Original Article

SAGE Open Medicine

SAGE Open Medicine
3: 2050312115612805

DOI: 10.1177/2050312115612805
smo.sagepub.com
SAGE

Treating hepatitis C in American Indians/Alaskan Natives: A survey of Project ECHO® (Extension for Community Healthcare Outcomes) utilization by Indian Health Service providers

Talia Pindyck[1], Summers Kalishman[2,3], Lainey Flatow-Trujillo[3] and Karla Thornton[1,3]

Abstract

Background: American Indians/Alaskan Natives have a high mortality associated with hepatitis C virus, yet treatment rates are low. The ECHO (Extension for Community Healthcare Outcomes) model™, a videoconferencing technology for primary care providers, is underutilized at Indian Health Service facilities.

Purpose: To ascertain Indian Health Service providers' benefit of and barriers to utilizing hepatitis C virus TeleECHO clinics.

Methods: We electronically sent an Active Participant Survey to Indian Health Service providers utilizing hepatitis C virus TeleECHO clinic and a Non-Participant Survey to other Indian Health Service providers interested in this clinic.

Results: In total, 100% of Active Participant Survey respondents perceive moderate to major benefit of hepatitis C virus TeleECHO clinic in managing hepatitis C virus, and 67% of Non-Participant Survey respondents reported lack of administrative time as the major barrier to utilizing this resource.

Conclusion: Indian Health Service providers participating in hepatitis C virus TeleECHO clinic perceive this resource as highly beneficial, but widespread utilization may be impractical without allocating time for participation.

Keywords

Infectious diseases, gastroenterology/hepatology, Native Americans/Alaskan Natives, rural health, primary care, TeleECHO

Date received: 23 June 2015; accepted: 7 September 2015

Introduction

Chronic liver disease (CLD) is the fifth leading cause of mortality among American Indians/Alaskan Natives (AI/ANs).[1] National hepatitis C virus (HCV) surveillance in this population has been limited, but recent available data are concerning. HCV is the second leading cause of CLD in the Southwestern US AIs.[2] Native HCV-infected patients are twice as likely to die from HCV-related events than non-native patients in the United States. In 2011, AI/ANs had the highest mortality rates of persons with HCV by race/ethnicity (10.6 per 100,000 population).[3] Elevated rates of comorbidities, such as type 2 diabetes and alcoholic steatohepatitis, may contribute to this disparity in disease progression.

Despite increased identification of HCV in AI/ANs as a significant cause of liver disease and mortality, treatment rates are low. In a retrospective cohort study of AI/ANs in Alaska, treatment was initiated in 14 (10%) of 146 patients in 2007.[4] In two North Dakota medical facilities, 22 (18%) of 124 AI/ANs received HCV treatment, with lack of access to specialists cited as a common barrier to treatment.[5] Lack of

[1]Division of Infectious Diseases, Department of Internal Medicine, School of Medicine, The University of New Mexico (UNM), Albuquerque, NM, USA
[2]Department of Family and Community Medicine, School of Medicine, The University of New Mexico (UNM), Albuquerque, NM, USA
[3]Project ECHO, Albuquerque, NM, USA

Corresponding author:
Talia Pindyck, Division of Infectious Diseases, Department of Internal Medicine, School of Medicine, The University of New Mexico (UNM), Albuquerque, NM 87131, USA.
Email: tpindyck@gmail.com

access to treatment has also been cited as a barrier to screening AI/ANs for HCV.[6]

The Indian Health Service (IHS), an agency within the Department of Health and Human Services, provides federal health services to approximately 2.2 million of the nation's estimated 3.7 million AI/ANs. The Navajo Area Indian Health Service (NAIHS), one of 12 IHS regional administrative units, is responsible for health services to AIs in portions of Arizona, New Mexico, and Utah. IHS primary care clinics and hospitals are located mainly in rural locations, without ready access to subspecialty care. Historically, primary care clinicians in rural areas have rarely offered treatment for HCV.[7,8]

Project ECHO® (Extension for Community Healthcare Outcomes) was developed at the University of New Mexico Health Sciences Center (UNMHSC) to increase access to specialty care for patients with chronic and complex conditions in rural and underserved areas of New Mexico. The ECHO model™ connects academic medical center specialists weekly with primary care clinicians over a videoconferencing network (TeleECHO clinics). A recent prospective cohort study found equivalent rates of sustained viral response (cure) between patients treated at the UNMHSC HCV clinic and those treated by primary care clinicians using the ECHO model.[9]

HCV TeleECHO clinics convene weekly. Over the past 2 years, significant efforts have been made to provide HCV ECHO services to IHS facilities, including networking with IHS primary care providers and subspecialists during site visits and IHS conferences. In March 2013, a monthly IHS-exclusive HCV TeleECHO clinic was established specifically for IHS providers.

