
CPSI SHN Virtual Learning Collaborative: Canadian teams improving STEMI care together

By Dannie Currie, RN, MN, DHSA, Virginia Flintoft, MSc, BN, Chantal Bellerose, DtP, MSc, Doris Doidge, RN, MN, and Theresa Fillatre, RN, MHSA, CHE

“Timely reperfusion therapy is the most important determinant of better outcomes for patients suffering an ST-segment elevation myocardial infarction (STEMI). All health care professionals should work together to ensure that all Canadian STEMI patients receive reperfusion therapy in the most timely manner possible.”

– Dr. Jack Tu, Senior Scientist, Institute for Clinical Evaluative Sciences and Faculty Lead for the CPSI-SHN Acute Myocardial Infarction Intervention.

Introduction

Optimal patient outcomes using fibrinolytic therapy or primary percutaneous coronary intervention are dependent on the timeliness of reperfusion of the infarct-related artery (Levy, Terashima, & Travers, 2010; Lambert, Brown, Brophy, Rodes-Cabau, & Bogaty, 2010). Patient age, infarct location, symptom duration, pre-hospital care, triage level, timing of ECG, and geographical location of the patient are some of the factors that can impact timeliness of reperfusion. Delay in reperfusion therapy is associated with increased morbidity and mortality (Lambert et al., 2010; Nallamothu et al., 2007). A significant portion of patients (Nallamothu et al., 2007), estimated to be more than half (Atzema, Austin, Tu, & Schull, 2009), exceed recommended times to reperfusion (Tu, Khalid, Donovan, & Ko, 2008).

Health care professionals are faced with competing demands for their time, knowledge, energy and resources, while at the same time always seeking ways to improve care and close evidence and practice gaps. To improve patient safety, exploration and testing of new methods for connecting providers for learning is essential, while respecting the demands on their resources. However, distance, travel and accommodation costs, and time away from direct care are very real limitations. Therefore, using interactive technology to connect people with a common goal, to both content and improvement experts is a viable alternative to more traditional methods for bringing people together. The CPSI SHN AMI Virtual Learning Collaborative was designed to engage interested Canadian emergency department teams using the internet and telephone to create an interactive learning environment.

Canadian Virtual Learning Collaborative

Safer Healthcare Now! (SHN), the flagship program of the Canadian Patient Safety Institute (CPSI), invited Canadian health care teams to participate in a virtual learning collaborative to improve AMI care. The goal was to improve delivery of

care so that all eligible patients receive fibrinolytic therapy or primary percutaneous coronary intervention (PCI) within 30 or 90 minutes of hospital arrival respectively. The collaborative participants were supported by a multidisciplinary planning committee, faculty and SHN staff to develop, adapt, and share best practices within their local environments. The focus was on understanding the local care delivery contexts, factors that impact timely administration of reperfusion therapy, testing change ideas that lead to improvement, and measuring performance. The AMI Virtual Learning Collaborative transitioned into a network of health care professionals focused on improving STEMI care, as was expected. A web-based community of practice (CoP) was used to share documents, presentations, team charters, change cycles, data collection tools and procedures. The CoP was open to all and provided access to recordings of sessions to other interested teams and organizations. Data submission on timely diagnostic ECG and reperfusion therapy, and other AMI care measures was encouraged. The SHN Central Measurement Team (CMT) and Safety Improvement Advisor (SIA) staff helped teams to embed data collection and interpretation into their improvement work. Teams were encouraged and coached in the use of run charts to make comparisons with baseline starting points. The use of run charts enabled teams to monitor their performance over time, as teams deployed their tests of change. Sharing of innovations, high impact change ideas and solutions to change barriers were exchanged during explicitly designed learning sessions. Additional conference calls on various AMI improvement topics were held and details can be found on the CoP.

