

Supporting Peer Learning Networks for Case-Based Learning in Public Health: Experience of the Rocky Mountain Public Health Training Center With the ECHO Training Model

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Abstract

Extension for Community Healthcare Outcomes (ECHO) is a model for professional training and support now being used widely in clinical health care. ECHO provides training for health care professionals in their own communities by creating peer learning groups connected by live bidirectional video communications. Topic experts lead the sessions, but most of the learning occurs through case presentations and consultations. Although similar to telemedicine, ECHO differs in that the responsibility for patient care remains with the primary care learners. The Rocky Mountain Public Health Training Center—which supports training for the public health workforce in the six-state region of Colorado, Utah, Wyoming, Montana, and North and South Dakota—has adapted the ECHO health care model for public health training, using the ECHO learning principles of creating and supporting peer learning networks connected by live bidirectional video, and employing a case-based learning approach. The public health ECHO trainings are facilitated by subject matter experts, focus on real-life public health challenges, and use programs or scenarios within communities as “cases.” This article looks at early success in using the ECHO model for public health training on topics such as local public health agency quality improvement, patient navigation, food safety, tobacco control, obesity prevention, tuberculosis management, and HIV prevention. The Rocky Mountain Public Health Training Center continues to refine its implementation of the ECHO learning model across a wide range of public health and population health topics and shows great promise as a framework for regional public health training.

Keywords

training, public health, peer learning, case-based learning

Extension for Community Healthcare Outcomes (ECHO) is a training model developed in 2003 at the University of New Mexico that is now being used widely for training in many clinical health care settings (Arora et al., 2010; Arora et al., 2014; Arora, Geppert, et al., 2007; Arora, Kalishman, et al., 2011; Arora, Thornton, et al., 2011; Arora, Thornton, Jenkusky, Parish, & Scaletti, 2007). ECHO was initially designed to train primary care providers to improve the management of hepatitis C and other medical specialty problems in their communities by creating innovative telehealth-enabled peer learning groups. Using ECHO, a medical specialist in a particular disease, accompanied by a panel of experts from other medical disciplines, leads a series of sessions on management of the disease. The didactic portion of the

sessions is minimized, so the greater part of learning occurs through interactive case presentation and discussion among participants. ECHO is based on the principles of social cognitive, situational learning, and community of practice theories (Socolovsky et al., 2013). This article describes an approach to adapting the ECHO health care training model for the public health workforce.

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ECHO Effectiveness in Health Care Training

Recognizing that his specialty referral center would not be able to manage the large numbers of patients needing hepatitis C treatment, Dr. Sanjev Arora, a hepatologist at the University of New Mexico, designed a strategy in 2003 to train and support primary care practitioners to manage hepatitis C in their own community practices (Arora et al., 2010; Arora et al., 2014; Arora, Geppert, et al., 2007; Arora, Kalishman, et al., 2011; Arora, Thornton, et al., 2007; Arora, Thornton, et al., 2011). The strategy, Extension for Community Healthcare Outcomes (ECHO), used low-cost, state-of-the-art video technology to create peer learning groups. Dr. Arora demonstrated that ECHO-trained primary care practitioners achieved outcomes for hepatitis C equivalent to those in his hepatology specialty center (Arora, Kalishman, et al., 2011). ECHO programs now offer primary care providers in rural and underserved areas the training and support needed to deliver evidence-based care for patients with complex health conditions. The ECHO model of knowledge sharing has improved specialty care outcomes in many community settings, increasing progress in all of the “triple aim” goals of improving access, quality, and value of health care, while also improving population health (Berwick, Nolan, & Whittington, 2008). This innovative approach has been extended to train nurses, community health workers, and other health care providers in the United States and is being used by the Indian Health Service, U.S. Army, and VA Health Care System (Carey, Frank, Kerns, Ho, & Kirsh, 2016; Colleran et al., 2012; Dubin et al., 2015; Katzman et al., 2016; Khatri, Haddad, & Anderson, 2013; Komaromy et al., 2016; Mitruka et al., 2014; Pindyck, Kalishman, Flatow-Trujillo, & Thornton, 2015; Salgia et al., 2014; Scott et al., 2012; Tahan, Almashhrawi, Mutrux, & Ibdah, 2015; Watts, Roush, Julius, & Sood, 2015).