Recruitment efforts have been most effective in NAIHS facilities. However, IHS participation is still low. Since 2010, only three out of six NAIHS hospitals and one out of seven NAIHS health centers have utilized UNM HCV TeleECHO clinic.

The goal of this study was to delineate IHS-specific barriers to utilizing the ECHO model by surveying IHS providers interested in treating HCV. We hypothesized that lack of technical support, and limited clinic or administrative time are impeding participation in TeleECHO clinics.

Methods

The UNMHSC Office of Human Research Protections Office reviewed and approved the full protocol. IHS providers who, within the last year, had ever shown interest in treating HCV by attending any HCV TeleECHO clinic were recruited via email. The introductory email describing the project included a link to an electronic survey. The survey was available from 15 May to 15 September 2014. Two general reminder emails were sent to all IHS providers during the study period, and individual emails to enhance recruitment were also sent.

IHS providers who had been mentored to treat at least one patient with HCV ECHO were directed to the Active Participant Survey (APS), while the rest were directed to the Non-Participant Survey (NPS). Both surveys included items regarding characteristics of providers, IHS facility, and total number of HCV patients on providers' panels. Items specific to NPS included barriers to becoming an HCV treater, while items specific to APS included benefits to utilizing HCV TeleECHO. Both surveys had open-ended questions, where providers could elaborate on their responses.

Survey responses were collected and analyzed using Gravic Remark Web Survey Version 5 and Excel. Fisher's exact test was used to compare between-group respondent characteristics, with a significance level of 0.05. Medians and quartiles were calculated to describe Likert-type scales. Due to the limited scope of this study, a power analysis was not conducted. All survey responses were presented anonymously to the study investigators.

Results

In all, 38 (53%) of the 72 recipients contacted agreed to participate in the study. A total of 25 (66%) respondents filled out the NPS, and 13 (34%) respondents filled out the APS. Six respondents were noted to be non-providers and were dropped from the analysis, resulting in 20 (63%) NPS respondents and 12 (38%) APS respondents. In total, 15 IHS facilities were represented, from eight IHS regional areas. Seven respondents did not disclose their facility. There were significantly more NPS than APS respondents with 6–20 years of active clinical practice (p value = 0.014). Of the 11 APS respondents who had personally treated patients within the past year for HCV, 10 (91%) had co-managed 100% of these patients with a TeleECHO clinic. A total of 75% of APS respondents participated in UNM HCV TeleECHO clinic; the rest participated in the University of Washington HCV TeleECHO clinic.

APS and NPS respondents were similar regarding medical professions and HCV patient panel size. Most respondents had five or more HCV patients on their panels, with six (32%) NPS respondents and five (42%) APS respondents reporting >30 HCV patients on their panels (Table 1). More NPS than APS respondents (57% versus 18%, respectively) had Infectious Disease (ID) or Gastroenterology (GI) subspecialists at their facilities, though this difference was not statistically significant.

While 13 (68%) of NPS respondents reported interest in potentially presenting patients to TeleECHO clinic, they consistently reported lack of administrative time as the most significant barrier (Table 2). In the open-ended questions, both NPS respondents (67%) and APS respondents (50%) reported lack of time to attend TeleECHO clinic as a major barrier to participation.

Feedback regarding the benefits of participating in HCV TeleECHO clinic was consistently positive. In total, 100% of

Table 1. Characteristics of Survey Respondents.

Number of participants	Active Participant Survey		Non-Participant Survey		p value
	12	*	20	*	
IHS sites					
IHS regional areas	5		5		
ID/GI on site	2	18%	8	57%	0.1
IHS facility reported	11	92%	14	70%	
Profession					
Physician	5	42%	12	60%	0.47
Pharmacist	4	33%	6	30%	1
PA/NP	3	25%	2	10%	0.34
Years in active clinical practice					
0–5 years	10	83%	10	50%	0.08
6–20 years	0	0%	8	40%	0.01
>20 years	2	17%	2	10%	0.62
Years out of training					
0–5 years	10	83%	9	45%	0.06
6 or more years	2	17%	11	55%	
Number of HCV patients on panel					
<5	2	17%	8	42%	0.24
5–30	5	42%	5	26%	0.45
>30	5	42%	6	32%	0.71
No response	0	0%	1		

IHS: Indian Health Service; ID/GI: Infectious Disease/Gastroenterology subspecialist; PA/NP: Physician Assistant/Nurse Practitioner; HCV: hepatitis C virus.
*Unknowns excluded from denominator.

