: If effective, this multimodal intervention could be delivered in both urban and rural environments. For example, existing infrastructure such as regional stroke centers and existing secondary stroke prevention clinics, make this intervention, if effective, deliverable and sustainable.

Music therapy provided by trained music therapists may help to improve movement in stroke patients, according to a new Cochrane Systematic Review. A few small trials also suggest a wider role for music in recovery from brain injury.



Rhythm for Rehabilitation: Music Therapy as a Part of the Stroke Rehabilitation Team

Music therapy is an evidence-based practice and is largely dependent on research. The research results have been shown to affect areas in motor skills, communication skills, cognitive skills, and socio-emotional skills.

Music therapists can co-treat with other professionals, using music therapy in conjunction with physical, occupational, and speech therapists to maximize treatment. In the interdisciplinary model, music therapists work on a team with other professionals, typically including the patient and family, to create a treatment plan for the patient. Music therapists also work in a trans-disciplinary model, seeing patients separate from other professionals, but consulting with other professionals on treatment techniques so the patient can continue progress in other modalities.

Music can be used to treat stroke cognition. Music can be used as a mnemonic device to orient stroke survivors to their surroundings or help them recall a sequence of events. Rhythm is the main ingredient for music therapy techniques in treating motor deficits. In working on motor control, music therapists use instruments as a target for reaching and weight-bearing exercises. Music can be especially helpful in gait-training exercises. Speech has a natural rhythm and certain phrases carry a natural intonation and melody, thus music can enhance therapy for speech recovery.

Listening to music with which the patient identifies, songs written by the patient, and creating music through improvisation allow the patient to express and address emotional needs and music is a natural social outlet, helping people to identify with each other while at the same time expressing their individuality.

Chrissy Watson, MT-BC, The Carolina Center for Music Therapy, LLC

Millions of people suffer strokes each year. Many patients acquire brain injuries that affect their movement and language abilities, resulting in significant loss of quality of life. Music therapists are trained in techniques that stimulate brain functions and aim to improve outcomes for patients. One common technique is rhythmic auditory stimulation (RAS), which relies on the connections between rhythm and movement. Music of a particular tempo is used to stimulate movement in the patient.

Seven small studies, which together involved 184 people, were included in the review. Four focused specifically on stroke patients, with three of these using RAS as the treatment technique. RAS therapy improved walking speed by an average of 14 meters per minute compared to standard movement therapy, and helped patients take longer steps. In one trial, RAS also improved arm movements, as measured by elbow extension angle.

"This review shows encouraging results for the effects of music therapy in stroke patients," said lead researcher Joke Bradt of the Arts and Quality of Life Research Center at Temple University in Philadelphia, US. "As most of the studies we looked at used rhythm-based methods, we suggest that rhythm may be a primary factor in music therapy approaches to treating stroke."

Other music therapy techniques, including listening to live and recorded music, were employed to try to improve speech, behavior and pain in patients with brain injuries, and although outcomes in some cases were positive, evidence was limited. "Several trials that we identified had less than 20 participants," said Bradt. "It is expected that larger sample sizes will be used in future studies to enable sound recommendations for clinical practice."

Used with permission. July 7, 2010, <http://www.sciencedaily.com/releases/2010/07/100706081547.htm>

Stroke Rehabilitation through Music

How Music Helps to Heal the Injured Brain

The role of music in therapy has gone through some dramatic shifts in the past 15 years, driven by new insights from research into music and brain function. These shifts have not been reflected in public awareness, though, or even among some professionals.

Biomedical researchers have found that music is a highly structured auditory language involving complex perception, cognition, and motor control in the brain, and thus it can effectively be used to retrain and reeducate the injured brain. Therapists and physicians use music now in rehabilitation in ways that are not only backed up by clinical research findings but also supported by an understanding of some of the mechanisms of music and brain function. Neurologic music therapy does meet the standards of evidence-based medicine, and it should be included in standard rehabilitation care.

During the past two decades, new brain imaging and electrical recording techniques have combined to reshape our view of music in therapy and education. These techniques (functional magnetic resonance imaging, positron-emission tomography, electroencephalography, and magnetoencephalography) allowed us to watch the living human brain while people were performing complex cognitive and motor tasks. Now it was possible to conduct brain studies of perception and cognition in the arts.