ECHO Adaption for Public Health Training

The Rocky Mountain Public Health Training Center (RMPHTC) was established in 2014 at the Colorado School of Public Health, funded as 1 of 10 Health Resources and Services Administration (HRSA) regional public health training centers. The RMPHTC supports training for the public health workforce in Colorado, Montana, North and South Dakota, Utah, and Wyoming. The RMPHTC includes a network of regional collaborators who support the development and delivery of training to public health professionals, broadly defined as anyone with a public health, population health, or disease prevention focus, regardless of whether they work in a clinical or public health setting. HRSA mandated that the regional training centers primarily use distance-based

training methodologies. As the RMPHTC began developing its training strategy, others at the University of Colorado were establishing ECHO Colorado. It quickly became clear that the many advantages of the ECHO training model would also be effective for the public health workforce. The RMPHTC and ECHO Colorado developed the public health ECHO model based on the same learning principles as the New Mexico ECHO: peer learning networks connected by live bidirectional video, using a case-based learning approach. An adaptation is that the case-based learning in public health ECHO trainings focuses on real-life challenges, using programs and communities as the “cases.” Objectives for the RMPHTC ECHO trainings include learning within the context of workplaces and communities, improving capacity to prevent disease and promote health, fostering collaboration with peers to improve population health, enriching professional development while reducing professional isolation, and allowing public health practitioners to use effective evidence-based approaches to practice at the top of their ability.

ECHO Public Health Topic Development

To begin the development of an ECHO public health training topic, a topic is identified by stakeholders or through needs assessment surveys, and topic appropriateness and audience readiness are considered. Audience readiness includes participant experience, perceived benefit, and opportunities for information to be applied throughout the series. The topic is evaluated for its fit with core ECHO model elements: peer learning and sharing, multidisciplinary panel perspectives, value of technology, and content compatibility with short didactics. Final decisions on new topics are made by RMPHTC and ECHO Colorado leadership, in consultation with regional partners. Development of each series includes working with topic experts and multidisciplinary panel members to define learning goals and session-specific objectives. Tailored marketing materials, including print/electronic flyers and web pages, are used to recruit participants, who register online. Evaluation methods, including assessing the learning process and outcomes with topic-specific evaluation tools, are prepared prior to launching each ECHO series.

Early Experience With the ECHO Model for Public Health Training

Early experience with course development has been very positive from the perspective of both RMPHTC staff and learners. ECHO courses typically include around 15 learners (range = 10-25) connecting on video group sessions every 2 to 4 weeks for six to eight sessions. Sessions typically last 60 to 90 minutes. A topic expert delivers a

short, 15-minute presentation, with the remainder of the session dedicated to case presentation and discussion. Unlike clinically oriented ECHOs, public health ECHOs do not solicit patient cases. Instead, participants present and discuss specific programs and scenarios from their public health practice. The rich discussion that follows engages all session participants—the expert, the panelists, and the learners. Below is a description of the initial public health topics developed.

Local Health Agency Quality Improvement

Developed at the request of local county public health agencies (LPHAs) and conducted in partnership with the Colorado Association of Local Public Health Organizations, the series on local health agency quality improvement (QI) was designed to support LPHAs' development of effective QI programs. Many LPHAs were interested in QI training to enhance their capacity to meet accreditation standards set by the Public Health Accreditation Board, but the training was not Public Health Accreditation Board–specific (Riley, Bender, & Lownik, 2012). Each session included a didactic on commonly used QI tools (e.g., prioritization matrix, root cause analysis) from national experts. Teams of participants from 15 to 20 health departments participated in biweekly sessions.

Patient Navigation and Community Health Workers

Multiple series on patient navigation and community health workers were developed in partnership with the Patient Navigator Training Collaborative, an organization supporting training for lay health workers assisting patients to navigate the complex paths within health care systems. Three ECHO series have been completed, and sessions covered topics such as barrier assessment and mental health resources in the “Resources” series; health assessment, population health management, and reducing readmission rates in the “Care Coordination” series; and using self-monitoring tools, culturally tailoring health messages, and health behavior change strategies in the “Health Promotion” series. Sessions were cofacilitated by clinical, academic, and community topic experts and supplemented in-person workshops available to the patient navigator workforce.

