

Leveraging Behavioral Health Expertise: Practices and Potential of the Project ECHO Approach to Virtually Integrating Care in Underserved Areas

Brant Hager, M.D., Michael Hasselberg, Ph.D., Eric Arzubi, M.D., Jonathan Betlinski, M.D., Mark Duncan, M.D., Jennifer Richman, M.D., Lori E. Raney, M.D.

This column describes Project ECHO (Extension for Community Healthcare Outcomes), a teleconsultation, tele-education, telementoring model for enhancing primary care treatment of underserved patients with complex medical conditions. Numerous centers have adapted ECHO to support primary care treatment of behavioral health disorders. Preliminary evidence for behavioral health ECHO programs suggests positive impacts on providers, treatment planning,

and emergency department costs. ECHO has the potential to improve access to effective and cost-effective behavioral health care by virtually integrating behavioral health knowledge and support in sites where specialty providers are not available. Patient-level outcomes research is critical.

Psychiatric Services 2018; 69:366–369; doi: 10.1176/appi.ps.201700211

Less than half of persons with behavioral health disorders receive behavioral health care (1), and persons living in rural areas are less likely than those in urban or suburban areas to access such care (2). Barriers to behavioral health care include workforce shortages, stigma, and geographical maldistribution of behavioral health providers (2). Thus most people who receive behavioral health care do so through their primary care provider (PCP) (1). Unfortunately, only 13% of behavioral health care provided in primary care is considered to be at least minimally adequate, for reasons including inadequate primary care training in behavioral health and ineffective communication between behavioral health providers and primary care teams (1).

Several technology-enabled models, including telepsychiatry, electronic consultation, and collaborative care, aim to improve behavioral health care access and quality in primary care settings (3). In this column, we describe a fourth model, Project ECHO (Extension for Community Healthcare Outcomes), as a promising means for improving behavioral health care access and quality in primary care settings. We first describe ECHO and its behavioral health adaptations, with examples from several institutions. We then summarize empirical support for ECHO across nonbehavioral health and behavioral health conditions. Finally, we outline funding and implementation challenges, as well as policy implications of ECHO.

The ECHO Model

Project ECHO (www.echo.unm.edu), based at the University of New Mexico Health Sciences Center (UNMHSC), strives

to improve access to specialty care, including behavioral health care, in underserved communities by utilizing videoconferencing technology to transfer specialist knowledge and support to primary care teams. The ECHO model involves building an interdisciplinary team of specialists at a regional center (hub) that is trained in ECHO protocols (described below) by one of several ECHO training sites (superhubs). Hubs may have multiple teams, each with a condition of interest—for example, chronic hepatitis C virus (HCV) infection, endocrine disorders, and behavioral health disorders. Hubs are typically located in academic medical centers. Through professional networking, each hub team establishes relationships with remote primary care sites (spokes) that have identified the need to improve treatment of the condition(s) of interest in their practices. Spokes are typically located in underserved locations, both rural and urban.

Each hub team hosts a weekly one- to two-hour teleconsultation, tele-education, and telementoring session, called a teleECHO clinic, which all interested spokes attend simultaneously. Prior to a teleECHO clinic, spokes submit deidentified patient case presentations to a teleECHO clinic coordinator. During a teleECHO clinic, the hub team facilitates discussions about the submitted cases and collates evidence-based interdisciplinary recommendations generated by both hub and spoke participants. Discussions are grounded in clinically relevant teaching moments, cultural humility, and a unique brand of collegiality that values and respects input from all participants. Collated recommendations typically include diagnostic guidance

and suggestions for further evaluation, psychosocial support, nonpharmacologic treatment, and pharmacologic treatment. During a teleECHO clinic, the hub team also presents a succinct, evidenced-based lecture covering key disease processes and best practices. TeleECHO clinic attendance allows each spoke participant to receive no-cost continuing education credit for the number of hours attended. Between teleECHO clinics, the hub team provides ad hoc telephone consultation to spoke teams and facilitates specialty referrals as indicated.

The number of cases discussed during a teleECHO clinic and the depth of discussion for each case depend on the nature of the condition(s) of interest. TeleECHO clinics focused on curable, laboratory-driven conditions, such as HCV, tend to discuss more cases in lesser depth, whereas teleECHO clinics focused on chronic, relapsing-remitting conditions, such as endocrine or behavioral health disorders, tend to discuss fewer cases in greater depth. Similarly, the makeup of each hub team is tailored to the needs of the condition(s) of interest. For example, non-behavioral health ECHO hub teams typically include a medical doctor specializing in the condition(s) of interest, with support from a behavioral health provider and a clinical pharmacist, with or without a social worker with case management experience, a nurse, and a community health worker. In contrast, behavioral health ECHO hub teams typically include a psychiatrist or psychiatric nurse practitioner, a clinical psychologist or master's-level psychotherapist, and a community health worker or promotor, with or without a clinical pharmacist, an addiction medicine physician, or a social worker with case management experience. Each specialist on a given hub team speaks to presented cases through the lens of expertise, resulting in an interdisciplinary tapestry of input for each case.

