



Show Me Echo – Hepatitis C: A telemedicine mentoring program for patients with hepatitis C in underserved and rural areas in Missouri as a model in developing countries

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ABSTRACT

Project (Extension for Community Healthcare Outcomes) (ECHO) is a telemedicine case-based training model for primary care providers to treat complex diseases by mentoring academicians of universities. It was first developed by the University of New Mexico for rural and underserved areas in New Mexico. The project Show Me ECHO-Hepatitis C (HCV) is an adaptation of Project ECHO to improve healthcare and hepatitis C therapy in the entire state of Missouri, including rural and underserved areas. Show Me ECHO- HCV uses telemedicine as videoconferencing technology for the case-based learning. The medical specialists of the University of Missouri–Columbia provide training and mentoring to primary care providers working in rural and urban underserved areas to deliver the best evidence-based care for patients with hepatitis C. This type of a model is promising in the management of patients with hepatitis C in developing countries with the availability of basic internet connections and potential voluntary participants.

Keywords: Hepatitis C, telemedicine, mentoring, developing countries, healthcare, community

INTRODUCTION

Project Extension for Community Healthcare Outcomes (ECHO) was developed as a model for the treatment of complex diseases in rural and underserved populations by extensive primary care provider (PCP) training through the use of telemedicine technologies for case-based learning of hepatitis C. It was initially developed by the University of New Mexico for rural New Mexico areas. Sanjeev Arora, a distinguished Professor of Medicine, Division of Gastroenterology, at the University of New Mexico Health Sciences Center, is the director and founder of Project ECHO. At present, Project ECHO is utilized successfully as a widespread model for enhancing nationwide and international care and therapy for hepatitis C (1-5).

In Missouri, we are utilizing an adaptation of the ECHO model named “Show Me ECHO” to address barriers in the healthcare of hepatitis C in rural and underserved areas in Missouri. This unique telemedicine mentoring project is focused on low-income patients with hepatitis C who experience barriers because of financial or physical access problems with regard to care for hepatitis C disease (6).

Objectives of show me ECHO-HCV

- 1) To develop a co-managed hepatitis C Telemedicine Program, “TeleECHO,” for participants in Project ECHO connected remotely for treatment of hepatitis C patients in selected areas.
- 2) To expand Project ECHO’s TeleECHO Clinics, trainings, and focus groups/interviews. These clinics use weekly or biweekly sessions to provide ongoing mentoring to PCPs in screening, treatment, and management of hepatitis C.
- 3) To train and mentor PCPs on challenging issues related to hepatitis C care in primary care environment using TeleECHO.
- 4) To utilize a comprehensive approach with a team of multidisciplinary providers (Hepatologists, pharmacist, psychologist, and nurse specialist) to consult with an expanding base of rural providers on treatment options and recommendations related to hepatitis C.
- 5) To conduct research through questionnaires and small group interactions among professionals, including interviews, surveys, and electronic de-identified case data from clinical observations and consented cases.

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HCV in Missouri

In 2011, 5,040 cases of chronic and eight cases of acute HCV infection were reported in Missouri. HCV chronic and acute infection rates in 2011 represented relative increases from the previous years. In 2012, both chronic and acute rates decreased mildly. Missouri Department of Health and Senior Services (MDHSS) received reports of 4,726 hepatitis C cases, of which 4,722 were chronic hepatitis C; only four cases of acute hepatitis C were reported (Missouri Surveillance Reports, 2012). These 2012 accumulated cases contributed to a reported incidence rate of 78.6 per 100,000 people (7,8). The incidence rate was nearly twice as high in African Americans (61.2 per 100,000) as that in Whites (34.2 per 100,000) and was much higher in males (99.4 per 100,000) than in females (58.6 per 100,000). The highest number of hepatitis C cases was reported for males aged 50–59 years (1,130, which was more than twice than that reported for all other age groups) followed by those in age groups of >60 years (52 cases), 40–49 years (529 cases), 30–39 (325 cases) years, and 0–19 years (only 33 cases).

In 2011–2012, it was estimated that 16.1% of Missourians aged <65 were uninsured compared with 18% in the United States (Missouri Foundation for Health, 2014) (7).

We aimed to implement the Show Me ECHO intervention in the entire state to strengthen healthcare capacity to diagnose, monitor, and cure HCV infection.