Food-Borne Outbreak Investigations

In collaboration with the Colorado Integrated Food Safety Center of Excellence, the RMPHTC held an ECHO learning community for epidemiologists engaged in food-borne illness outbreak detection and response. A collaboration between the Colorado Department of

Public Health and Environment and the Colorado School of Public Health, the Center of Excellence used the ECHO model to fill an important gap in continuing education opportunities for experienced local and state public health professionals and reduced professional isolation among those from smaller agencies with limited number of outbreak response staff. Subject matter experts were drawn from state and federal public health agencies, including the Centers for Disease Control and Prevention. Case presentations involved challenging food-borne illness outbreak investigations conducted by participants.

Tobacco Control

In collaboration with technical assistance providers and topic experts at the Colorado School of Public Health, the ECHO model was adopted for four previously established peer learning networks focused on priority areas of tobacco control, including tobacco cessation and health systems, worksite policy, smoke-free environments, and point-of-sale policy. The goal of using the ECHO model was to strengthen and enrich these peer learning networks, which had previously connected via teleconference and webinars. Sessions were held on a quarterly basis; however, as they were not found to foster the peer support and investment experienced by other series, the sessions were concluded after 1 year. It was determined that the ECHO model is most successful when sessions are conducted frequently (e.g., every 2 to 4 weeks). Video technology continues to support these peer learning networks, but without the ECHO format.

Obesity Prevention

The RMPHTC and ECHO Colorado partnered with LiveWell Colorado (<https://livewellcolorado.org>), a statewide obesity prevention program, to focus on reducing obesity in Colorado. LiveWell funded obesity prevention communities using the ECHO methodology to strengthen their capacity to improve healthy eating and active living by focusing on identifying, developing, and applying strategies to create sustainable improvements in the root causes of obesity in communities.

Tuberculosis Management

In collaboration with the Colorado Department of Public Health and Environment and Denver Health, ECHO Colorado held an ECHO series to improve the capacity of public health workers to manage cases of active tuberculosis (TB). This series focused on specific diagnostic and treatment protocols for providers, investigative techniques for clinic staff and LPHA case managers, and side effects and complications tied to TB treatment. These ECHO sessions included chest radiograph images and

consultation and connected public health and clinical agencies, thus supporting a coordinated approach to preventing the spread of TB infection.

HIV Prevention

ECHO Colorado partnered with Denver Health to host an ECHO series about best practices in pre-exposure prophylaxis for statewide providers. This series aimed to build HIV prevention capacity in rural Colorado and increase the number of providers offering pre-exposure prophylaxis to their at-risk patients. The series addressed patient talking points, psychosocial barriers inhibiting utilization, assessment tools, and treatment plans. The series provides the opportunity for new strategies in HIV prevention in rural areas to be explored.

Evaluation

ECHO evaluation activities are designed to investigate components of the series that are performing optimally and those that need improvement, both in real time and after each series concludes. A mixed-methods evaluation approach is used, including the collection of quantitative data through participant surveys and qualitative data through participant interviews and open-ended survey questions. ECHO is evaluated using the RE-AIM framework: reach (the number and diversity of entities affected), effectiveness (increasing knowledge, professional satisfaction, etc.), adoption (number and proportion participating in program), implementation (fidelity to protocols), and maintenance of intervention (effects are sustained and institutionalized; Glasgow, Vogt, & Boles, 1999). Below are some lessons learned.

Facilitation

Good facilitation is critical to the success of an ECHO series. Facilitators are trained in the ECHO model and are given feedback during the series to improve performance. ECHO series facilitators should be dynamic and comfortable in the virtual setting, as well as inclusive and able to draw out dynamic discussion among participants. The best expert on a given topic is not necessarily the best group facilitator. Plans for future trainings include asking facilitators and topic experts to observe other ECHO series in order to become familiar with the learning process and effective teaching and facilitation practices within this unique learning setting.

Participant Recruitment

Given the ECHO model's focus on peer learning, it is key for participants to share a similar level of experience in order to contribute equally to case presentations and

discussion. Having a highly invested champion agency during the development of the ECHO series that is connected to the priority audience is highly beneficial for ensuring the recruitment and retention of suitable participants.

Session Frequency

Though the ECHO model provides flexibility in number and cadence of sessions, the most successful series comprise approximately six sessions. This format provides enough time for participants to connect with each other and the topic, without experiencing participant fatigue. Similarly, series that met at least once a month were more successful at creating connected peer groups.

Topic Fit

Finally, the ECHO model, with its short didactic component, is ideal for topics that do not require the delivery of a large amount of information. If a topic is complex or new to participants, 15 minutes of direct instruction may not be sufficient. In these instances, a different modality of distance education with or without bidirectional video may be more effective in achieving learning objectives.