Spoke teams learn via three hypothesized avenues. The first is "learning loops." Spoke teams share current practices via case-based discussions, change practices based on recommendations, apply knowledge to the care of other patients, and engage in iterative learning through repeated opportunities to discuss multiple patients throughout the course of care. Second, "knowledge networks" allow other spoke teams to participate in their peers' case-based discussions. Spoke teams tap into their individual reservoirs of knowledge and experience to provide additional expertise and support to their colleagues in a virtual community of practice. Third, "evidence-based didactics" support spoke teams' content knowledge and no-cost continuing education credits. As knowledge builds, spoke teams present increasingly complex cases, with subsequent progression of learning. In time, spoke teams evolve into local centers of excellence for treatment of patients with complex medical conditions, and patients benefit from access to specialty-informed medical care, provided to them locally within the therapeutic framework of the primary care relationship. Further research is needed to delineate how these hypothesized mechanisms of learning lead to provider and patient change,

the degree of change they elicit, and which mechanisms are most important in driving change.

Behavioral Health ECHO

Behavioral health ECHO programs have proliferated over the past decade. Integrated Addictions and Psychiatry TeleECHO Clinic (IAP ECHO) at UNMHSC began in 2006 and continues to the present, with a focus on co-occurring mental and substance use disorders (4). Subsequently, OHSU ECHO at Oregon Health and Science University, ECHO Geriatric Mental Health (GEMH) and ECHO General Psychiatry (PSYCH) at the University of Rochester, Psychiatry and Addictions Case Conference at the University of Washington, and Integrated Behavioral Health ECHO Montana at the Billings Clinic have all established interdisciplinary teleECHO clinics supporting primary care teams treating a broad range of mental and substance use disorders.

Unlike typical telepsychiatry services, wherein a psychiatrist consults with one patient at a time, ECHO connects behavioral health specialists directly to primary care teams with the goal of increasing primary care capacity to deliver behavioral health care to patients within their own practices. Unlike typical electronic consultation services, wherein a single psychiatrist consults with a single PCP on a single case, ECHO connects multiple behavioral health specialists with multiple primary care teams simultaneously, allowing for shared, interdisciplinary, case-based learning. Finally, in contrast to typical behavioral health integration models, which utilize on-site behavioral health consultants, ECHO virtually integrates behavioral health care knowledge and support into primary care teams themselves.

Primary care-delivered behavioral health services supported by the above ECHO programs have included psychiatric diagnosis; psychoeducation; motivational interviewing; behavioral activation; Seeking Safety; buprenorphine treatment of opioid use disorder; psychopharmacological management of depressive, anxiety, bipolar, psychotic, substance use, neurocognitive, pain, and other disorders; and the collaborative care model. Within spoke teams, community health workers or care managers typically carry out ECHO-recommended nonpharmacologic treatments while PCPs carry out diagnostic workups and pharmacologic treatments. ECHO GEMH at the University of Rochester also augments ECHO services with direct telepsychiatry consultation for patients with treatment-refractory conditions at spoke sites.

Other programs, such as ECHO Chicago at the University of Chicago and ECHO PSYCH at the University of Rochester, have developed a focus on the collaborative care model. ECHO PSYCH supports care managers who treat behavioral health patients at spoke sites. Care managers are an integral part of the collaborative care model, which has substantial evidence to support its effectiveness in improving depression, quality of life, and cost-effectiveness in primary care (5). Care managers in ECHO PSYCH-supported practices manage a

registry of patients with complex biopsychosocial needs and carry out nonmedication recommendations made by the hub team. If the hub team recommends medication changes, the care manager communicates these recommendations directly to the PCP and follows the patient on a regular basis to assess response. The hub psychiatrist is available to the PCP if further communication about medication recommendations is needed. Didactics focus on outcome measures, which care managers utilize to evaluate patient registries.

Impact

ECHO first demonstrated effectiveness in the treatment of patients with HCV during the interferon era. Remote primary care teams, supported by an HCV ECHO specialist team, achieved sustained viral response rates noninferior to those obtained by a university-affiliated HCV clinic (6). Psychiatrists with the HCV ECHO specialist team played key roles in supporting primary care teams in pretreatment preparation of patients, selection of patients for treatment, treatment-emergent neuropsychiatric toxicity management, and relapse prevention.