Primary care providers intervention

Project ECHO has been using telehealth to improve accessibility to specialized healthcare for treating patients with hepatitis C in rural areas. It also enables the training of PCPs on hepatitis C diagnosis, prevention, and treatment through case-based learning. Project ECHO uses telemedicine technology for case-based learning to train PCPs to care for patients with hepatitis C in rural and underserved areas. Arora et al. (2) concluded that ECHO model is not only an effective model for the treatment of HCV in rural communities but also reduces “racial and ethnic disparities in treatment outcomes by bringing more services to minority communities.”

The aims of the Show Me ECHO are to increase the ability of PCPs in rural Missouri areas to screen people infected with HCV, diagnose hepatitis C, and appropriately treat according to the current guidelines. Our work will also facilitate the proper reporting of hepatitis C cases to the Missouri Department of Health and Senior Services.

To earn free CME credits, participants are given the opportunity to complete surveys before and after attending the course, although all participants can choose not to provide their consent for using their survey information for research purposes without losing CME credit.

Improvement of public health surveillance systems

Show Me ECHO project offers the opportunity to improve public health surveillance of HCV in Missouri. Show Me ECHO team will work with its main partners, the Missouri Department of Health and Senior Services (MDHSS) and the Missouri Primary Care Association (MPCA) to develop an interface between their respective information system datasets and registries. Increased reporting of HCV is expected from this intervention through a pull or push informatics adaptation.

We expect this new information system to dramatically improve timeliness, completeness, and sensitivity of hepatitis surveillance in Missouri. It can potentially be expanded to include similar infectious diseases.

Show Me ECHO intervention

Show Me ECHO interdisciplinary team comprises Hepatologists, pharmacist, psychologist, and nurse specialist. We follow the guidelines published by the American Association for the Study of Liver Diseases (AASLD) in treating HCV infection. Project ECHO is also an AASLD recommended strategy that addresses the lack of access to specialists through the implementation of a model that involves close collaboration between PCPs and subspecialists (9).

An early outcome of the proposed ECHO-based interventions is the increase in the number of PCPs who are confident in their ability to diagnose and treat HCV-infected patients. Intermediate outcomes of the ECHO-based intervention are the increased number of persons detected with HCV infection and patients appropriately treated for HCV infection in the targeted geographical areas of the project. Indirect outcomes of the ECHO-based intervention are an increased number of reported cases of HCV infection and completeness of reported cases to the MDHSS.

Potential implications for hepatitis C care in developing countries

The concept of ECHO-based interventions provides a model and frame work to potentially improve the public health surveillance of HCV and management in developing countries. The project has a potential to develop information system datasets or registries so that increased reporting of HCV may be expected from this intervention.

Addressing social determinants, such as income, education, and healthcare coverage, will certainly impact rates of all diseases including hepatitis C. Improving accessibility to specialized healthcare for screening, diagnosing, and treating hepatitis C in underserved and rural areas in developing countries is possible with the availability of a centralized telemedicine infrastructure. Also, this telehealth system can effectively facilitate the training of PCPs on hepatitis C prevention, diagnosis, and treatment through case-based learning as well as on disease management techniques while strategically taking advantage

of critical resources at the local level to bridge the gap for the lack of specialists in remote and underserved areas.

The most updated HCV therapy guideline of the American Association for the Study of Liver Diseases (AASLD) recommends the ECHO project to be “a strategy that addresses the lack of access to specialists (a primary barrier to hepatitis C care) is participation in models involving close collaboration between primary care practitioners and subspecialists through collaborations using telemedicine videoconferencing to enhance primary care practitioner and knowledge to overcome geographic barriers through case-based learning and real-time feedback from a multidisciplinary team of specialists (i.e., gastroenterology, infectious diseases, pharmacology, and psychiatry practitioners)” (10).

In particular, in chronic hepatitis C cases, ECHO model has shown high rates of cure, with sustained virologic response (SVR) being 57% at an academic institution site and 58% at an ECHO site (3).

We expect this new information system to dramatically improve timeliness, completeness, and sensitivity of hepatitis surveillance in developing countries. It can potentially be expanded to include similar infectious diseases including hepatitis B.

CONCLUSION

The project Show Me ECHO-HCV offers a partnership between the University of Missouri–Columbia and rural/underserved community clinics to provide best practices and protocol-driven healthcare to manage HCV infection in rural and underserved areas in Missouri. The goal of the project Show Me ECHO-HCV is to mentor and have primary care providers to deliver university-based quality healthcare for Missourians living with HCV infection. In addition, this project model has the potential to improve and facilitate HCV-related healthcare in developing countries where internet connections are easily available for interested team players.

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