Table 2. Non-Participant Survey (NPS) Respondents: Barriers to Using HCV ECHO.

	Not a barrier (1)	Minor barrier (2)	Moderate barrier (3)	Major barrier (4)	N/A[a]	Median	Quartile (Q1–Q3)[b]
Lack of technology or institutional support to implement software	8 42%	1 5%	7 37%	3 16%	1	3	(1, 3)
Lack of administrative time to participate in HCV TeleECHO clinic	1 6%	1 6%	4 22%	12 67%	2	4	(3, 4)
I am concerned about the legal ramifications of treating HCV, regardless of whether the patient is co-managed with the HCV TeleECHO clinic	17 89%	2 11%	0 0%	0 0%	1	1	(1, 1)
Lack of clerical support to gather data for patient presentations to HCV TeleECHO clinic	6 33%	4 22%	5 28%	3 17%	2	2	(1, 3)
There is an infectious disease subspecialist at my IHS site	8 67%	2 17%	1 8%	1 8%	8	1	(1, 2)
I don't think TeleECHO is an adequate method of co-managing treatment	16 94%	1 6%	0 0%	0 0%	3	1	(1, 1)
HCV TeleECHO clinic is not sensitive to the specific needs of my native patients	16 89%	2 11%	0 0%	0 0%	2	1	(1, 1)

HCV: hepatitis C virus.
[a]N/A were not included in the calculation of median and quartiles.
[b]Q1 = 25th percentile; Q3 = 75th percentile.

APS respondents rated being well-informed, self efficacy, access to expertise, collegiality, and decreased professional isolation as moderate to major benefits (Table 3), and 50% of APS respondents stated they would not treat HCV without regular participation in this clinic.

Discussion

This is the first HCV ECHO survey focusing on IHS providers. Most providers (68%) reported having multiple (five or more) HCV patients on their panels, indicating the relevance of HCV treatment to the survey respondents.

Table 3. Active Participant Survey (APS) Respondents: Benefits to Using HCV ECHO.

	Not a benefit	Minor benefit	Moderate benefit	Major benefit	N/A[a]	Median	Quartile (Q1–Q3)[b]
Being well-informed about symptoms in HCV	0	0	2	10	0	4	(4, 4)
	0%	0%	17%	83%			
Self-efficacy: belief in my ability to manage and treat HCV patients	0	0	4	7	1	4	(3, 4)
	0%	0%	36%	64%			
Access to expertise in behavioral/mental health resources	0	0	4	7	1	4	(3, 4)
	0%	0%	33%	58%			
Access to expertise in pharmacy	0	0	3	8	1	4	(3.5, 4)
	0%	0%	27%	73%			
Collegial discussion with peers about HCV patients	0	0	1	11	0	4	(4, 4)
	0%	0%	8%	92%			

HCV: hepatitis C virus.
[a]N/A were not included in the calculation of median and quartiles.
[b]Q1 = 25th percentile; Q3 = 75th percentile.

Lack of administrative time to devote to HCV ECHO participation was consistently reported as a major barrier in both the quantitative and free form sections of the surveys. IHS providers described a need for allocated time set aside to take part in TeleECHO clinics, which is not currently provided in many of their facilities, as well as administrative assistance. Providers must not only be available to present patients weekly via videoconference but also regularly provide medical history and laboratory results prior to their presentations.

Our results are consistent with other HCV ECHO provider surveys, which reported significant improvement in providers' ability to manage and treat HCV patients.[10,11]

Results also suggest that a large portion of participants who utilized the ECHO model to treat HCV (50% in this study) would not be treating HCV otherwise. This is consistent with a recent analysis of Centers for Disease Control and Prevention (CDC)-funded programs in Utah and Arizona, modeled on HCV Project ECHO. Nearly all (93%) of participating providers had no prior experience treating HCV, but after implementation of these programs, 129 (46%) of the HCV-infected patients presented in TeleECHO clinics received antiviral treatment.[12]

APS respondents were more likely than NPS respondents to have 0–5 years of active clinical practice, (p value = 0.014), and to have finished training within the last 5 years (p value = 0.06). This suggests that recently trained providers are more likely to utilize HCV TeleECHO clinic. The presence of ID or GI subspecialists at an IHS facility may also be associated with lower TeleECHO clinic utilization, but in this small study, the between-group difference did not reach statistical significance.