The Virtual Learning Collaborative (VLC) was modelled on the Institute for Healthcare Improvement (IHI) Virtual Breakthrough Series (Boush, Provost, Gagnon, & Carver, 2006) methodology (Figure 1) and earlier work that had been tested and evaluated on a smaller scale by SHN Atlantic teams. The “Call to Action” was widely circulated in July and August of 2010 inviting potential teams to participate, and was followed by information sessions to help organizations make their participation decisions. Training sessions on “how to” use the web based tools to maximize interactivity were held in both English and French languages before the first “virtual learning session” occurred. All documents and support during and between learning sessions were offered in both English and French languages and presentations were offered in English with French language support as needed.

The design of the VLC included three-hour “virtual learning sessions” using webinar technology. Content and improvement experts and SHN AMI faculty convened with enrolled

teams to foster a learning environment where didactic and applied knowledge were exchanged and expanded. Support was available during this time and included: team conference calls; faculty contact by phone or email; use of the web-based CoP; and ready access to SHN staff and the SHN CMT. CMT supports all SHN teams and serves as the central repository for SHN data through a contract between CPSI and the University of Toronto.

Teams from 21 organizations and nine provinces, from British Columbia to Nova Scotia, participated in the collaborative. Multidisciplinary clinical team members including nurses, physicians, cardiology technologists, and paramedics participated in 16 hours of virtual learning webinars. During these sessions teams shared their own work and benefitted from presentations by 12 volunteer experts on various content themes related to improving reperfusion therapy. Improvement methodology support was provided by SHN staff and the CMT.

Measurement

Measurement focused on three clinical care elements and participant experiences with the virtual learning environment. Specifically, teams were asked to submit data on (i) time to ECG from hospital arrival, (ii) time to thrombolytic agent administration from hospital arrival, and/or (iii) time to primary PCI from hospital arrival. The clinical measures were submitted to the CMT. The participant experience measures included a self-assessment of progress, and learning relationships within

and between the teams. In addition, various aspects of satisfaction with the learning sessions and a final measure of the participant overall VLC experience were measured.

Results

Team self-assessment of progress on a five-point scale moved from 0 to 3 and within seven months indicating that, on average, the reporting teams believed they moved from “forming a team” to accomplishing a “50% improvement” on at least one goal. This is comparable to face-to-face collaborative team results over a similar timeframe. The intra-team self-assessment of collaborative work patterns revealed that 86% selected: “We are having productive team meetings and are accomplishing tasks between meetings” and 14% selected: “We are proud of our improvement work. There is mutual respect within our team, we are using the team members’ strengths to focus on and achieve our AIM. We celebrate our successes.” For inter-team relationships, 57% indicated that there was some activity related to their improvement work taking place with other collaborative teams.

Participant satisfaction with the VLC, based on 12 respondents to a survey indicated they were satisfied or very satisfied with the experience. The two areas of dissatisfaction cited were for team participation and “format and easiness to concentrate and devote time to VLC at the workplace” (Table 1).

All respondents to the survey agreed that the VLC provided opportunities for interaction, networking, sharing, and moving