Pedagogy of ECHO Learning

ECHO is based on the principles of social cognitive, situational learning, and community of practice theories (Socolovsky et al., 2013). Thus, the ECHO model connects two important components of how people learn: authentic experience using case-based learning and social learning, as applied to online learning. Several other components that distinguish the ECHO model of learning are outlined below.

Online Versus In-Person Training Dynamics

Webinars are often not engaging for learners. It has therefore been difficult to emulate the active and personally engaging learning dynamic that can be achieved in a live classroom using online methods. The real-time, bidirectional video connection of ECHO learning cohorts helps address that problem by allowing for face-to-face communication across distances. Internet-supported group video can now support large groups, though the optimal number of group participants appears to be in the 15 to 20 range, allowing for frequent input from each group member to reinforce engagement. For complex topics, ECHO can be combined with an introductory in-person learning experience in order to introduce the topic and begin to build a group identity, as resources allow. Although learners may often prefer in-person trainings, time and resource limitations often restrict their

ability to participate. ECHO learning communities are more time efficient, require less travel, and can be conducted during lunch time or before or after regular business hours. The platform offers time savings, while building communities that reduce isolation and offer participants an opportunity to learn in the very setting where the new knowledge is relevant.

Using Case-Based Methods

Case-based learning uses authentic stories or program/community situations, thus preparing the participant for professional practice by applying knowledge to solve real problems. This method has been used in a range of professional education, with proven acceptance and effectiveness (Thistlethwaite et al., 2012). Generally, learners report an increased relevance of course content through the introduction of cases, which is consistent with adult learning theory. The case-based approach performs as well as other methods and typically scores higher on both student and instructor evaluations due to high levels of interaction, topical relevance, engagement, and focused discussion. ECHO provides an application of the clinical model of case-based learning from “curb-side consults” for public health training (Perley, 2006). It is the group learning aspect of ECHO that corresponds to an established tenet of best learning practices: learning in a social context. Unfortunately, traditional training methods in the public health arena often treat learners as silos. This approach ignores modern teaching theory that stresses the social component of learning (Siemens, 2005). We acquire knowledge best when we tie the act of learning to our interaction with other people. The ECHO model capitalizes on real-world knowledge of the learners and participants receive real-time feedback on problems they are working on. This interaction facilitates the creation of real interpersonal connection, which can be especially valuable for public health professionals in rural or frontier areas, who can often feel professionally isolated. The ECHO peer network, built from the cohort of learners in a given series, can also serve to promote continued professional interaction after the series is completed.

Connection to Local/Regional Expertise

One of the advantages of the ECHO model is that in the process of learning, peers become personally and professionally familiar with both colleagues and regional topic experts. In both clinical health care and public health, this familiarity can then become valuable for off-line communications and consultation, allowing both the subject matter experts and the learners to form wider collaborative groups for ongoing interaction.

ECHO Versus Telemedicine

Traditionally, telemedicine has been defined as audiovisual consultations that occur directly between patients and physicians, allowing transmission and storage of patient-oriented information (e.g., radiographs, scans, photos), supporting both remote diagnosis and patient monitoring. Although ECHO uses video technology that is quite similar to that used by telemedicine, ECHO is not focused patient-specific health care delivery. Through case presentations and consultations, primary care providers receive valuable information about patient-specific management, but the responsibility for health care always resides with the primary care learner, and that learning is shared across the entire peer learning network (Weinstein et al., 2014). The ECHO topic specialists serve as mentors, training community providers to provide care in clinical areas that were previously outside their expertise. The RMPHTC has adapted this approach to the public health arena, as these same principles apply to public health topics and learners. Instead of patient cases, the experiences and scenarios that learners bring to the discussion are real-world challenges that can benefit from collective feedback from experts and peers.

Summary

ECHO is a model of providing learners, including both primary care providers and public health professionals, with useful knowledge and collegial support to effectively manage complex problems within their own communities. ECHO has become a widely accepted model of peer professional learning in health care, and has great potential for continuing education and professional development in health care systems and public health agencies. ECHO shows great promise as an educational framework for regional public health training, with minimal adaptation needed, primarily around the application of case presentations (e.g., situations rather than individual patients). The RMPHTC continues to refine its implementation of the ECHO learning model across a wide range of public health and population health improvement topics, applying lessons learned from the first year of implementation.

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