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## The Embedded Librarian in a Telehealth Continuing Medical Education Program

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### ABSTRACT

This article outlines the involvement of a librarian in an innovative telehealth continuing medical education (CME) program, ECHO Ontario Chronic Pain/Opioid Stewardship (ECHO Ontario Chronic Pain). Survey and focus group data have suggested that embedding a librarian as a member of an interprofessional education program has added value to the program. The embedded librarian (EL) enhanced the program's ability to share best practices and reduce variations in care by providing accessible, high quality, evidence-based information to members of the ECHO Ontario Chronic Pain community where it may not otherwise have been received. An outline of the ECHO model and the role of the EL, data and a discussion of the role the EL are presented.

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### KEYWORDS

Chronic pain; continuing medical education; hospital librarian; rehabilitation; Telehealth

## Introduction

Librarians are intuitive partners in healthcare. Embedded librarians (ELs) play a critical role in the healthcare system, from clinical settings to medical education to research. They work collaboratively within clinical settings to provide healthcare teams with high-quality, evidence-based information that guides best practice (1,2). ELs also work to provide information within academic medical institutions at the undergraduate and graduate level (3). Within the research field, ELs can often participate as active members of medical research teams, providing tailored information services to the teams in which they are embedded (4).

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With the growing need to maintain up-to-date knowledge and training, Continuing Medical Education (CME) programs are essential for practicing clinicians (5). In some instances, they are even mandated by professional colleges (6). For instance, physicians need to acquire a minimum number of CME credits every year to maintain their licenses. CMEs are designed to develop and strengthen the knowledge and skills of clinicians and other healthcare providers in their field of practice. CMEs can be delivered in a variety of formats, including in-person, online, or remotely using telehealth technology. Telehealth is defined as the use of information communication technology, such as video-conferencing, to support and promote healthcare (7). The use of telehealth can increase access to CME for those where traveling to urban centres is unfeasible, due to geographical, financial or time constraints (8).

The role of librarians supporting CMEs is well-documented, yet few do so in an embedded manner (9,10). Their embedded involvement, if present at all, is typically confined to the developmental stages of these initiatives (11). A few cases of librarians as embedded in undergraduate or graduate medical education facilitated by information communication technology have previously been reported (12,13). However, the involvement of librarians in the context of CMEs using telehealth technology has not.

The objectives of this article are to 1) describe a telehealth CME intervention program and the role of the EL within it, 2) present data to support the EL's role within the program, and 3) discuss implications and value of the EL within telehealth CME programs.

### **Telehealth CME intervention: the ECHO model & ECHO Ontario Chronic Pain/Opioid Stewardship**

Project Extension for Community Healthcare Outcomes (Project ECHO™) is an innovative clinical education and telementoring model that aims to democratize knowledge and to build capacity in the healthcare workforce (14,15). Project ECHO was created at the University of New Mexico by Dr. Sanjeev Arora to address the shortage of hepatology specialists treating hepatitis C. He developed the ECHO model as a means of providing quality and timely access to care for clinicians of patients in rural areas (16). The ECHO model operates under four simple principles: 1) leverage scarce healthcare expertise and resources by using telehealth technology, 2) share best practices and reduce variation in care, 3) use case-based learning to develop specialty expertise among community partners, usually primary care providers (PCPs), and 4) monitor and evaluate outcomes. Using a hub-and-spoke model, ECHO is a unique opportunity for healthcare providers from rural and underserved areas (the spokes) to learn from each other and from interprofessional specialists (the hub) (16,17).

ECHO Ontario Chronic Pain/Opioid Stewardship (ECHO Ontario Chronic Pain) began as a two-year demonstration project funded by the Ontario Ministry of Health and Long-Term Care (MOHLTC). ECHO Ontario Chronic Pain is the first replication of the ECHO model in Canada with the vision that all chronic pain patients should receive safe and effective management. Chronic pain and opioid management is an urgent public health concern. Given the rise of opioid-related deaths in the province of Ontario as well as the prevalence of chronic pain conditions, ECHO Ontario Chronic Pain serves as a provincial strategy to address a complex problem (18–20).

