

ECHO Ontario Chronic Pain & Opioid Stewardship: Providing access and building capacity for primary care providers in underserved, rural, and remote communities

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Abstract. Chronic pain is a prevalent and serious problem in the province of Ontario. Frontline primary care providers (PCPs) manage the majority of chronic pain patients, yet receive minimal training in chronic pain. ECHO (Extension for Community Healthcare Outcomes) Ontario Chronic Pain & Opioid Stewardship aims to address the problem of chronic pain management in Ontario. This paper describes the development, operation, and evaluation of the ECHO Ontario Chronic Pain project. We discuss how ECHO increases PCP access and capacity to manage chronic pain, the development of a community of practice, as well as the limitations of our approach. The ECHO model is a promising approach for healthcare system improvement. ECHO's strength lies in its simplicity, adaptability, and use of existing telemedicine infrastructure to increase both access and capacity of PCPs in underserved, rural, and remote communities.

Keywords. Chronic pain, Ontario, telemedicine, ECHO (Extension for Community Healthcare Outcomes), primary care

Introduction

Chronic pain is a prevalent and serious problem. One in five Canadians suffers from moderate to severe chronic non-cancer pain daily or most days of the week [1]. Pain is one of the most common reasons patients seek medical care in Canada and accounts for more healthcare utilization than any other condition [2, 3]. Despite universal healthcare coverage in Canada, non-pharmacological treatments (physiotherapy and counselling) for chronic pain are not covered by most provincial healthcare plan – yet drugs are.

Healthcare practitioners in Canada receive minimal training in chronic pain [4, 5]. A 2007 Canada-wide survey revealed that medical students receive an average of 16 hours of training in pain management while veterinarians receive 87 hours [6]. Further, family physicians, who see the majority of pain patients receive less than four hours of chronic pain training in their two-year residencies [7]. And finally, there are no licensure requirements for pain management knowledge for Canadian physicians [5].

Frontline primary care providers (PCPs) manage the great majority of chronic pain patients. Wait times for appointments with a pain specialist can stretch into years [8]. This has led to over-prescribing of potent narcotic analgesics with a subsequent epidemic of opioid misuse, abuse, and unintentional overdoses in Ontario [9]. In 2010, the National Opioid Use Guideline Group (NOUGG) published the Canadian Guidelines for the Safe and Effective Use of Opioids for Chronic Non-Cancer Pain [10]. This national Guideline provides a tool to counter the misuse, abuse, and diversion of prescription opioid medications and to address the knowledge gaps of those prescribing opiates. Uptake of the guideline, however, has been limited [11].

With these gaps and challenges in mind, Dr. Ruth Dubin, Dr. Andrea Furlan, and their colleagues replicated the ECHO (Extension for Community Healthcare Outcomes) model, first developed at the University of New Mexico. This paper describes the development, operation, and evaluation of the first cycle of ECHO Ontario Chronic Pain & Opioid Stewardship project.

1. Development of ECHO Ontario

ECHO Ontario Chronic Pain & Opioid Stewardship is a demonstration project funded by the Ontario Ministry of Health and Long-Term Care (MOHLTC) addressing the problem of chronic pain management in Ontario. The goal of ECHO Ontario is to increase PCP competence and confidence in managing chronic pain. Using existing

telemedicine infrastructure provided by Ontario Telemedicine Network (OTN), ECHO Ontario transcends geographic barriers by connecting PCPs from all across Ontario via multipoint video and teleconference technology. ECHO Ontario addresses the identified knowledge gaps by providing short didactic presentations and case-based learning, as well as no-cost continuing medical education (CME) credits.

The ECHO model was first developed at the University of New Mexico to connect the academic health centre in Albuquerque with rural clinicians willing to treat patients with Hepatitis C Virus (HCV) in their home communities. Using a hub and spoke model, clinical experts at the academic hub connect with multiple PCP “spoke” sites. Learning occurs multi-directionally within the hub and spoke community.

