

# The Bulletin

Welcome to the Cardiovascular Health Nova Scotia (CVHNS) e-mail bulletin, produced 3 times annually. The Bulletin has been created to share information about the program's activities, related cardiovascular health initiatives, and ideas from around the province.

## PATENT FORAMEN OVALE (PFO) UPDATE

The debate surrounding PFO closure after cryptogenic stroke continues.

### New Evidence

A meta-analysis of five randomized controlled trials involving 3627 patients with cryptogenic stroke or transient ischemic attack (TIA) and PFO followed for a mean of 3.7 years showed that patients who underwent transcatheter PFO closure had a significantly lower risk of ischemic stroke recurrence than those receiving medical treatment alone.

The event rates were 0.53 versus 1.1 per 100 patient-years, giving an odds ratio of 0.43 (95% confidence interval 0.21-0.90), a relative risk reduction of 50.5%, an absolute risk reduction of 2.11%, and a number needed to treat to prevent one stroke of 46.5 for 3.7 years. There was no significant difference in TIAs or all-cause mortality. Outcomes in the PFO closure group were significantly better compared with the medical therapy only group among patients with a high-risk PFO, defined as the presence of a moderate-to-large shunt and/or atrial septal aneurysm.

PFO closure was associated with a statistically significant increase in the rate of new-onset atrial fibrillation (1.3 versus 0.25 per 100 person-years). Although these episodes of atrial fibrillation were usually transient, the long-term risk of recurrence remains unknown and of some concern given that the patients studied in the clinical trials were on average in their mid-40's at the time of enrolment and followed for a mean of less than four years. Other serious device-related adverse events were uncommon, occurring in less than five percent of patients.

### Canadian Stroke Best Practice Recommendations

For carefully-selected patients with a recent ischemic stroke syndrome attributed to a PFO, PFO device closure plus long-term antiplatelet therapy is recommended over long-term antithrombotic therapy alone provided all the following criteria are met:

- a. Age 18-60 years
- b. The diagnosis of the index stroke event is confirmed by imaging as a non-lacunar infarct, or a TIA with positive neuroimaging or cortical symptoms
- c. The patient has been evaluated by a stroke clinician, and the PFO is judged to be the most likely cause for the index stroke event following a thorough evaluation to exclude alternate causes

## PFO Diagnosis

Echocardiography is indicated in the investigation of a large-artery territory (cortical or non-lacunar) ischemic stroke when vascular imaging studies show no significant abnormality and there are no contraindications to oral anticoagulant therapy, or if there are other compelling indications such as suspected endocarditis. Young adults (18-60 years old), require a contrast echocardiogram to look for right-to-left shunting through a PFO. If a shunt is detected, a transesophageal echocardiogram is required to define the anatomy of the atrial septum, and assess its suitability for device closure.

## PFO Closure in Nova Scotia

After assessment by stroke and cardiac clinicians, the patient may be referred to Dr. Najaf Nadeem (cardiologist, Halifax Infirmary) for consideration of PFO closure. Despite evidence of benefit from this procedure, some patients may choose to avoid PFO closure because of the low absolute risk of recurrent stroke, the risk of procedure-related complications, and uncertainty about the balance of risk and benefit in the long-term.

Dr. Stephen Phillips, Stroke Neurologist  
Dr. Najaf Nadeem, Cardiologist  
QEII Health Sciences Centre

## Additional Readings Related to PFO

Cotter PE, Martin PJ, Belham M. [Toward understanding the atrial septum in cryptogenic stroke](#). *Int J Stroke*. 2011; 6:445-453.

Farb A, Ibrahim NG, Zuckerman BD. [Patent foramen ovale after cryptogenic stroke - assessing the evidence for closure](#). *N Engl J Med*. 2017; 11:1006-1009.

Kent DM, Ruthazer R, Weimar C, *et al*. [An index to identify stroke-related vs incidental patent foramen ovale in cryptogenic stroke](#). *Neurology*. 2013; 81:619-625.

Ntaios G, Papavasileiou V, Sagris D, *et al*. [Closure of patent foramen ovale versus medical therapy in patients with cryptogenic stroke or transient ischemic attack](#). Updated systematic review and meta-analysis. *Stroke*. 2018; 49:412-418.