In June 2014, ECHO Ontario Chronic Pain began hosting weekly two-hour sessions through telehealth web-based videoconferencing technology. Using a “one-to-many” teaching model, ECHO Ontario Chronic Pain connects the hub team with spokes practicing in various communities across Ontario (Figure 1). There are three main components of each session: 1) a roll call for attendance at the beginning, 2) a didactic presentation from a hub member or invited guest lecturer, and 3) de-identified patient case presentations by the spokes followed by a facilitated discussion. Didactic presentations follow a pre-determined curriculum that focus on five rotating modules: pain fundamentals, opioids, pain conditions, non-opioid chronic pain management, and special topics. Spokes can join at any time during the curriculum and attend for as many sessions as they like. Case presentations by spokes include but are not limited to patients with common conditions like low back pain, neuropathic pain, headaches or fibromyalgia, and less familiar afflictions such as chronic regional pain syndrome, or problematic opioid related behaviors. All case discussions are structured to promote learning between all participants: spokes encouraged to speak before the hub members, which increases PCP confidence and self-efficacy. Knowledge flow is bidirectional as hub and spokes learn from each other.



**Figure 1.** Members of the ECHO Ontario Chronic Pain hub, with EL speaking directly to community (left); ECHO community, as seen through telehealth web-based videoconferencing platform (right).

The ECHO Ontario Chronic Pain hub is composed of dedicated inter-professional members attending from two academic teaching centres. There are nine healthcare professions represented: chiropractic, health librarianship, medicine (addictions medicine, chronic pain, family medicine, neurology, psychiatry, and psychology), nursing, occupation therapy, pharmacy, physical therapy, psychology, and social work. Administrative staff and telehealth technicians also attend and support every session. Observers and students are commonly present during sessions.

The ECHO Ontario Chronic Pain spokes are a diverse group of healthcare professionals. Spokes attend from a variety of practice settings including family health teams, community health centres, aboriginal health access centres, nurse-practitioner led clinics, hospitals, mental health associations, primary care offices, and multidisciplinary pain treatment facilities. Spokes also attend from a variety of geographical locations, from remote, rural, suburban, and urban areas. Spoke participants are also interprofessional, and include: chiropractors, dietitians, kinesiologists, mental health workers, nurse practitioners, occupational therapists, pharmacists, physicians (family and specialists), physician assistants, physiotherapists, psychologists, psychotherapists, registered nurses, and social workers.

### **The embedded librarian role within ECHO Ontario chronic pain**

Many ECHO programs have been implemented worldwide, yet ECHO Ontario Chronic Pain was the first ECHO replication to include an embedded librarian as a member of the interprofessional hub team. Because this role was unprecedented to our knowledge, the EL's responsibilities were established and negotiated over time. This was an iterative process within the CME program, with the primary role of the EL addressing information gaps that arose from spokes related to ECHO sessions. Information gaps were understood as moments where additional clarification or information on a topic was needed. These were predominantly addressed by retrieving evidence through literature searches. We divided information gaps into four categories: 1) direct spoke needs during sessions, 2) direct spoke needs outside of sessions, 3) indirect spoke needs during sessions, and 4) indirect spoke needs outside of sessions.

- (1) Direct spoke needs during sessions: During ECHO sessions, spokes asked questions that sometimes required information beyond what could be immediately provided by the hub team. These information gaps could relate to both didactic content or patient case presentations. The types of questions which arose most frequently were often related to the effectiveness of interventions for pain management, or the validity of measurement tools. While the hub members are often

able to briefly address questions, there is insufficient time to describe and discuss questions in detail. For example, an uncommon pain condition was presented, and many spoke participants were unfamiliar with. A spoke asked a question about diagnosis or management, and commented on the need for further information on the condition. The EL then conducted a search of the literature to retrieve supplemental resources hence supporting the development of a better understanding of this condition, such as an evidence-based review outlining etiology, diagnosis, and management.

- (2) Direct spoke needs outside of sessions: The EL received questions outside of ECHO sessions through the message board. This is a private online forum created by ECHO Ontario Chronic Pain for spokes to access resources and ask questions outside of the weekly sessions. On occasion, the EL also received questions via e-mail.
- (3) Indirect spoke needs during sessions: As the EL developed familiarity with ECHO Ontario education curriculum, information gaps were anticipated and identified without an explicit prompt from the spokes.
- (4) Indirect spoke needs outside of sessions: The librarian kept informed on chronic pain literature by utilizing various auto-alert services including: eTOCs for seminal chronic pain journals, PubMed auto alerts, and EvidenceAlerts by DynaMed Plus and McMaster University's Health Information Research Unit (21,22). The EL shared recent articles of interest (current awareness resources) on the message board. Current awareness resources shared included newly published systematic reviews, guidelines, and major clinical trials related to chronic pain management.