The four core tenets of the ECHO model are to 1) use telehealth technology to **leverage scarce healthcare resources**; 2) share best practices and **reduce variation** in care; 3) harness **practice-based learning** and develop specialty training expertise among PCPs, and 4) monitor and **evaluate outcomes** of the ECHO model and, when indicated, adopt changes to improve the desired outcomes [12, 13].

Since 2003, there have been 39 successful ECHO clinic replications focused on a variety of medical issues (chronic pain, mental health and addictions, endocrinology and diabetes, rheumatology, etc). Many different organizations have replicated the ECHO model including the U.S. Departments of Defense and Veteran’s Affairs, Harvard University, the University of Washington, the Irish Republic, Northern Ireland, Uruguay, and the National Institute of Mental Health and Neurosciences in Bangalore, India [14, 15].

2. Operation of ECHO Ontario

ECHO Ontario runs weekly two-hour sessions. Each session connects the central “hub” of chronic pain experts at two academic health centres co-located in Toronto and Kingston with primary care “spokes” distributed throughout the province of Ontario (**Figure 1**).

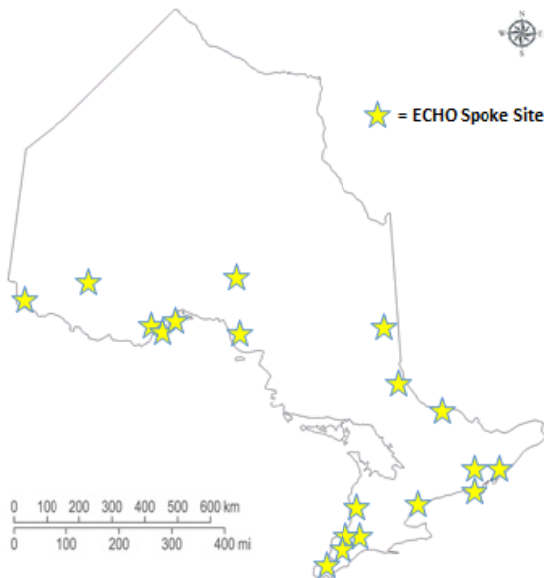


Figure 1. Map of ECHO Ontario community spoke sites

The interprofessional representation of the ECHO Ontario hub consists of physiatry, pain medicine, neurology, addiction medicine, family medicine pain expert, psychology, nursing, social work, physical therapy, occupational therapy, pharmacy, chiropractic, clinical librarian, and telemedicine technicians.

ECHO spoke PCPs are recruited from urban as well as underserved, rural, and remote locations across Ontario. The distribution of spoke participant professions is 45% physicians, 23% registered nurses and nurse practitioners, and 32% other healthcare providers, including physician assistants, social workers, pharmacists, physiotherapists, occupational therapists, and mental health workers. The majority (48%) of spoke participants are within their first 1-9 years of practice and below the age of 39 (44%).

2.1 Structure of an ECHO session:

1) Didactics: After announcements and roll-call of participants, a member of the hub gives a brief lecture on a chronic pain topic. The topics for these didactics are based on needs assessment of the spokes and program outcomes which is contingent upon new developments or local issues. Examples of topics covered to date include: the 5 pillars of chronic pain management, functional goal setting, the qualitative sensory exam, switching/tapering and stopping opioids, urine drug screening, pain psychology, and non-pharmacological treatment for chronic pain.

2) Case presentations: Each week, one or more PCPs present a de-identified patient case. These cases are highly complex, with chronic pain, mental health, addictions, and often multiple additional medical diagnoses. Most are disadvantaged psychosocially, economically, ethnically, and geographically. Revisiting patient cases is also encouraged to allow further reflection and follow up. The case presentation is coordinated by a facilitator. The facilitation skills include excellent listening skills, supportive non-judgmental summary of cases, and genuine curiosity as to how the spoke PCPs would approach this management of the case prior to closing comments and recommendations from the hub experts.

Case presenters receive a summary of all recommendations following each clinic session. If an occasional patient requires urgent access to specialist care, the ECHO hub members are able to arrange expedited referral to an appropriate service. This ensures that specialists see the patients they can best help in a timely fashion.