A recent systematic review examining the impact of ECHO across conditions reported high levels of PCP satisfaction; increases in PCP knowledge, competence, and performance; improvements in patient health; and cost-effectiveness (7). Notable patient-level impacts have included the aforementioned HCV findings; increased utilization of physical medicine and initiation of nonopioid pharmacotherapy in chronic noncancer pain; reduction in glycosylated hemoglobin in difficult-to-control diabetes; and less use of restraints and antipsychotics and fewer urinary tract infections among nursing home residents (7).

Regarding behavioral health-specific measures, a descriptive evaluation of IAP ECHO at UNMHSC found that the most frequently presented cases pertained to patients with opioid use disorder (4). After the launch of this teleECHO clinic, the number of per-capita buprenorphine-waivered physicians in underserved areas increased more rapidly in New Mexico than in the United States overall (4). In addition, 75% of participants who presented a case at IAP ECHO reported that the advice they received led to changes in their treatment plan (8). A mixed-methods pre-post evaluation of the University of Rochester's ECHO GEMH found improved PCP knowledge about, confidence in, and professional satisfaction with treating older adult patients with behavioral health symptoms across 35 primary care practices in New York State (9). Pre-post analysis of health care utilization and costs attributed to behavioral health patients from these primary care practices indicated a 24% reduction in costs associated with emergency room use ($p < .05$) after implementation of the ECHO intervention (9).

These early evaluations are promising; however, further research is needed to understand the impact of ECHO on behavioral health outcomes. In particular, patient-level outcome studies, utilizing rigorous designs such as stepped-wedge

cluster randomization, will prove pivotal in evaluating ECHO's empirical effects.

Funding

Sustainability of ECHO hubs beyond grant funding is an area of ongoing discussion. The major challenge to sustainability is that most medical care reimbursement remains based on a fee-for-service model. In this context, primary care teams have misaligned incentives: attending ECHO for one to two hours every week could result in loss of revenue from reduced patient volume during ECHO attendance. For academic medical centers, there may also be hidden costs for supporting ECHO in a predominately fee-for-service reimbursement model, because revenue generated at these centers is currently based on high-cost specialty care. If ECHO reduces reliance on high-cost specialty services, it could result in loss of revenue.

On the other hand, participation in ECHO—with its no-cost continuing education credits and associated benefits in PCP knowledge, competence, confidence, performance, and satisfaction—may result in improved retention of spoke providers within their communities, thus reducing costs. ECHO-supported spokes may also be able to provide and bill for higher levels of care and retain patients they otherwise would have referred elsewhere. ECHO programs that use a collaborative care model may also assist spokes in receiving reimbursement for collaborative care by using CPT codes available since January 1, 2017. In turn, specialists at academic medical centers may increasingly see the most complex and urgent patient cases, with the potential for more appropriate referrals and fewer missed appointments.

Furthermore, in response to rising health care costs, providers and insurers are developing innovative approaches to the delivery and financing of care, including organizational structures such as accountable care organizations and patient-centered medical homes. Within these structures, reimbursement will be based increasingly on the quality and outcomes of care, delivered in the framework of value-based purchasing—for example, shared savings contracts between payers and providers in which savings realized in the delivery of care are returned to the provider if indicators of quality are met. ECHO has an emerging evidence base for cost-effectiveness, and as more providers enter value-based reimbursement contracts, they will have far greater incentives to use ECHO as a component of their service delivery.

Finally, if future health care legislation loosens coverage mandates for essential health benefits, raises out-of-pocket expenses, or turns toward greater reliance on health savings accounts, ECHO is uniquely poised to support decreased costs for patients. ECHO-supported primary care teams can bring to bear a broad umbrella of specialty treatments within their own offices, limiting the number of provider visits and decreasing the time, travel, and costs required for a patient to access specialty care.

Policy

Recognizing the potential for Project ECHO and similar models to enhance quality of care, reduce costs, and improve provider satisfaction, the Expanding Capacity for Health Outcomes (ECHO) Act, Public Law 114–270, 130 Stat. 1395, was passed into law on December 14, 2016 (10). The ECHO Act requires a Health and Human Services (HHS) and Health Resources and Services Administration (HRSA) analysis of ECHO and related models' impacts on provider capacity and patient quality of care; a Government Accountability Office (GAO) report outlining cost savings, potentials for improvement of health care, and opportunities for increasing uptake of ECHO and related models; and a combined HHS-HRSA-GAO report to Congress on how to integrate ECHO and related models into funding streams and innovation grants.