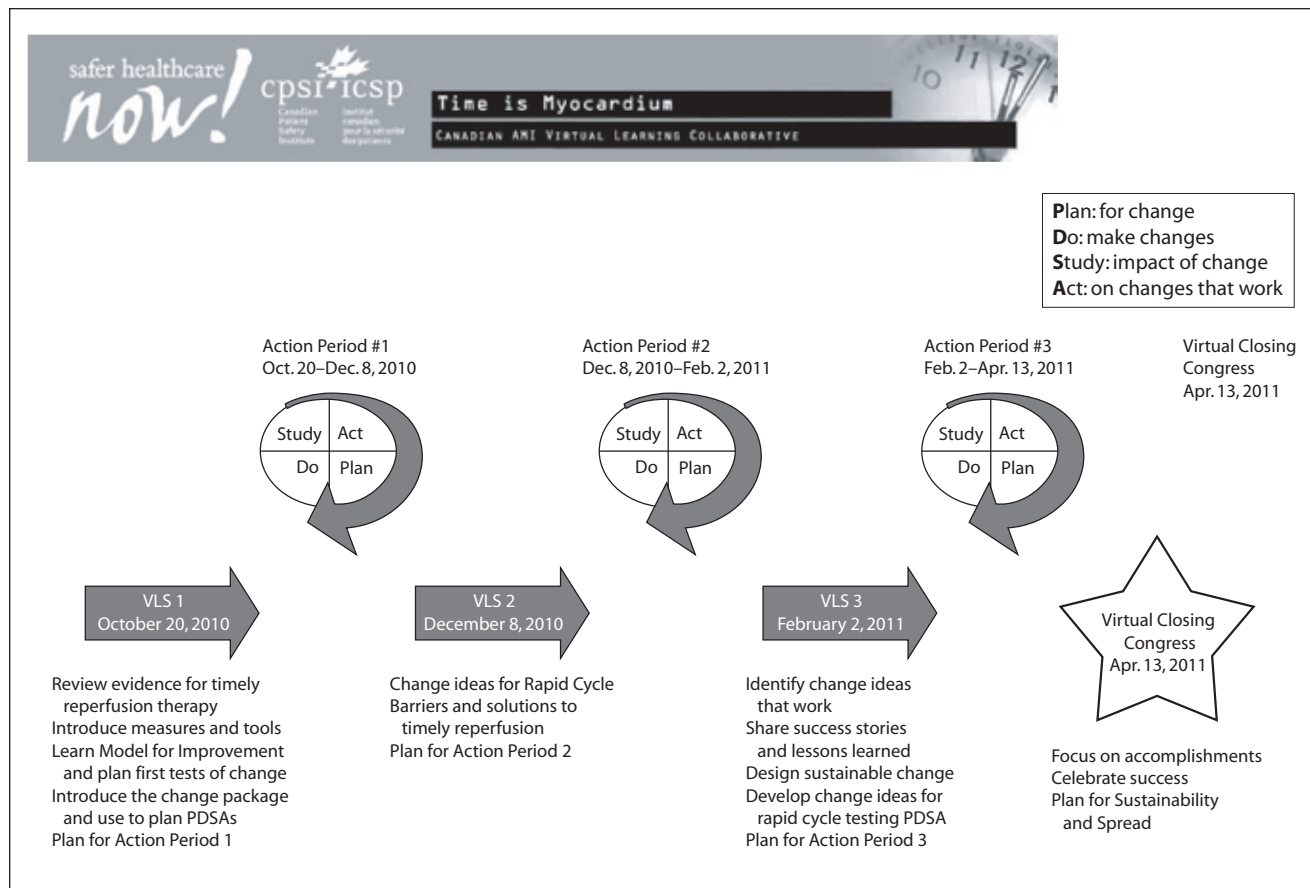


Figure 1.

forward with improvement work, and that access to and coaching from SHN SIAs and faculty were helpful to their quality improvement work. Seventy-five per cent indicated they had or planned to submit data (clinical measures) to the CMT while only 50% indicated they used the CoP (Table 2).

Eight of the teams reported on the percentage of patients receiving thrombolytic agents within 30 minutes of hospital arrival and six teams reported on the percentage of patients with an ECG within 30 minutes.

One team's success story

The Cape Breton Regional Hospital (CBRH) is a 326-bed acute care facility in Nova Scotia. On average, the emergency department sees 85 patients monthly requiring an ECG, of which four patients on average are diagnosed as presenting with STEMI. The AMI-VLC interdisciplinary team was led by the nurse manager and included representatives from medicine, cardiology technology, nursing, and quality improvement professionals. The director of nursing served as the team's executive sponsor. Baseline data verified an opportunity for improvement in

Table 1.