Phillips SJ, Gubitz G. Acute Stroke. RxTx [Internet]. Ottawa (ON): Canadian Pharmacists Association, 2016. [www.e-therapeutics.ca/search](http://www.e-therapeutics.ca/search).

Ropper AH. [Tipping point for patent foramen ovale closure](#). *N Engl J Med*. 2017; 11:1093-1095.

Wein T, Lindsay MP, Côté R, *et al*. [Canadian stroke best practice recommendations: Secondary prevention of stroke, sixth edition practice guidelines, update 2017](#). [First published November 24, 2017]. *Int J Stroke*.

## Learning Opportunities

**CACPR Spring 2018 Annual Meeting & Symposium**, May 11 - 12, 2018. Moncton, NB.  
Contact [cacpr@secretariatcentral.com](mailto:cacpr@secretariatcentral.com).  
[www.cacpr.wildapricot.org/Conferences](http://www.cacpr.wildapricot.org/Conferences)

**5<sup>th</sup> Annual Heart Failure Workshop**, May 11 - 12, 2018. Toronto, ON. Contact [contact@hfupdate.ca](mailto:contact@hfupdate.ca)

**Heart Failure Update 2018**, May 11 - 12, 2018. Toronto, ON. [www.hfupdate.ca/en](http://www.hfupdate.ca/en)

**Atlantic Canada Cardiovascular Conference**, May 25 - 26, 2018. Halifax, NS. [http://ac-society.org/wp/en/home\\_acs\\_en/](http://ac-society.org/wp/en/home_acs_en/)

**CCCN National Spring Nursing Conference & Annual General Meeting**, May 25 - 26, 2018. Niagara Falls, ON. [www.cccn.ca/content.php?doc=182](http://www.cccn.ca/content.php?doc=182)

**Clinical Day in Cardiology**, June 8, 2018. Sydney, NS. Contact 902-567-8007

## CVHNS News

### New Provincial STEMI Database to Facilitate Local Quality Improvement Related to Timeliness of Lytic Administration

Sites across Nova Scotia have been collecting data on STEMI fibrinolytics since the start of the national *Safer Healthcare Now!* Campaign in 2005. Over the years, many additional local and provincial projects have focused on improving door to needle time for STEMI. In December 2017, CVHNS launched a new provincial STEMI database to standardize collection of data across the province and to facilitate ongoing quality improvement related to timeliness of lytic administration.

The CVHNS Cardiovascular Coordinators who have been collecting these data will now enter it into the CVHNS STEMI database. The database is in CAISIS, an open source, web-based data management system. The CVHNS STEMI database has the capability to generate performance reports on key quality indicators related to door to needle time. This provides sites across the province with more timely access to performance on these key indicators for the purposes of quality improvement and will facilitate more timely provincial reporting on the same.

In the longer term, we hope these data can be used to more accurately identify STEMI cases for the original CVHNS database and streamline data collection. Data collection in the new database started as of January 1, 2018 and reports on local performance for door to needle time in STEMI may be accessed from your local CVHNS Cardiovascular Coordinator.

CVHNS is also facilitating a series of meetings with key stakeholders across the province to review performance on door to needle time for STEMI and stroke. The focus is to create local process maps of current care from hospital arrival to needle and to stimulate ongoing quality improvement. To

date, meetings have been held in Yarmouth and Bridgewater.

### 2018 *Come on Nova Scotia...Check It!* Blood Pressure Challenge

It's back...get ready for the 2018 *Come on Nova Scotia...Check It!* Blood Pressure Challenge. For the 7th year in a row, CVHNS, the Diabetes Care Program of Nova Scotia and the Renal Program of Care are teaming up to promote and support this province wide challenge. Held in the month of May to coincide with [World Hypertension Day](#) (May 17<sup>th</sup>), the Challenge encourages Nova Scotians to have their blood pressures checked and learn more about the risks, as well as ways to prevent and to manage high blood pressure. To date over 20,700 blood pressures have been screened and numerous education/awareness events provided as part of the Challenge. Whether you are new to the Challenge or a seasoned participant, we have materials which include a planning guide and tools such as educational brochures, wallet cards to track blood pressure over time, decision-support tools for health care providers and much more! There are also prizes to be won! For more information, see [www.cdha.nshealth.ca/my-blood-pressure](http://www.cdha.nshealth.ca/my-blood-pressure).