After years of research, two findings stand out as particularly important for using music in rehabilitation. First, the brain areas activated by music are not unique to music; the networks that process music also process other functions. The brain areas involved in music are also active in processing language, auditory perception, attention, memory, executive control, and motor control. Second, music learning changes the brain. A key example of this second finding, that music learning changes the brain, is research clearly showing that through such learning, auditory and motor areas in the brain grow larger and interact more efficiently.

Read the full article online at <http://dana.org/news/cerebrum/detail.aspx?id=26122>

Music enhances cognitive recovery and mood after middle cerebral artery stroke

We know from animal studies that a stimulating and enriched environment can enhance recovery after stroke, but little is known about the effects of an enriched sound environment on recovery from neural damage in humans.

In humans, music listening activates a wide-spread bilateral network of brain regions related to attention, semantic processing, memory, motor functions, and emotional processing. Music exposure also enhances emotional and cognitive functioning in healthy subjects and in various clinical patient groups. The potential role of music in neurological rehabilitation, however, has not been systematically investigated. This single-blind, randomized, and controlled trial was designed to determine whether everyday music listening can facilitate the recovery of cognitive functions and mood after stroke.

In the acute recovery phase, 60 patients with a left or right hemisphere middle cerebral artery (MCA) stroke were randomly assigned to a music group, a language group, or a control group. During the following two months, the music and language groups listened daily to self-selected music or audio books, respectively, while the control group received no listening material. In addition, all patients received standard medical care and rehabilitation. All patients underwent an extensive neuropsychological assessment, which included a wide range of cognitive tests as well as mood and quality of life questionnaires, one week (baseline), 3 months, and 6 months after the stroke. Fifty-four patients completed the study. Results showed that recovery in the domains of verbal memory and focused attention improved significantly more in the music group than in the language and control groups. The music group also experienced less depressed and confused mood than the control group. These findings demonstrate for the first time that music listening during the early post-stroke stage can enhance cognitive recovery and prevent negative mood. The neural mechanisms potentially underlying these effects are discussed in this study published in *Brain* (2008), 131, 866-876.

Cognitive Brain Research Unit, Department of Psychology, University of Helsinki, and Helsinki Brain Research Centre, Helsinki, Department of Music, University of Jyväskylä, Jyväskylä, Department of Neurology and Department of Radiology, Helsinki University Central Hospital, Helsinki, Department of Psychology, —bo Akademi University, Turku, Finland and Department of Psychology, University of Montreal, Montreal, Canada

Working with Robots for Optimal Stroke Rehabilitation

Nearly all individuals who survive a stroke are left with physical and cognitive disabilities ranging from mild to severe. But based on the idea that the brain can heal itself, stroke survivors can regain some of their physical and cognitive skills through a wide range of therapeutic treatments.

“Patients will undergo physiotherapy, speech therapy and occupational therapy, for instance, with each therapist working on a particular set of skills,” explains Dr. Sean Dukelow, a clinical scientist at the Foothills Medical Centre in Calgary and holder of grant funding from the Canadian Institutes of Health Research and the Heart and Stroke Foundation of Alberta, NWT and Nunavut Investigatorship in Stroke Rehabilitation Research.

“Often, our challenge is measuring patients’ exact deficits and how well they respond to the treatment we deliver, since current assessment tools are often subjective and therefore not completely reliable,” says Dr. Dukelow. “That’s why I’ve been developing a robotic model that will not only help in accurately measuring the patient’s improvements over time, but also help in delivering therapy.”

Dr. Dukelow is referring to the KINARM, (Kinesiographical Instrument for Normal and Altered Reaching Movements), which is a large robotic chair that allows stroke patients to comfortably sit in a supportive environment with both of their arms resting in flexible arm braces that are parallel to the ground. The KINARM is linked to a computer that runs a variety of tests and concurrently stores the data collected from the patient’s outcome.

“The KINARM is set up to test where patients are at before treatment and then measure their progress while they do a variety of assessments of vision, arm movement and sensation,” says Dr. Dukelow. “Like standard tests, we are measuring strength, reflex responses and vision.” During testing, the chair is strategically placed at a computerized glass table so that the arms are floating below the computerized platform.

