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7-1-2020

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## COVID-19, Medical Education, and Bone Health: Insights From Project ECHO

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The coronavirus disease 2019 (COVID-19) global pandemic has severely challenged healthcare delivery systems worldwide, disrupted traditional modalities of education at all levels, and altered norms of social interaction everywhere. It has accelerated some trends already in place, as seen by the surge in the use of electronic communication for education and medical care. It has also confronted us with dilemmas in providing medical care that cannot be given through electronic connections, such as administering injectable medications that require a strict dosing regimen to maintain their effectiveness. The ways in which we respond to the current crisis are likely to transform the landscape of medical education and healthcare delivery, perhaps forever.

Project ECHO (Extension of Community Healthcare Outcomes) is technology-enabled collaborative learning (1) with many applications in healthcare and other fields of interest. The ECHO model of learning uses videoconferencing to expand healthcare workforce capacity, increase access to specialty level care, and reduce health disparities in underserved communities. ECHO was developed in 2003 at the University of New Mexico Health Sciences Center (UNMHSC) in

Albuquerque, NM, USA, to address unmet needs in the care of patients with chronic hepatitis C in rural parts of the state. Healthcare professionals who regularly participated in interactive case-based learning with ECHO were ultimately able to manage their patients as well as or better than the university specialty clinic (2). There are now at least 825 ECHO programs addressing a broad range of disease states and conditions, based in 48 states and 39 countries (3), with many more to come. These are operated by entities that include universities, institutions, societies, and organizations who have replicated and adapted the ECHO model of learning based on community needs and resources. The skills necessary to launch and maintain an ECHO program can be acquired through no-cost “Immersion training” provided at UNMHSC and in other countries, and now available in an online format. The full resources of Project ECHO are available to ECHO “partners,” including use of the Zoom (Zoom Video Communications, Inc, San Jose, CA) videoconferencing platform. When COVID-19 infections were recognized as a global crisis, Project ECHO responded by temporarily redeploying all staff to activities devoted to best practice COVID-19 care for public health officials, scientists, and frontline healthcare workers in the United States and abroad.

Bone Health TeleECHO was established at UNMHSC in 2015 with the aim of educating participants to provide better care for patients with skeletal diseases and reducing the osteoporosis treatment gap (4). As with chronic hepatitis C, osteoporosis is a disease that is underdiagnosed and undertreated, despite the availability of effective inexpensive medications to reduce fracture risk (5). Bone Health TeleECHO is an online community of practice composed of healthcare professionals with an interest in the care of patients with skeletal diseases. Participants represent a diverse mix of urban and rural providers from many medical specialties and practice settings connecting with weekly videoconferences using Zoom. Each session typically includes a short (10-15 minutes) presentation on a topic of interest followed by presentations of real but de-identified patient cases, all of which are accompanied

Received 04/29/20. Accepted 04/30/20.

**Disclosure:** E. Michael Lewiecki has no direct income from potentially conflicting entities. His employer, New Mexico Clinical Research & Osteoporosis Center, has received research grants from Radius, Amgen, Mereo, Bindex; income for service on scientific advisory boards or consulting for Amgen, Radius, Alexion, Sandoz, Samsung Bioepis, Sanifit; service on speakers' bureaus for Radius, Alexion; project development for University of New Mexico; and royalties from UpToDate for sections on DXA, fracture risk assessment, and prevention of osteoporosis. He is a board member of the National Osteoporosis Foundation, International Society for Clinical Densitometry, and Osteoporosis Foundation of New Mexico. Micol S. Rothman has nothing to disclose.

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by interactive discussions (6). Bone Health TeleECHO has become a model for the development of similar programs that now operate from diverse locations in other countries, at times and in languages that work best for those who wish to participate (7).

Responses to the COVID-19 global pandemic have involved interventions such as “social distancing” (individuals in public remaining at least 6 feet apart), “shelter in place” (remaining at home except for essential activities) and limiting or eliminating social gatherings, including medical congresses and traditional medical office visits. This set of circumstances has made Project ECHO and Bone Health TeleECHO more relevant than ever. Bone Health TeleECHO has addressed the COVID-19 crisis by continuing to link healthcare professionals and focusing discussions on the unique challenges imposed by the pandemic.

**Osteoporosis treatments:** Nonbisphosphonate medications used to treat patients with osteoporosis have a rapid offset of effect when discontinued. It is important to avoid treatment interruptions or delays to achieve the expected benefits of reduced fracture risk. Teriparatide and abaloparatide are given by self-administered injections which can be continued while maintaining social distancing. However, in the United States, denosumab and romosozumab must be administered by a healthcare professional. With “shelter in place” orders and concerns about the severity of COVID infections in elderly and immunosuppressed patients, some patients with osteoporosis have been advised against traveling to medical offices or infusion centers to have these drugs administered or have been hesitant to enter a building that might put them in close contact with other patients and medical staff. Strategies to maintain treatment have been a particular focus of discussion with recent Bone Health TeleECHO sessions. Providers have shared innovative solutions, such as administering injections in the parking lot with the patient remaining in the car or allowing patients direct entry to a treatment room without time in a waiting room in close proximity to others. In some cases, a visiting nurse has given the injection in the patient’s home or the patient has self-injected. At nursing homes and assisted living facilities, on-site staff may be able to give the injections. Participants also shared lessons learned about insurance provisions during this time. Bone Health TeleECHO gives participants means to rapidly share information, thereby allowing knowledge of novel innovations to be quickly and widely disseminated.

**Medical education:** Clinical providers typically obtain continuing medical education (CME) credits by traveling to conferences, some of them with hundreds or thousands of attendees. The pandemic has forced cancellation or postponement of most medical congresses in 2020 due to

proscriptions on travel and large gatherings. It remains uncertain when, if ever, potential attendees will resume these traditional ways of learning. Project ECHO addresses these issues by allowing healthcare professionals to have virtual interactive meetings, with CME, to learn from one another without the need for travel and gathering in large groups. It is likely that the future of medical education will include a variety of virtual learning methods such as ECHO.

**Patient care:** The knowledge gained in ECHO sessions can directly affect patient care in a different way than attending a webinar or obtaining virtual CME. ECHO provides a unique opportunity to discuss cases with many providers with expertise in the field. In university settings, ongoing case conferences have been postponed or canceled during the pandemic. This, coupled with the closure of many medical offices and accelerations in virtual visits has left many providers feeling isolated in terms of their ability to care for complex patients. Project ECHO improves patient care by empowering participating healthcare professionals with specialty-level knowledge that can be applied to many patients. By doing so, it complements care provided by telemedicine and acts as a force multiplier that can reach many patients.

Bone Health TeleECHO sessions provide a collegial environment for learning that can improve patient care at individual and institutional levels. These sessions were highly effective prior to the COVID-19 crisis, and are now more relevant than ever.

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