Each ECHO Ontario session is recorded and archived, compliant with Ontario provincial privacy legislation and available for viewing after each session to individuals who are registered as spoke [16].

3. ECHO Ontario Evaluation Methods

Monitoring and evaluating outcomes is fundamental to the ECHO model. ECHO Ontario uses a mixed methods research approach to collect data.

3.1 Quantitative data

We are collecting prospective data in the form of questionnaires regarding clinician knowledge about chronic pain, self-efficacy, attitudes and behaviours, demographics,

and practice characteristics. Clinicians are assessed at a minimum of two time points: before they join ECHO, at the end of each cycle, and after they decide to stop attending ECHO sessions.

We are also investigating the impact of ECHO Ontario on the individual patient cases presented during ECHO sessions with a grant received from the Canadian Institutes for Health Research (CIHR). Each case presentation includes reports of pain levels, function, mood, quality of life, and prescribed medications. In collaboration with the Ministry of Health, patient healthcare utilization is tracked and economic analyses will be conducted.

3.2 Qualitative data

We are conducting focus groups and semi-structured interviews with spoke PCPs. We do a semi-structured interview every 10 sessions with five randomly selected spoke participants. Questions pertain to educational and clinical components. To date, one focus group has been conducted where ECHO spoke participants were asked about clinical impact and participation in ECHO. Themes that emerged from focus group discussion include developing a sense of being a part of an ECHO community of practice, identification of knowledge gaps in chronic pain management, and comments on the ways in which ECHO impacts clinical practice.

Regarding the identification of a knowledge gap, one family physician in rural Ontario said, “I think I’m at the point where I realize now how little I actually know about chronic pain. So I would say my confidence in managing it is actually less than it probably was before I started this program and I haven’t kind of gotten to the point where I feel that I’ve got that expertise. So I’m hoping if I stick with this I will get there but it’s been four months, five months. [...] I’ve certainly gained knowledge but I’ve also realized that there are a lot of gaps that I didn’t recognize before.”

Another family physician in rural Ontario said, “I would say that my chronic pain patients, I don’t have a huge number. They are my most challenging patients and I’ve got their faces in my brain. And my top three probably take more brain and mental energy than the next 500 most challenging people. And so, I often felt quite helpless before ECHO. They had seen all the specialists and the specialists had sent them all back to me with not a lot of help. So with ECHO I feel like I’m getting the tools to better deal with them. And I feel that if I have a challenging case, I can present to this panel of experts, like I get good answers. Or if I have a question about chronic pain, I can get it answered by an expert really easily. So it’s like I’ve got back-up for my hardest, most challenging people.”

By using both qualitative and quantitative methods, we hope to gain an understanding of the mechanisms by which ECHO Ontario produces benefits for PCPs, patients, and the healthcare system. To date, we have completed one full cycle of ECHO Ontario curriculum, containing 31 sessions. An average of 17 OTN sites joined via telemedicine each week, with an average of 35 spoke participants.

A total of 31 new patient cases plus 7 follow-ups (18 female, 13 male) have been presented and discussed in cycle 1. The average age of patients presented was 52 years (sd = 16 years, range = 20 – 86 years). The top five most common pain diagnoses, in order of frequency are: low back pain, fibromyalgia, myofascial pain, neuropathic pain, and migraine headaches. The top five most common non-pain diagnoses, in order of frequency are: depression, insomnia, fatigue, hypertension, and diabetes. Reasons that PCPs present cases at ECHO include: seeking advice on opioid dosing and rotation,

clarification of pain diagnoses, poor pain control, looking for general advice, and wanting guidance on non-pharmacologic strategies and/or adjuvant analgesics.

4. Discussion

4.1 Strengths

The ECHO model has many strengths which address the specific challenges of chronic pain management in Ontario. ECHO Ontario increases access for PCPs to specialist knowledge. Ontario is Canada's most populous province, with 13.6 million residents, spread over an area greater than 1,000,000 km². Telemedicine technology is crucial. ECHO Ontario was able to use existing OTN infrastructure to overcome Ontario's massive geographical barriers without needing significant additional funding from our publically funded healthcare system.