One of the tests that stroke patients will undergo, for instance, is to move their arm and point their index finger at a red dot when it has stopped moving; a few seconds later, it reappears in a different spot. The robot measures each trajectory taken by the patient’s arm (direct, zigzagging or missing it all together), as well as the response time.

Following a stroke, patients’ disabilities are most often on one side only, affecting coordination, reflex, and strength of the left arm and leg, or right arm and leg. Vision on the affected side can also be impaired through reduced peripheral vision, or blind spots.

“Patients are often delighted to feel and see their affected arm moving, especially the first time after their stroke,” says Dr. Dukelow. “The KINARM provides the opportunity for patients to receive novel repetitive therapy to improve affected arm and vision.”



A robot at the University of Calgary helps researchers study the effects that strokes have on patients’ motor skills. (CBC)

Given that the brain is most open to relearning skills within the first three months following a stroke, it’s important that stroke patients have access to a wide range of quality therapy.



Researchers in Calgary are studying the effects that strokes have on patients’ sensory and motor skills. (CBC)

With the support of the Heart and Stroke Foundation and Canadian Institutes of Health Research, Dr. Dukelow will be enrolling stroke patients at the Foothills Medical Centre to help improve patient outcome and post-stroke treatment. He says, “robotics not only bring precision to the process of measuring problems following stroke, but also provide unique and exciting methods of therapy delivery.”

Reprinted with permission: Heart and Stroke Foundation of Alberta, NWT and Nunavut, 2011

Go to: www.bkintechologies.com for more information about the KINARM

Go to: <http://www.ncbi.nlm.nih.gov/pubmed?term=Dukelow%20SP%5BAuthor%5D&cmd=DetailsSearch> for more information on Dr. Dukelow’s areas of research interest or contact Dr. Dukelow at sean.dukelow@albertahealthservices.ca

The Canadian Journal of Neuroscience Nursing/Le journal canadien des infirmiers et infirmières en sciences neurologiques

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Detecting cognitive impairment in clients with mild stroke or transient ischemic attack attending a stroke prevention clinic

By Gail MacKenzie, RN, MScN, Linda Gould, RPN, Sandra Ireland, RN, PhD, Kathryn LeBlanc, BSc, MSc, and Demetrios Sahlas, MSc, MD, FRCP(C)

Abstract: Twenty clients diagnosed with probable transient ischemic attack (TIA) or stroke attending a stroke prevention clinic (SPC) were screened for cognitive function, as one inclusion criteria for a pilot study examining medication adherence and hypertension management. The Mini Mental State Examination (MMSE) was administered at study admission followed by a second screening within two weeks using the Montreal Cognitive Assessment (MoCA) tool. Individual scores for the MMSE and MoCA were compared. Results demonstrated that the majority (90%) of participants scored in the normal range (≥ 26) on the MMSE ($M = 27.9$ SD 2.15). However, more than half (55%) of participants had some degree of cognitive impairment based on MoCA scores of < 26 ($M = 23.65$ SD = 4.082). MoCA scores demonstrated a wider range (Range = 16) compared to the range of MMSE scores (Range = 8). MoCA scores were significantly ($p < 0.05$) lower than the MMSE scores. Findings from this pilot study suggest that the MoCA test will identify more deficits in cognition among SPC clients diagnosed with cerebrovascular disease. Further investigation is underway to determine the implications of these deficits on SPC clients' abilities to follow medication and other treatment regimens.

Best Practice Guidelines - Recommendations 5.4: SCORE Recommendations for upper limb management following stroke