The survey results are limited by the inherent biases associated with self-reporting and the limited number of respondents. We were unable to determine whether responses were site-specific or HCV TeleECHO clinic–specific, given the low survey response rate in most facilities. The small group of APS respondents also limited between-group analyses. However, in light of known low IHS provider participation, there were a broad number of facilities represented in this analysis, and one major barrier to TeleECHO clinic participation was consistently reported.

Currently, there is scant literature regarding treatment of HCV in AI/ANs, particularly using videoconferencing technology. Further studies to determine how the ECHO model could best be utilized by IHS facilities are needed. IHS providers utilizing HCV TeleECHO clinic perceive major benefit from this resource, but, practically, increased participation requires either TeleECHO-dedicated provider time or administrative support.

Acknowledgements

The authors would like to acknowledge Rebecca J. Monette, Education and Development Manager at Project ECHO; Bruce Struminger, Associate Professor of Medicine at UNM and Associate Director of Project ECHO; Brigg Reilley, Indian Health Service Contractor; Sanjeev Arora, Director of Project ECHO and Professor of Medicine at UNM; and Cristina Murray-Krezan, Division of Epidemiology, Biostatistics, and Preventive Medicine at DOM, UNM, for their much appreciated assistance with this study.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The statistical consultative services were supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences of the National Institutes of Health through grant no. ULI TR000041. UNMHSC Office of Human Research Protections Office reviewed and approved the full protocol for this study.

References

1. Heron M. Deaths: leading causes for 2010. *Natl Vital Stat Rep* 2013; 62(6): 1–97.
2. Bialek SR, Redd JT, Lynch A, et al. Chronic liver disease among two American Indian patient populations in the southwestern United States, 2000–2003. *J Clin Gastroenterol* 2008; 42(7): 949–954.
3. Surveillance for viral hepatitis—United States, 2011, http://www.cdc.gov/hepatitis/Statistics/2011Surveillance/Commentary.htm (2014, accessed 27 March 2015).
4. Livingston SE, Townshend-Bulson LJ, Bruden DL, et al. Treatment eligibility in Alaska Native and American Indian persons with hepatitis C virus infection. *Int J Circumpolar Health* 2012; 71: 1–7.
5. Hossain S, Jalil S, Guerrero DM, et al. Challenges of hepatitis C treatment in Native Americans in two North Dakota medical facilities. *Rural Remote Health* 2014; 14: 2982, http://www.rrh.org.au/Articles/subviewnew.asp?ArticleID=2982 (accessed 27 March 2015).
6. Reilley B, Leston J, Redd JT, et al. Lack of access to treatment as a barrier to HCV screening: a facility-based assessment in the Indian health service. *J Public Health Manag Pract* 2014; 20(4): 420–423.
7. Spaulding AC, Weinbaum CM, Lau DT, et al. A framework for management of hepatitis C in prisons. *Ann Intern Med* 2006; 144(10): 762–769.
8. Navajo Area—Indian Health Service (IHS), http://www.ihs.gov/navajo/ (accessed 27 March 2015).
9. Arora S, Thornton K, Murata G, et al. Outcomes of treatment for hepatitis C virus infection by primary care providers. *N Engl J Med* 2011; 364(23): 2199–2207.
10. Arora S, Kalishman S, Thornton K, et al. Expanding access to hepatitis C virus treatment–Extension for Community Healthcare Outcomes (ECHO) project: disruptive innovation in specialty care. *Hepatology* 2010; 52(3): 1124–1133.
11. Arora S, Kalishman S, Dion D, et al. Partnering urban academic medical centers and rural primary care clinicians to provide complex chronic disease care. *Health Aff* 2011; 30(6): 1176–1184.
12. Mitruka K, Thornton K, Cusick S, et al. Expanding primary care capacity to treat hepatitis C virus infection. *MMWR: Morb Mortal Wkly Rep* 2014; 63(18): 393–398.