In addition to the EL responsibilities supporting spokes, the EL also supported the hub team. Tasks included: conducting literature searches and retrieving latest evidence in order to support the development and updating of didactic presentations, finding evidence to answer clinical questions in anticipation of more complex patient case presentations, and immediate on-the-fly questions during sessions.

The EL has also been involved in navigating copyright law and fair dealings regarding the sharing of information; ensuring appropriate methods for information dissemination are followed throughout ECHO. This has involved negotiating what can be shared with the community, and which mechanisms should be used. As a general rule for information sharing, only citations and URLs are disseminated. Open access articles are emphasized as many spoke members practice may not have access to subscription content.

The mechanisms for sharing evidence-based resources to the community have most often been posts of relevant citations and URLs as resources on the message board, or sent directly to the requester via e-mail. The message

board has been the preferred method of contact, as it allows the whole community to receive resources while also doubling as an archive of resources.

In the early stages of EL involvement in ECHO sessions, a tablet was brought to seek information to address questions as they arose. The tablet had several Point-of-Care resources installed, such as Lexicomp and BMJ Best Practice (23,24). It also had access to PubMed and other open access Web sites. Despite having these resources available, most questions were addressed after sessions due to technological and infrastructural constraints, such as poor wireless internet connection and the lack of functionality of some mobile Web sites. Over time, the EL started using a laptop during sessions. This provided a more secure wireless connection and greater ease in web navigation. Since the addition of the laptop, the EL was able to address more questions as they arose.

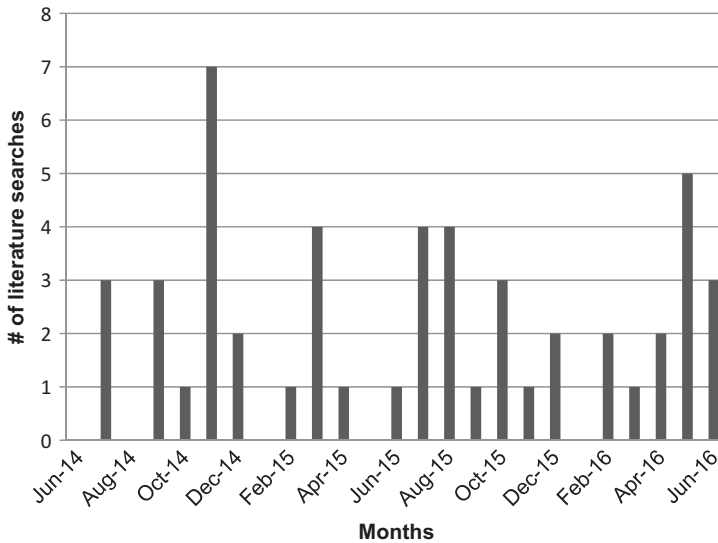
### **Data collected on the EL's role**

While the EL involvement in ECHO Ontario is ongoing, data reported in this article was collected over the two-year period from June 2014 to June 2016 of the ECHO Ontario Chronic Pain demonstration project. Time spent attending sessions and ECHO participation outside of sessions were documented and recorded. The librarian maintained a record of the frequency of reference questions being addressed, how these questions were received, and the amount of time spent conducting literature searches. Two quality improvement (QI) surveys were distributed during this time, one to hub members and one to spoke members (Appendix A and B). Data reported were collected during February and March 2015. The purpose of the surveys was to determine the ECHO community's perception of the librarian's role. One question from each survey was based on two surveys previously created to measure library impact on patient care (2,25). In addition to these data, feedback about the EL's role from qualitative focus group discussions with ECHO spoke participants was collected, although this was not an explicit objective of focus group discussions (26).

From June 2014 to June 2016, the EL attended 92 ECHO sessions (out of 102, 90.2%), which totaled 184 hours of attendance. Outside of ECHO sessions, the EL conducted 51 literature searches, totaling 56.75 hours of work. The frequency of literature searches varied monthly (Figure 2). The idea of posting current awareness resources to the message board began in July 2015. From July 2015 to June 2016, the EL posted current awareness resources seven times.

Based on the QI surveys distributed to both hub members ( $n = 13$ ) and spoke PCPs ( $n = 27$ ), the EL role was well received. Ten (76.9%) hub members and 22 (81.5%) spoke members answered yes to the question





**Figure 2.** Literature searches conducted from June 2014 to June 2016.

“Should we continue to offer clinical librarian services during ECHO sessions?” Feedback was mostly positive and encouraged continuation of librarian services. Some feedback, however, indicated a lack of awareness regarding the specific role and services provided by the EL.