Best Practice Recommendation 5.4.1 Management of the Arm and Hand

Therapeutic Goal: Improved arm and hand skill for independence

- i. Exercise and functional training should be directed towards enhancing motor control for restoring sensorimotor and functional abilities. [Evidence Levels: Early – Level A; Late – Level A].
- ii. Engage in repetitive and intense use of novel tasks that challenge the patient to acquire necessary motor skills to use the involved limb during functional tasks and activities [Evidence Levels: Early – Level A; Late – Level A].
- iii. The Upper extremity program should include strength training to improve impairment and function after stroke for upper extremity. Spasticity is not a contraindication to strength training³⁷⁴ [Evidence Levels: Early - Level A; Late - Level A].
- iv. Therapists should provide a graded repetitive arm supplementary program for patients to increase activity on ward and at home. This program should include strengthening of the arm and hand (small wrist weight, putty, hand gripper), range of motion (stretching, active exercises), and gross, fine motor skills (e.g., blocks, Lego, pegs), repetitive goal and task-oriented activities designed to simulate partial or whole skill required in activities of daily living (e.g. folding, buttoning, pouring, and lifting). The GRASP protocol suggests one hour per day, six days per week³⁷⁵ [Evidence

Levels: Early-Level A; Late-Level C].

v. Following appropriate cognitive and physical assessment, mental imagery should be used to enhance sensory-motor recovery in the upper limb [Evidence Levels: Early-Level A; Late- Level B].

vi. Functional Electrical Stimulation (FES) should be used for the wrist and forearm to reduce motor impairment and improve functional motor recovery [Evidence Levels: Early-Level A; Late-Level A].

vii. Intensive Constraint Induced Movement Therapy (CIMT) should not be used for individuals in the first month post stroke until further research is completed [Evidence Levels: Early-Level A; Late-N/A].

viii. Consider the use of intensive CIMT for a select group of patients who demonstrate at least 20 degrees of wrist extension and 10 degrees of finger extension, with minimal sensory or cognitive deficits. Intensive training should involve restraint of the unaffected arm for at least 90 percent of waking hours, and at least six hours a day of intense upper extremity training of the affected arm for two weeks [Evidence Level: Between 3 and 6 months-Level A; Late- Level A].

ix. Consider the use of modified CIMT for a select group of patients who demonstrate at least 20 degrees of wrist extension and 10 degrees of finger extension, with minimal sensory or cognitive deficits. Modified CIMT consists of constraint of the unaffected arm with a padded mitt or arm sling for a minimum of six hours a day with two hours of therapy for fourteen days [Evidence Levels: Early- Level A; Late- Level A].

x. EMG biofeedback systems should not be used on a routine basis. (adapted from RCP) [Evidence Levels: Early- Level A; Late- Level A].

xi. For patients whose arm and

hand are predicted to be less than stage three as measured by the Chedoke-McMaster Stroke Assessment,³⁷⁶ enhance sensory-motor recovery of the upper limb by using sensory motor stimulation [Evidence Levels: Early- Level B; Late- Level B]. This consists of passive and active-assisted range of movement that also includes placement of the upper limb in a variety of positions within the patient's visual field (Adapted from HSFH 1.2a) [Evidence Levels: Early-Level C; Late Level C].

xii. There is insufficient evidence to recommend for or against neuro-developmental treatment in comparison to other treatment approaches for motor retraining following an acute stroke [Evidence Levels: Early-Level B; Late Level B].

xiii. Use adaptive devices for safety and function if other methods of performing specific tasks are not available or cannot be learned [Evidence Levels: Early- Level C; Late Level C].

xiv. Assess the need for special equipment on an individual basis. Once provided, equipment should be re-evaluated on a regular basis. [Evidence Levels: Early-Level C; Late-Level C].

Rationale:

Stroke frequently affects the function of the arm and a large number of stroke survivors with arm weakness at stroke onset do not regain normal function.

Bilateral arm function is critical for almost every daily activity. A number of techniques have been developed for those individuals who have some minimal arm movement.

The rehabilitation techniques that can be used are expanding and speak to the need for increased access to therapy time to carry out these techniques.

Best Practice Recommendation**5.4.2 SCORE****Range of Motion and Spasticity in the Shoulder, Arm and Hand**

Therapeutic Goal: *Maintain Range of Motion and Reduce Spasticity in the Shoulder, Arm and Hand*

- i. Spasticity and contractures should be treated or prevented by antispastic pattern positioning, range-of-motion exercises, stretching and/or splinting [Evidence Levels: Early- Level C; Late-Level C].
- ii. For patients with focal and/or symptomatically distressing spasticity, consider use of chemodenervation using Botulinum toxin to increase range of motion and decrease pain [Evidence Levels: Early-Level C; Late-Level A].
- iii. Consider use of tizanidine for spasticity in patients with generalized, disabling spasticity resulting in poor skin hygiene, poor positioning, increased caregiver burden or decreased function [Evidence Levels: Early-Level C; Late-Level B].
- iv. Recommend against prescription of benzodiazepines during stroke recovery period due to possible deleterious effects on recovery, in addition to deleterious sedation side effects [Evidence Levels: Early-Level B; Late-Level B].