### CVHNS Reporting Change

Earlier this year, the reporting relationship for CVHNS was transitioned from the QEII Clinical Services portfolio to the Planning, Performance and Accountability portfolio. The program now reports through Matt Murphy, Director of Performance, Analytics and Accountability.

### Staff Complete Online Stroke Education

Participation in the Canadian Hemispheres 2.0 Stroke Competency Series online course has ended for 128 staff working in stroke care across the province. Over 90% of the 128 participants successfully completed at least one module in the course. Seventy-seven percent successfully completed all six of the modules recommended as appropriate in a successful pilot in Western Zone in 2016. Access to the course was granted to 180

staff under CVHNS' license between February and March 2017. Users had one year from the date of their registration to complete the modules. Fifty-two spots were reassigned over the year due to staffing changes and attrition. Of the 52 reassigned spots, there are currently five open. The spots assigned to new users will expire between April 2018 and February 2019. CVHNS plans to evaluate the need for re-offering the course for additional staff in the future.

### The Impact of Attending Canadian Stroke Congress

Twenty-six staff who work in stroke care from across Nova Scotia attended the Canadian Stroke Congress in Calgary, Alberta in September 2017. Three posters from Nova Scotia were presented: two highlighting local improvements in stroke care (improving door-to-needle times for thrombolytics) and one on the ongoing monitoring and surveillance via the CVHNS provincial stroke registry, which is unique in the country.

Twelve attendees were supported by CVHNS as part of the centrally held funds for stroke professional education, an integral part of provincial stroke service enhancements. CVHNS conducted two surveys (one month and three months post-Congress) with attendees. The surveys evaluated their learnings and plans for practice changes as a result of attending the conference.

Fifteen staff completed the one-month post-Congress survey. All respondents agreed or strongly agreed that their participation in Congress increased their knowledge of stroke best practices and would improve their patient care. They indicated they planned to change the following in their stroke care practice as a result of attending:

- Improve assessment and management of stroke patients
- Utilize specific tools discovered at Congress
- Implement strategies to improve care transitions

Eleven staff completed the three-month post-Congress survey. All respondents had shared information they learned with their colleagues, such as: specific practice changes to implement or explore, recent advances in stroke care and stroke research, and data to share. A variety of methods were used to share information like lunch-and-learn sessions, education at stroke rounds, presentations to key groups, and sharing print resources and online videos. Eighty-two percent of respondents had implemented or begun to implement practice changes they had identified from attending (with some implementing the changes with colleagues/teams). Many respondents indicated that attending Congress was an excellent opportunity to learn about advances in research and stroke care across the country, as well as network with other stroke professionals. Based on survey responses, it is clear that participation at Stroke Congress led to a wide sharing of knowledge across the province and the implementation of practice changes intended to improve stroke care.

### Helpful Resources

Ezekowitz JA, O'Meara E, McDonald MA, et al. [2017 comprehensive update of the Canadian Cardiovascular Society guidelines for the management of heart failure](#). *Can J Cardiol*. 2017; 33(11):1342-1433.

Mazurek AN, Atkinson P R, Hubacek J, et al. [Does frequency of ST-segment elevation myocardial infarction presentation impact quality of care?](#) *Cureus*. 2017; 9(11):e1879.

Mehta SR, Baine KR, Cantor WJ, et al. [Canadian Cardiovascular Society/Canadian Association of Interventional Cardiology focused update of the guidelines for the use of antiplatelet therapy](#). *Can J Cardiol*. 2018; 34(3):214-233.

Saposnik G, Strbian D. Enlightenment and challenges offered by DAWN Trial (DWI or CTP assessment with clinical mismatch in the triage of wake up and late presenting strokes undergoing neurointervention with Trevo). *Stroke*. 2017; 49:498-500.

Swartz RH, Noor Niyar LN, Foley N et al. Canadian stroke best practice consensus statement: Secondary stroke prevention during pregnancy [published online November 24, 2017]. *Int J Stroke*.