Some hub members raised their concern over the EL’s time, indicating that it may not be necessary for the EL to attend for the full two-hour weekly ECHO session and could address questions over e-mail or by attending the last minutes of each session. However, many also remarked the quality of information and evidence provided, and the need rapid access to information. Feedback from one hub member said:

Having a librarian to post relevant research papers related to cases given at ECHO is fabulous. Note that the librarian’s work is reaching an entire community of practice that spans all of Ontario. Primary care providers who likely have no time to look things up themselves, or no access to a university centre librarian are now getting access to best practice evidence-based information.

Another hub clinician stated, “The librarian has been most useful in providing information about the sharing of published information – [I] am involved with other pain and addictions forums, and her input was very valuable.”

During one focus group discussion, a spoke participant remarked:

I think for me it’s just to have that support because at times you feel like you’re the only person, just to know that there are all the other professionals there, and just knowing that you’re on the right track [...]. That just is very helpful that all the information is there as opposed to you trying to search it all, right? It’s really great that on ECHO there is the reference librarian, but even just to know, ‘what is the best practice out there?’



While reflecting on their satisfaction with the ECHO Ontario Chronic Pain program, another spoke clinician said, unsolicited, “It was actually amazing there was a librarian there. [...] I still haven’t used her yet (agreement in background) but I was amazed.”

## Lessons learned and directions for the future

The EL role has been as innovative as the educational model it supports—falling in line both with the tradition of the clinical medical librarian (as the librarian is embedded in a team of healthcare providers whose primary goal is to provide evidence-based information to improve patient care), and with the role of educator (as the EL is fundamentally being embedded in a learning environment for primary care providers).

The fundamental goal of the EL in ECHO Ontario Chronic Pain has been to provide evidence-based information to ultimately improve patient care. The continuous involvement of the EL provided a foundation for the culture of evidence-informed education and best practice. Over the course of ECHO sessions, this was addressed by providing literature searches to provide best practice evidence when information gaps arose, proactively providing information by making current awareness resources available, and by offering support to hub members in anticipation of ECHO sessions.

Many members of the ECHO community participated from rural and remote clinic sites where they do not have access to academic, clinical, or hospital librarian services or institutional journal subscriptions. Lack of time and costs further hinder access to information for these practitioners (27). These obstacles often impede clinicians from pursuing the use of evidence-based information in answering patient care questions; frequently questions remain unanswered, or answers are sought from colleagues (28). Access to a librarian provided participants with increased access to evidence-based information that they may not be able to seek themselves. When providing the community with information, it was important to consider the varied levels of access of different clinicians involved in ECHO Ontario; not all participants would have journal, database or resource subscriptions. To ensure that all participants were able to access the same quality of information, open access resources were prioritized. This tactic supports the mandate of Project ECHO of democratizing medical knowledge (29).

An unanticipated role of the EL was that of “information steward”. Because ECHO hub and spoke members come from many practice settings with a spectrum of institutional affiliations, the EL has been fundamental in navigating and negotiating what can and cannot be disseminated according to copyright law. Feedback from one hub member demonstrated a lack of awareness of the potential legal implication of disseminating certain types of information without the correct clearance or licensing. These legal matters

would have likely not been considered without the input of the EL. The responsibility of navigating the world of copyright and fair dealings can be challenging and time consuming, and in this case has evolved into the role of the EL (30). Prioritizing open access resources has eased this burden.

Within any EL position, it is important to maintain a strong presence, and to develop strong relationships with your user group (31). While feedback from questionnaires was positive overall, it also demonstrated that many members of the ECHO community lacked awareness of the role of the EL. A clear understanding of the librarian's role is essential to being successfully embedded within the program. To address this issue, several actions were taken to increase visibility. A more explicit introduction to the EL at the beginning of certain ECHO sessions took place. The introduction emphasized the role of the EL as a support for the ECHO community as information needs arose. During the introduction, the EL also introduced the message board, explained how it could be accessed, and that any links to articles or other resources could be found there. The EL also sat at the front of the room to maintain physical presence during ECHO sessions (Figure 1).

Technology is fundamental to the ECHO model. ECHO uses telehealth technology to cultivate a virtual community of practice (15). The mechanisms that the EL uses to share information should be as responsive and seamless as the technologically-oriented nature of the program. The technology used by the EL has evolved over the course of involvement in ECHO sessions. Using a tablet during sessions was an obstacle to the effectiveness of information retrieval and dissemination. This has since been improved using a laptop. The mechanism for information dissemination has primarily been the message board; however, there are limitations to this method. The message board does not allow for seamless sharing of information in real time during ECHO sessions. Further, it is unclear how many spoke members routinely visit the message board. While the information being shared by the EL may be valuable to spoke members, it is essential for the EL to disseminate information in a mechanism that is direct, accessible, and visible. In order to improve the "reach" of the dissemination effort, alternate methods are being explored, including using an embedded chat function to share citations and URLs in real time during ECHO sessions.