Rationale:

Spasticity is an important problem after stroke that results increased tone or resistance to movement in muscles after stroke. If spasticity is not managed appropriately there may be loss of range of motion at involved joints of the arms called contractures. These contractures may interfere with functional use of the limbs.

Best Practice Recommendation**5.4.3 SCORE Management of Shoulder Pain following Stroke**

Therapeutic Goal: *Maintain Pain Free Shoulder and Arm*

5.4.3.1 Assessment and Prevention of Shoulder Pain

- i. The presence of pain and any exacerbating factors should be identified early and treated appropriately [Evidence Level C].
- ii. Joint protection strategies include:
 - a. Positioning and supporting the limb to minimize pain [Evidence Level B].
 - b. Protection and support for the limb to

- minimize pain during functional mobility tasks using slings, pocket, or by therapist and during wheelchair use by using hemi tray or arm troughs) [Evidence Level C].
- c. Teaching patient to respect the pain. [Evidence Level C].
- iii. Overhead pulleys should not be used [Evidence Level A].
- iv. The shoulder should not be passively moved beyond 90 degrees of flexion and abduction unless the scapula is upwardly rotated and the humerus is laterally rotated [Evidence Level A].
- v. Educate staff and caregivers about correct handling of the hemiplegic arm [Evidence Level A].

5.4.3.2 Management of Shoulder Pain

- i. Treat Shoulder pain and limitations in range of motion through gentle stretching and mobilization techniques focusing especially on external rotation and abduction [Evidence Level B].
- ii. Reduce hand edema by:
 - a. Active self-range of motion exercises in conjunction with elevation [Evidence Level C] to gain full range of movement of the fingers, thumb and wrist.
 - b. Retrograde massage [Evidence Level C].
 - c. Gentle grade 1-2 mobilizations for accessory movements of the hand and fingers [Evidence Level C].
 - d. Cold water immersion (Level B) or contrast baths [Evidence Level C].
- iii. Consider using FES to increase pain free range of motion of lateral rotation of the shoulder [Evidence Level A].
- iv. Consider use of acetaminophen or other analgesics for pain relief [Evidence Level C].
- v. Consider the use of botulinum toxin injections into subscapularis and pectoralis muscles for individual with hemiplegic shoulder pain [Evidence Level C].

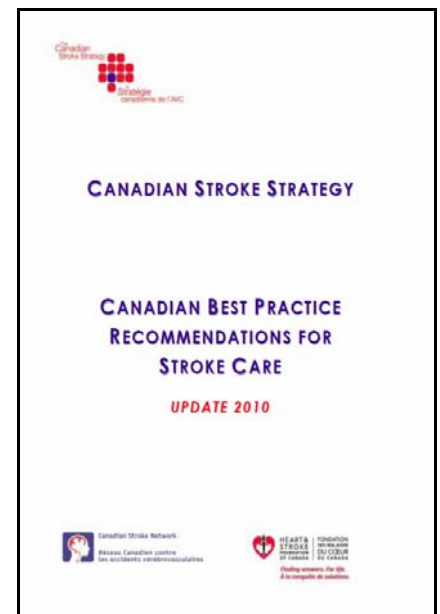
5.4.3.3. Assessment and Management of Complex regional pain syndrome

(Also known as shoulder-hand syndrome, Reflex sympathetic Dystrophy, Sudecks atrophy)

- i. A bone scan may be used to assist diagnosis of this condition [Evidence Level C].
- ii. Oral corticosteroids in tapering doses may be used to reduce swelling and pain due to this condition. [Evidence Level B].