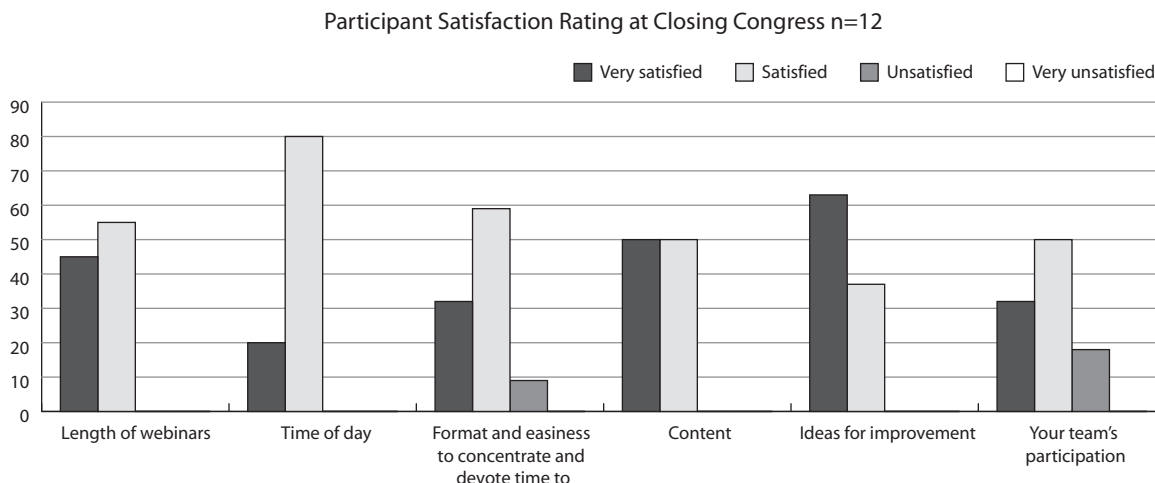


Table 2.

Topic	% Yes	% No
The Collaborative allows for interaction, networking and sharing of challenges and solutions	100%	0%
The Collaboration was successful in helping us move forward with STEMI improvement work	100%	0%
SIAs and faculty experts were helpful in assisting our team work and improvement	100%	0%
The Collaborative allowed easy access to quality improvement and STEMI experts	90.0%	10.0%
The VLC presented strong evidence to increase awareness and help prioritize timely reperfusion as an improvement project in our organization	83.3%	16.7%
The Collaborative documents such as the shared tools, change package and Community of Practice (CoP) website are useful resources	83.3%	16.7%
Would you like this Collaboration to reconnect and follow up in three months from now to explore improvements, new learnings and accomplishments?	83.3%	16.7%
The AMI Virtual Learning Collaborative helped us to establish an interdisciplinary improvement team	81.8%	18.2%
The Collaborative allowed us to dedicate time and to concentrate on improvement in the work to be done	75.0%	25.0%
Did you use the change package?	72.7%	27.7%
Have you submitted AMI improvement data or will you submit some in the near future?	73.0%	27.3%
Did you use the CoP?	50.0%	50.0%

the percentage of STEMI patients receiving an ECG within 10 minutes and lytics within 30 minutes of hospital arrival or first medical contact.

The team focused on how to improve patient care by initially mapping their processes for a typical episode of care, maintained a patient-centred perspective, and identified and tested change ideas using the Plan Do Study Act (PDSA) Cycle in their emergency department. PDSA cycles and tests of change included: (1) synchronizing clocks and equipment; (2) programming the triage phone to speed dial the ECG department; (3) using a whiteboard to identify the location of the patient in the ED; (4) placing an ECG machine within the department; (5) modifying care documentation forms to enable performance data collection; (6) designating ECG as first priority designated medical function for all patients with chest pain; (7) meeting regularly to review team performance and shape continuous improvements to close their practice gaps. Over a period of seven months, the percentage of STEMI patients receiving an ECG within 10 minutes of arrival or first medical contact improved from baseline of 34% to 95.2%, and the percentage of patients receiving lytics within 30 minutes of arrival improved from the baseline of 61.5% to 95.2%.