Wein T, Lindsay MP, Côté, R et al. Canadian stroke best practice recommendations: Secondary prevention of stroke, sixth edition practice guidelines, update 2017 [published online November 24, 2017]. *Int J Stroke*.

## Innovative Ideas

### Updated Stroke Lytic Report Implemented at Halifax Infirmary

The Halifax Infirmary (HI) has revised their stroke lytic performance report. The new report, now disseminated monthly instead of quarterly, includes data on all acute stroke protocol (ASP) activations for that month. The rate of false ASP activations is included, along with the final diagnosis for each of these patients. The documented reasons that true strokes did not receive lytic are also presented. The report indicates how many lytic patients had door-to-CT (DTCT) and door-to-needle (DTN) times within target. The HI now reports their data compared to the updated targets from the *Canadian Stroke Best Practice Recommendations*: a median of 15 minutes for DTCT time and a median of 30 minutes for DTN time (with a 90<sup>th</sup> percentile target of 60 minutes). The report is shared with emergency department managers, clinical lead, and medical staff via the chief of emergency medicine; emergency health services via the medical director; diagnostic imaging staff and managers; neuroradiology group; and neurology staff and residents. An example (not real data) of the report is presented to the right. For more information contact the Stroke Coordinator for Central Zone, [wendy.simpkin@nshealth.ca](mailto:wendy.simpkin@nshealth.ca).

#### Acute Stroke Treatments in the Emergency Department **EXAMPLE \***

ASP ACTIVATIONS 40

FALSE + (Target 25%) 37.5%

FALSE + TREATED 0

FALSE + FINAL DX

Migraine	2	Seizure	4
Neuro Sx, uncertain cause	2	Dehydration	2
Exacerbation old stroke sx	1	Weakness NYD	1
Confusion	2	Patient Unidentified	1

TRUE + UNTREATED

TIA / Improving	8	INR >1.7 / DOAC	2
ICH	4	Recent stroke / recurrence	5
Too late	2		

TRUE + TREATED

ASP TIME	GENDER	AGE	HI DOOR to CT (target 15min)	EVT (1=Y, 0=N)	TPA (1=Y, 0=N)	HI DOOR to NEEDLE (target 30min)
8:14	M	78	8	1	1	30
12:48	F	75	10	0	1	34
15:10	M	58	10	1	1	30
11:08	F	80	20	0	1	34

MEDIAN	10	32
Number in Target	3 of 4	2 of 4
Percent in Target	75 %	50 %

\* Not real data



## Apps for Stroke Survivors

A number of websites have compiled suggestions for helpful apps for stroke survivors and their caregivers to use during the recovery process. The apps are suggested as tools to help create routine, track progress, improve health, and reduce risk factors during recovery. The apps cover areas like organizing/scheduling; medication tracking; exercise; stress reduction; and activities for speech therapy, cognitive training, hand recovery, and vision loss. A number of the options are free and can be downloaded for Apple tablets or smartphones (some available for Android as well).

The following sites provide suggestions for just some of the many available apps to assist with stroke recovery:

- [Medical News Today: The 10 best apps for stroke survivors](#)
- [National Stroke Association \(US\) - StrokeSmart: 5 Apps for Stroke Recovery](#)
- [Saebo, Inc: The Best Apps to Help With Stroke Recovery](#)

The National Stroke Association of the United States has also compiled an extensive list of aphasia apps on a three-page [fact sheet](#). The tools include:

- Photo talking apps to attach words or phrases to
- Augmentative and Alternative Communication apps to assist in communicating basic needs
- Text-to-speech apps
- Speech practice apps including speech practice options for those with apraxia or dysarthria, and for comprehension and expression

## Hypertension Canada's 2018 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults and Children

Changes include:

- Validated wrist devices may be used in patients with large arm circumference
- Standardized office blood pressure measurement using electronic (oscillometric) upper arm devices is preferred over auscultation for follow-up
- For patients with demonstrated white coat effect, ambulatory blood pressure monitoring or home blood pressure is recommended
- All individuals with hypertension should have an assessment of global cardiovascular risk to promote health behaviors that lower blood pressure

For more information see

[www.onlinecjc.ca/article/S0828-282X\(18\)30183-1/abstract](http://www.onlinecjc.ca/article/S0828-282X(18)30183-1/abstract)

## CONTACT US

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