Rationale:

The incidence of shoulder pain following a stroke is high, with as many as 72 percent of adult stroke patients reporting at least one episode of shoulder pain within the first year after stroke. Shoulder pain can delay rehabilitation and recovery of function; the pain may mask improvement of movement and function or may inhibit patient participation in rehabilitation activities such as therapy or activities of daily living. Hemiplegic shoulder pain may contribute to poor functional recovery of the arm and hand, depression and sleeplessness. Preventing shoulder pain may affect quality of life.



For the full recommendations, the SCORE recommendations for lower limb management and other resources, go to www.strokebestpractices.ca



Patient undergoing Constraint Induced Movement Therapy (CIMT)



Save the Dates



2nd Canadian Stroke Congress, Ottawa Convention Centre, October 2-4, 2011

The purpose of a Canadian Stroke Congress is to provide a uniquely Canadian forum in which participants reflecting "bench-to-bedside-to-community" perspectives of stroke can exchange ideas, collaborate, and learn about innovation in stroke prevention, treatment, and recovery.

www.strokecongress.ca

Where the Brain and Spine Meet ... At the Beach



Canadian Association of Neuroscience Nurses 42nd Annual Meeting and Scientific Sessions, June 14-17, 2011, Vancouver
cann.ca/cann_conf.php



2011 Canadian Hypertension Congress, October 2-5, 2011, Alliston, ON.

www.hypertension.ca/chs/meetings/annual-meeting-2011/

Preconference Nursing Workshops at CSC



A series of workshops under the title "Practical Issues in Stroke Nursing" will be presented Sunday, October 2, before the Canadian Stroke Congress commences on Monday. The workshops are open to all Congress registrants, and will focus on clinical practice and application. All workshops will have two timeslots (1:00-2:30 and 3:00-4:30) to allow registrants to attend more than one workshop.

- Workshop 1 Sexuality after Stroke
- Workshop 2 Depression as an Independent Predictor of Stroke
- Workshop 3 Transcranial Doppler Service in the Treatment of Hemorrhagic Stroke
- Workshop 4 Cognitive Assessment: Screening vs. Diagnosis

Registration information is available as of June 1, 2011. Contact info@canadianstrokenetwork.ca or go to the conference website for more information (see sidebar). Additional workshops with topics related to Clinical Practices in Rehabilitation, Helping Your Patients Change Behavior and Key Techniques for the Biomedical Stroke Researcher will also be offered.

Shaking up Sodium 101.ca



How much is too much Sodium?

Sodium 101
Get the Facts!

To mark World Salt Awareness Week (March 21-28), the Canadian Stroke Network relaunched its popular sodium101.ca website. In addition to English and French, the updated site is now available in Mandarin as well. www.sodium101chinese.ca.

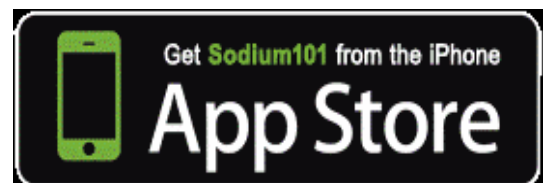
The website, which was designed and built by CSN online communities manager, Lori Barron, has a cleaner design, a built-in search function, and embedded videos. Users can also subscribe to a news feed on the site, or subscribe to receive email notifications every time news has been added to the site.

The website will continue to grow in the coming months, as we add delicious low sodium recipes and cooking tips, along with useful information on great low sodium products. In addition to the website, Sodium101 is active on Facebook at www.facebook.com/sodium101 and on Twitter @Sodium101.



Features include:

- Track your sodium intake based on your age group.
- Compare and track sodium content in takeout food.
- Enter and track sodium in packaged foods.
- A comprehensive listing of over 2000 food items from Canada's most popular takeout chains.
- Build a list of your favourite food items for quick and easy tracking.
- A handy converter that allows you to calculate the amount of sodium in any amount of salt.



- Simulated salt shaker to count salt added to food.
- Recipe converter that allows you to track the salt added to food while cooking, and calculates the sodium content based on serving size.
- Track your daily progress at a glance with the handy sodium thermometer.
- Share your daily sodium totals on Facebook and Twitter.