ECHO Ontario also gives motivated PCPs the opportunity to attain new knowledge [17]. Regular weekly sessions allow PCPs to schedule time to attend and present cases based on their patients' needs. Between sessions, the ECHO hub experts are available via email or telephone in case urgent issues arise.

The ECHO Ontario curriculum and education framework addresses the chronic pain knowledge gap of Ontario primary care providers. Our participants are motivated adult learners who bring their own experience and needs to each session. ECHO Ontario builds spoke self-efficacy and confidence thereby increasing clinician capacity in urban, underserved, rural, and remote communities. ECHO Ontario also provides no-cost Continuing Professional Development (CPD) credits which may be especially relevant to providers who otherwise have to travel long distances for their required CPD.

Patient cases are discussed in a way that enhances spoke self-learning. The spoke PCPs are the first to ask for clarifying information from their presenting colleague, and to make suggestions for investigations and treatment. Only *after* the spoke participants have spoken, do the hub experts offer their thoughts, views, or insights. Long-running ECHO sessions at the University of New Mexico demonstrate that spoke participants are consistently providing best-practice advice and functioning like specialists, ie. at the highest level of their scope of practice. [18]

The problem of chronic pain is complex and requires a multimodal approach [19]. The interprofessional composition of the ECHO Ontario hub reflects this management approach without the expense of creating multiple stand-alone pain rehabilitation programs. Standard telemedicine bridges distance to allow one specialist to assist one patient. ECHO increases capacity by force multiplying specialist expertise to multiple PCP's in one session.

The creation of a community of practice is a major benefit of the ECHO model. The weekly ECHO sessions build strong relationships between geographically dispersed and often isolated PCPs. This network also includes clinical experts in academic centers. ECHO clinics at the University of New Mexico have shown how the mutual support and camaraderie increases provider satisfaction, and reduces isolation and burnout among PCPs regardless of their locations [20].

ECHO acts as an effective triage system [21]. Patient cases that require access to tertiary clinics are identified and fast-tracked to appropriate care. Given that wait times for pain specialty clinics across Canada often stretch into years [8], facilitating faster

access to specialty pain care may reverse the usual downward spiral of disabling chronic pain.

The majority of patients can and should be managed by their PCP in their own communities. In a non-inferiority controlled trial, Project ECHO New Mexico showed that hepatitis C patients achieved the same, if not better, cure rates when managed by their PCP's, when compared to the academic health center [12]. Many patients who suffer from chronic pain are unable to travel the long distances to pain clinics or cannot afford the cost of travel. ECHO provides the right care, to the right patient, at the right time.

ECHO Ontario's pragmatic approach to supporting PCPs in providing community-based best-practice care is well-aligned with the health system-wide priority of enhancing capacity in primary care. As a result, the project has benefited from strong support from its primary institutional stakeholders: the University Health Network, Queen's University, and the MOHLTC.

4.2 Limitations

There are limitations to the evaluation of the ECHO Ontario model. Spoke participants are a self-selected group; participation in Ontario is voluntary. We expect that ECHO Ontario spoke participants are early adopters who have a public-health mindset; hence, our spoke population may not be a representative sample of the average PCP in Ontario. Also, considering the total numbers of PCP's in Ontario, and our early stage of development, we are attracting only a tiny minority. Our conclusions regarding the benefits of this model may not be generalizable at this time to the broader provincial practitioner and patient populations.

5. Conclusion

The ECHO model is a promising approach for healthcare system improvement that is attracting attention from many jurisdictions. ECHO's strength lies in its simplicity, adaptability, and use of existing telemedicine infrastructure to increase both access and capacity of PCPs in underserved, rural, and remote communities.

Acknowledgements

ECHO Ontario would like to gratefully acknowledge and thank the Ontario Ministry of Health and Long-Term Care (MOHLTC) for their funding and support, particularly, Dr. Garry Salisbury, Ms. Deanna Hanes, and Ms. Kathryn Boone.