Besides benefiting the ECHO community, the librarian also benefits from being involved in the program by developing a better understanding of the complexities of chronic pain literature, concepts and guidelines. Being involved as an interprofessional member of the ECHO hub has allowed the EL to experience healthcare from the "lens" of healthcare providers, developing a better understanding their evidence needs (32). This experience helped the librarian better serve the ECHO community and other library users.

Published literature supporting ECHO programs has focused on spoke-level outcomes including: increased self-efficacy, increased knowledge, and improved patient management (33). Successful innovations within the ECHO programs are seldom made available in the published literature. The innovation by ECHO Ontario Chronic Pain of including an embedded librarian on the hub team, is now being replicated by other ECHO programs (32). How librarians serve their ECHO community may vary. Nonetheless, this infers the merit of embedding a librarian within a Project ECHO program, and more broadly in a telehealth CME intervention. This new role demonstrates the importance and value of an embedded librarian within an interprofessional team focused on continuing medical education (34). We hope this case may lead other Project ECHO programs and telehealth-based CMEs to consider the value of embedding a librarian within their programs, and that this may provide guidance to information professionals moving into similar roles.

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## Appendix A

### *ECHO Librarian Services Survey—Hub member questions*

#### **Introduction**

The ECHO Librarian Services Survey was created in order to gather preliminary information regarding the perception and experience with librarian involvement within ECHO sessions to date. This survey was also designed to gauge the need of having a librarian on the ECHO Ontario hub team and provide feedback regarding perceived roles and responsibilities of the librarian.

A 6-question survey was drafted and revised by a small working group including the ECHO librarian, ECHO research personnel, and ECHO administrators. Consensus was reached on a revised version and this was distributed to all ECHO hub members using an online questionnaire platform, FluidSurveys.

#### **Questions**

##### **Question 1**

Have you attended an ECHO session where the librarian was asked to find evidence for a question?

Response: Yes/No

**Question 2**

Part 1: After any ECHO session, did you review the resource(s) provided by the librarian (via the discussion board or e-mail)?

Response: Yes/No

Part 2: How useful did you find these librarian-provided resources?

Response: sliding scale from 0 = not useful to 10 = extremely useful

**Question 3**

Did any of the following change in a positive as a result of the librarian-provided information? (Check all that apply)

Response options:

Choice of tests

Choice of drugs

Choice of other treatment

Advice given to a patient or family member

N/A

Other: (free text)

**Question 4**

The current format of ECHO sessions involves the clinical librarian attending every 2-hour session in full, and for any questions that arise during the session, or in between, the librarian then conducts a literature search for open access evidence in between ECHO sessions.

Do you perceive this to be the best format to obtain librarian services? If not, please suggest any changes.

Response: (free text)

**Question 5**

Do you have any additional suggestions to improve or change the delivery of information during ECHO sessions?

Response: (free text)

**Question 6**

Should we continue to offer clinical librarian services during ECHO sessions?

Response: Yes/No

## Appendix B

### *ECHO Librarian Services Survey—Spoke member questions*

**Introduction**

A 4-question survey was drafted and revised by a small working group including the ECHO librarian, ECHO research personnel, and ECHO administrators. Consensus was reached on a revised version and was distributed to all ECHO spoke members in July 2015 using an online questionnaire platform, FluidSurveys.

**Questions****Question 1**

Our ECHO Ontario Pain hub currently includes a clinical librarian. She attends every 2-hour ECHO session and is available during or in between ECHO sessions to conduct literature searches on clinical topics that arise.

Do you perceive this to be the best format to obtain librarian services? If this is not, please suggest any changes.

**Question 2**

Did any of the following change in a positive way as a result of the librarian-provided information? (Check all that apply)

Response options:

Choice of tests

Choice of drugs

Choice of other treatment

Advice given to a patient or family member

N/A

Other: (free text)

**Question 3**

Do you have any additional suggestions to improve or change the delivery of information during ECHO sessions?

Response: (free text)

**Question 4**

Should we continue to offer clinical librarian services during ECHO sessions?

Response: Yes/No

Please enter any comments or suggestions to the ECHO Ontario Team

Response: (free text)