Prairie North Health Initiates Outpatient Stroke Rehabilitation Clinics: How One Health Region Adapted their Existing Resources to Meet their Patient's Rehab Needs

Submitted By Brenda Kwiatkowski



Prairie North Regional Health Authority (PNRHA) identified Stroke prevention and rehabilitation as a priority in their 2010 -11 Strategic Framework. The health region's community based directors and managers compared existing services with the *Canadian Best Practice Recommendations for Stroke Care* to identify ways to improve stroke coordination, education and rehabilitation for health region clients.

Compared to best practices, gaps were identified in stroke care such as inconsistent processes, and limited coordination and integration of care. Patients participating in stroke education reported difficulty in navigating the system to receive services following hospital discharge. The decision to adjust services was based on these gaps.

A working group of managers, clinical leads and front line professionals was established to develop a plan to improve coordination of referrals, follow up and outpatient rehabilitation services. The group looked at organizing their time and resources differently to improve services with no additional human or financial resources.



Tricia Harvey, Audrey Harder, Pat McMartin (back row, L to R), Clifford and Sandra Carter, Wilfred and Ruth Sunderland (front row, L to R)

The Changes to Improve Referrals and Follow Up Care

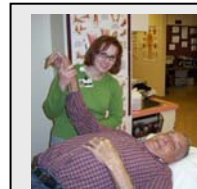
- All outpatient referrals for stroke and Transient Ischemic Attack (TIA) community based care are channeled through Chronic Disease Management Services.
- The Chronic Disease Management Nurse contacts the patient to determine their needs.
- Clients (and their support person(s)) are offered educational opportunities:
 - Individual session or
 - Living With Stroke Classes
- If outpatient rehabilitation is required, the CDM nurse initiates the initial assessment and arranges for the patient to attend the Stroke Rehabilitation Clinics.

Development of Outpatient Stroke Rehabilitation Clinics

An outpatient Stroke Rehabilitation Clinic has been established in each of the region's three cities: Meadow Lake, North Battleford and Lloydminster. The working group planned the realignment of workloads and developed an interdisciplinary team approach.

The Components of the PNRHA Stroke Rehabilitation Clinic:

- An interdisciplinary Stroke Rehabilitation Team
- One point for referral to Stroke Rehabilitation Clinic
- Weekly coordinated one stop outpatient services for persons recovering from stroke
- An interdisciplinary and client focused action plan for all services
- Stroke Education Programs
- Regular communication to patient's physician and family.

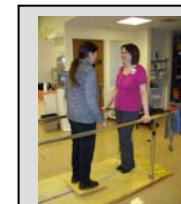


Tricia Harvey and Wilfred Sunderland

Each Stroke Rehabilitation Team currently consists of the following core members:

- Speech and Language Therapist
- Occupational Therapist
- Physical Therapist
- Chronic Disease Management Nurse.

There is ongoing planning to expand the team to meet client needs.



Sandra Carter and Pat McMartin

The North Battleford Outpatient Stroke Clinic started January 27, 2011 and Lloydminster launched their first clinic February 22, 2011. The Meadow Lake Stroke Clinic started February 9, 2011 and meets every two weeks.

Feedback from team members include comments such as

- "I see the person more as a whole when working in a multidisciplinary team"
- "The family member I called was so happy to be invited."
- "Patients are pleased to be able to see all the therapists in one visit rather than having to come back on different days.
- "I was surprised how much they needed the counselor support. All of our clients and even support persons have asked to see the counselor."
- "I have noticed that when a client is given the right information and knowledge, we see the client use that knowledge to improve their life, or become more effective in caring for themselves in activities of daily living or being able to better manage their disease, it is inspiring and rewarding."

One Caregiver stated "I know he is going to be busy for the next few hours so I can get my errands done"

Another caregiver noticed that since going to the Living with Stroke classes Mother is happier and able to do more.

One of the patients is from out of region. The daughter plans to relocate her father so he can access this service.