In addition, the Agency for Healthcare Research and Quality (AHRQ), the lead federal agency charged with driving the safety and quality of health care in the United States, has invested funding in evaluating how the ECHO model may improve the safety and quality of health care for the millions of Americans who do not have access to specialty care. AHRQ has specifically featured the University of Rochester's ECHO GEMH as a "policymaker impact case study," describing the use and impact potential of this model to state and federal policy makers, health systems, clinicians, providers, and academicians (11).

Conclusions

ECHO provides a robust model for addressing behavioral health disorders in underresourced areas through utilization of technology-enabled collaborative learning and support for primary care teams. Although ECHO is associated with positive impacts on providers, patients, costs, and policy, rigorous clinical trials are urgently needed to assess ECHO's full scope of effectiveness.

AUTHOR AND ARTICLE INFORMATION

Dr. Hager is with the Department of Psychiatry and Behavioral Sciences, University of New Mexico School of Medicine, Albuquerque. Dr. Hasselberg and Dr. Richman are with the Department of Psychiatry, University of Rochester, Rochester, New York. Dr. Arzubi is with the Department of Psychiatry, Billings Clinic, Billings, Montana. Dr. Betlinski is with the Department of Psychiatry, Oregon Health and Science University, Portland. Dr. Duncan is with the Department of Psychiatry, University of Washington, Seattle. Dr. Raney is with Health Management Associates, Denver, Colorado. Benjamin G. Druss, M.D., M.P.H., and Gail L. Daumit, M.D., M.H.S., are editors of this column. Send correspondence to Dr. Hager (e-mail: bhager@salud.unm.edu). Information from this report was presented at the Oregon Psychiatric Physicians Association Annual

Winter Conference, Portland, Oregon, February 24 and 25, 2017; and at the Institute for Psychiatric Services, Washington, D.C., October 6–9, 2016.

Financial support for this work was provided to Dr. Hager by grant 2015PG-T1D029 from the Leona M. and Harry B. Helmsley Charitable Trust, grant 3RL43 from the GE Foundation, and grant 3RBJ5 from the American Institute for Research; to Dr. Hasselberg by grant 5-23331 from the New York State Health Foundation, grant 15-01568 from the Greater Rochester Health Foundation, grant 1027 from the Health Foundation for Western and Central New York, and grant U1QHP28738 from the Health Resources and Services Administration; and by Blue Cross Blue Shield Montana, Montana Medicaid, Pacific Source, and MT Mental Health Trust. The views presented are those of the authors and do not necessarily reflect the views of the funding organizations.

Dr. Raney reports receipt of royalties from American Psychiatric Association Publishing. The other authors report no financial relationships with commercial interests.

REFERENCES

1. Wang PS, Lane M, Olfson M, et al: Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication. *Archives of General Psychiatry* 62:629–640, 2005
2. Thomas KC, Ellis AR, Konrad TR, et al: County-level estimates of mental health professional shortage in the United States. *Psychiatric Services* 60:1323–1328, 2009
3. Raney L, Bergman D, Torous J, et al: Digitally driven integrated primary care and behavioral health: how technology can expand access to effective treatment. *Current Psychiatry Reports* 19:86, 2017
4. Komaromy M, Duhigg D, Metcalf A, et al: Project ECHO (Extension for Community Healthcare Outcomes): a new model for educating primary care providers about treatment of substance use disorders. *Substance Abuse* 37:20–24, 2016
5. Bao Y, Druss BG, Jung HY, et al: Unpacking collaborative care for depression: examining two essential tasks for implementation. *Psychiatric Services* 67:418–424, 2016
6. Arora S, Thornton K, Murata G, et al: Outcomes of treatment for hepatitis C virus infection by primary care providers. *New England Journal of Medicine* 364:2199–2207, 2011
7. Zhou C, Crawford A, Serhal E, et al: The impact of Project ECHO on participant and patient outcomes: a systematic review. *Academic Medicine* 91:1439–1461, 2016
8. Komaromy M, Bartlett J, Manis K, et al: Enhanced primary care treatment of behavioral disorders with ECHO case-based learning. *Psychiatric Services* 68:873–875, 2017
9. Fisher E, Hasselberg M, Conwell Y, et al: Telementoring primary care clinicians to improve geriatric mental health care. *Population Health Management* 20:342–347, 2017
10. Public Law 114–270—Dec 14, 2016, 130 Stat 1395. Washington, DC, Congress.gov, 2016. <https://www.congress.gov/114/plaws/publ270/PLAW-114publ270.pdf>
11. AHRQ Telehealth Project Helps Address Mental Health Needs Among Rural Elderly in New York State. Rockville, Md, Agency for Healthcare Research and Quality, April 2017. <https://www.ahrq.gov/policymakers/case-studies/201703.html>