References

- [1] Canadian Pain Society. (2007). <http://www.nanosresearch.com/library/polls/POLNAT-S07-T264.pdf>. (Nanos Survey; Retrieved 12-15-2014).
- [2] Rashiq S, Schopflocher D, Taenzer P, Jonsson E, editors. (2008). Front Matter, Chronic Pain: A Health Policy Perspective. pg 44-50.
- [3] Rapoport J, Jacobs P, Bell NR, and Klarenbach S. (2004). Refining the measurement of the economic burden of chronic diseases in Canada. *Chronic Diseases in Canada* **25**(1),13-21.

- [4] Lynch ME, Campbell F, Clark AJ, et al. (2008). A systematic review of the effect of waiting for treatment for chronic pain. *Pain* **136**, 97-116.
- [5] Watt-Watson J, Carr E, McGillion M. (2011). Moving the pain education agenda forward: innovative models. *Pain research and management* **16**(6), 401.
- [6] Watt-Watson J, McGillion M, Hunter J, et al. (2009). A survey of prelicensure pain curricula in health science faculties in Canadian universities. *Pain research and management* **14**(6), 439-444.
- [7] Dubin R. (2011). Cross-Canada check-up 2010: a survey of family medicine residency training in chronic noncancer pain (CNCP) and addiction. Proceedings of the Canadian Pain Society Annual Conference. 2011 Apr 13–16; Niagara Falls, ON.
- [8] Clark AJ, Beuprie I, Clark LB, Lynch ME. (2005). A triage approach to managing a two year wait-list in a chronic pain program. *Pain research and management* **10**(3), 155-157.
- [9] Gomes T, Juurlink DN, Moineddin R, et al. (2011). Geographical variation in opioid prescribing and opioid-related mortality in Ontario. *Healthcare Quarterly* **14**(1), 22-24.
- [10] Furlan A, Reardon R, Wepler C. (2010). Opioids for chronic noncancer pain: a new Canadian practice guideline. *Canadian Medical Association Journal* **182**(9), 923-930.
- [11] Weinberg EL, Kaplan A. (2012). Cross Country Check-up: Are primary care physicians using the “Canadian Guideline for Safe and Effective Use of Opioids for CNCP”? *Pain research and management* **17**(3), 229.
- [12] Arora S, Thornton K, Murata G, et al. (2011). Outcomes of treatment for Hepatitis C Virus infection by primary care providers. *New England Journal of Medicine* **364**, 2199-2207.
- [13] Katzman JG, Comerci G, Boyle JF, et al. (2014). Innovative telementoring for pain management: Project ECHO Pain. *Journal of Continuing Education in the Health Professions* **34**(1), 68-75.
- [14] Bornstein, D. The power to cure, multiplied. (2014). *The New York Times*. http://opinionator.blogs.nytimes.com/2014/06/11/the-doctor-will-stream-to-you-now/?_r=0 (Retrieved 12-15-2014).
- [15] Project ECHO. (2014). metaECHO Conference handbook.
- [16] Service Ontario e-laws. (2004). Personal Health Information Protection Act (PHIPA), 2004, S.O. 2004, c. 3, Sched. A. http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_04p03_e.htm (Retrieved 12-15-2014).
- [17] Arora S, Thornton K, Komaromy M, et al. (2014). Demonopolizing medical knowledge. *Academic medicine* **89**(1), 30-32.
- [18] Arora S, Kalishman S, Dion D, et al. (2012). Knowledge networks for treating complex diseases in remote, rural, and underserved communities. In McKee A, Eraut M, editors. *Learning Trajectories, Innovation and Identity for Professional Development*.pg. 47-70.
- [19] Turk DC. (2002). Clinical effectiveness and cost-effectiveness of treatments for patients with chronic pain. *The Clinical Journal of Pain* **18**:355-365.
- [20] Arora S, Geppert CM, Kalishman S, et al. (2007). Academic health center management of chronic diseases through knowledge networks: Project ECHO. *Academic Medicine* **82**(2):154-160.
- [21] Arora S, Kalishman S, Dion D, et al. (2011). Partnering urban academic medical centers and rural primary care clinicians to provide complex chronic disease care. *Health Affairs* **30**(6):1176-1184.