Released June 16: Major National Study finds there is significant work to be done to improve the quality of stroke care



Canadian Stroke Network

Réseau canadien contre
les accidents cérébrovasculaires

The Quality of Stroke Care in Canada

Canadian Stroke Network

2011

“The Quality of Stroke Care in Canada could not be timelier,” says Dr. Robert Côté, Chair of the study’s National Steering Committee and a Professor at McGill University. *“The results of this study should be used to prioritize investments in stroke care and improve and monitor the quality of stroke care for all Canadians. Stroke is one of the leading causes of death and the main cause of neurological disability in Canada. The study will be of great value to our health system.”*

Canadians are not recognizing the symptoms of stroke

“The study’s findings and recommendations are a ‘call to action’ to the Canadian stroke care community,” says Dr. Moira Kapral, a national steering committee member and Associate Professor, Faculty of Medicine and Department of Health, Policy Management and Evaluation at the University of Toronto. “There needs to be a greater emphasis on improving the public’s awareness about the early signs and symptoms of stroke and the importance of calling 9-1-1 and having an ambulance bring them to hospital immediately.” The study looked at the quality of stroke care provided in emergency response, in-hospital care and in rehabilitation and recovery. Anonymous information from patients’ records was used and included: time of stroke symptom onset, timeliness of emergency medical system access, treatment received in the emergency department, acute inpatient care and information related to patient discharge from the acute care hospital. “We are extremely pleased with the results of the study because it illustrates what can be achieved in stroke care in Canada. If Canada invests now in innovative and sustainable stroke care systems and programs—we will achieve real benefits such as saving more lives and reducing the impact of stroke,” says Dr. Antoine Hakim, CEO and Scientific Director of the Canadian Stroke Network. The study included data from all health jurisdictions in Canada including government and health systems.

This major national Canadian study on the quality of stroke care, released on June 16 by the Canadian Stroke Network (CSN), finds that there is significant work to be done to improve prevention, treatment and recovery from stroke.

The study’s key findings include:

- Two thirds of stroke patients admitted to hospital do not arrive in time to receive the best possible stroke care.
- Stroke patients need greater access to stroke units;
 - > 77% of stroke patients do not receive treatment in a stroke unit.
- When patients arrive at hospital, they are not treated fast enough;
 - > Only 40% of patients who arrived within 3.5 hours of symptom onset received a CT (computed tomography) or MRI (Magnetic resonance imaging) scan within an hour of arrival.
- Patients receive good care in hospital but several aspects of stroke care need to be significantly improved;
 - > Only 12% of ischemic stroke patients admitted to a hospital with the capability to administer the important clot dissolving drug tPA were treated with the drug. Based on tPA rates at some of Canada’s top stroke centres, the target number could be triple the current rate for those ischemic strokes that arrive within the 3.5-hour window.
 - > Only 22% of the hospitals studied were affiliated with a secondary stroke prevention clinic.
- Access to rehabilitation is vital.
 - > Only 37% of moderate to severe strokes cases are discharged to a rehabilitation facility.

Read and download the report online at:

www.canadianstrokenetwork.ca

Printed copies are available by emailing

info@canadianstrokenetwork.ca

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National Stroke Nursing Council

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We want your Stroke Nursing News!

I would love to include your story, idea or picture in the newsletter. Please send content to Colleen Taralson, Editor at

Colleen.taralson@albertahealthservices.ca

The NSNC is on the Web!

See us at:

www.canadianstrokestrategy.ca
and
www.canadianstrokenetwork.ca

Teri Green, co-chair of the NSNC and Alberta Representative, is also the new editor of the Canadian Journal of Neuroscience Nursing. Send your research articles for publication to greenl@ucalgary.ca

May 17 is World Hypertension Day
(www.hypertension.ca)



About the National Stroke Nursing Council

The National Stroke Nursing Council was established in late 2005 with the support of the Canadian Stroke Network to promote leadership, communication, advocacy, education and nursing research in the field of stroke.

The Council works to build understanding of the critical role of Canadian stroke nurses, giving a voice to experiences on the frontline and supporting the vision of the Canadian Stroke Strategy.

Statement of Purpose

To promote leadership, communication, advocacy, education and nursing research in the field of stroke.

Goals

1. To build an understanding of the critical role of stroke nurses in Canada.
2. To give voice to experiences of stroke nurses on the front line.
3. To support the vision of the Canadian Stroke Strategy.

Objectives

1. Build a nationally recognized accessible stroke nursing network
2. Disseminate information and best practice standards to stroke nurses
3. Facilitate implementation of stroke best practices across the continuum of care
4. Promote the value and understanding of the various nursing roles in stroke care

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