Factors contributing to this team's success include: using a patient-centred team approach; use of data coupled with PDSA cycles to guide their improvements; as well as the willingness of team members to change their practice and embrace full participation in the AMI Learning Collaborative. The hospital has now established 100% as their target for obtaining ECGs within 10 minutes and administering lytics within 30 minutes of hospital arrival for STEMI patients.

What did we learn?

Holding sessions to teach people how to use the interactive technology before the learning sessions worked well and is viewed as an essential component of the engagement process. The performance gap between current and best practice for the teams that did submit data was similar to what has been reported in the literature and other SHN quality performance data. The virtual learning environment is a viable alternative for participants who are separated by geography, time and other resources. Participant progress and satisfaction was similar to "in person" learning collaboratives.

The use of virtual methodology augmented with coaching support resulted in a learning network similar to "in-person" learning collaboratives in which experts and care providers with a common goal were effectively brought together to improve quality of care and patient safety. From the host (CPSI SHN) perspective, the human resources required in preparation and execution of this virtual collaborative were greater than preparation time for in-person sessions, but for participants was less expensive and required less time away from direct care. With further experience with the virtual methodology and refinements to preparatory processes, it is anticipated that preparation and execution resource intensity will decrease somewhat.

How could we improve?

Participating team members need to be provided with protected time from their executive sponsors to participate in the learning sessions and concomitant action periods. Pre-collaborative work should include establishing baselines and making an explicit commitment to ongoing measurement and data submission. Teams would benefit from explicitly assigning role responsibility to a member to monitor and report team process and outcome measures to the team, their executive sponsor, and to their quality monitoring body. The question about making measurement and data submission an absolute requirement for participation and learning in future collaboratives is being examined. The additional effort required by participants to stay engaged and demonstrate sustainable results may be offset by holding more learning sessions for shorter lengths of time, and over a longer duration. 

About the authors



Dannie Currie, RN, MN, DHSA, Safety Improvement Advisor, CPSI Safer Healthcare Now!

Virginia Flintoft, MSc, BN, Project Manager Central Measurement Team, CPSI Safer Healthcare Now!

Chantal Bellerose, DtP, MSc, Safety Improvement Advisor, Quebec Safer Healthcare Now!, JGH Quality Advisor.

Doris Doidge, RN, MN, Quality Advisor, Quality Healthcare Network Ontario.

Theresa Fillatre, RN, MHSA, CHE, Senior Director CPSI.

References

- Atzema, C.L., Austin, P.C., Tu, J.V., & Schull, M.J. (2009). Emergency department triage of acute myocardial infarction patients and the effect on outcomes. *Annals of Emergency Medicine [Ann Emerg Med]*, 53(6), 736-45.
- Boush, B., Provost, L., Gagnon, J., & Carver, P. (2006). Using a virtual breakthrough series collaborative to improve access in primary care. *Journal on Quality and Patient Safety*, 32(10), 573-584.
- Levy, A.R., Terashima, M., & Travers, A. (2010). Should geographic analyses guide the creation of regionalized care models for ST-segment elevation myocardial infarction? *Open Medicine*, 1(1), E22.
- Lambert, L., Brown, K., Brophy, J., Rodes-Cabau, J., & Bogaty, P. (2010). Association between timeliness of reperfusion therapy and clinical outcomes in ST-elevation myocardial infarction. *JAMA*, 303(21), 2148-2155.
- Nallamothu, B., Fox, K.A., Kannelly, B.M., Van de Werf, F., Gore, J.M., Steg, P.G., Granger, C.B., ... Eagle, K.A. (2007). Relationship of treatment delays and mortality in patients undergoing fibrinolysis and primary percutaneous coronary intervention. The Global Registry of Acute Coronary Events. *Heart*, 93(12), 1552-5.
- Tu, J.V., Khalid, L., Donovan, L.R., & Ko, D.T. (2008). Indicators of quality of care for patients with acute myocardial infarction. Canadian Cardiovascular Outcomes Research Team/Canadian Cardiovascular Society Acute Myocardial Infarction Quality Indicator Panel. *CMAJ*, 179(9).