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Editorial

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Women's Health

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"Extension for Community Healthcare Outcomes creates knowledge networks that enable a transition from centralized specialty care at academic institutions to empowerment of primary care providers to provide more highly skilled care closer to home."

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Project ECHO (Extension for Community Healthcare Outcomes) is a strategy of telementoring healthcare professionals in underserved geographical areas to improve the care of common, chronic, complex medical conditions. ECHO was developed at the University of New Mexico Health Sciences Center [1] in Albuquerque, NM, USA, starting with a pilot project in 2003, using chronic hepatitis C virus (HCV) infection as the model disease. The ECHO concept has since been applied to other conditions (e.g., chronic pain, palliative care, addiction, tuberculosis) in New Mexico and replicated in other states and other world regions for these and other diseases, providing an innovative method of 'demonopolizing' medical knowledge to improve healthcare in rural underserved areas [2]. Recently, ECHO innovations have been applied to the management of osteoporosis and metabolic bone disease, serving as a force multiplier to expand the workforce capacity for bone diseases from a few healthcare professionals to many.

Osteoporosis is a major public health concern, particularly for aging women. As with HCV infection, osteoporosis is a common, chronic and complex disease that is too often inadequately treated. It has been estimated that in 2010 there were 158 million individuals worldwide age 50 years and older (87% of whom were women) at high risk of osteoporotic fracture, with that number expected to double by 2014 [3]. The burden of osteoporotic fractures is high. Fractures of the hip and spine are associated with an increase in mortality of about 20% [4]; of those who survive, many will be impaired and some will require long-term institutional care [5]. The most feared consequence of osteoporotic fractures, more onerous than death for many patients, is loss of independence [6]. Disability-adjusted life years associated with osteoporotic fractures are more than with many common diseases (e.g., breast cancer, prostate cancer, hypertension) that may generate greater angst with patients [7]. The worldwide direct and indirect costs of hip fracture were estimated to be US$34.8 billion in 1990 and expected to rise to US$131.5 billion by 2050 [8].

Despite the availability of treatments proven to reduce fracture risk [9] and accumulating evidence that osteoporosis treatment can prolong life [10], osteoporosis remains underdiagnosed and undertreated [11], with only about 20% of patients with hip fracture treated to reduce the risk of future fractures [12]. The causes of the osteoporosis treatment gap are many, including lack of awareness of clinical practice guidelines, competing healthcare priorities, declining reimbursement for bone density tests, limited time during physician encounters to discuss patient concerns and often a poor understanding and communication of the balance of benefits and risks with treatment. Strategies to reduce the treatment gap include

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systematic identification and treatment of post-fracture patients by means of fracture liaison services [13] and education of healthcare professionals to become more proficient at managing skeletal diseases through methods such as ECHO.

ECHO creates knowledge networks that enable a transition from centralized specialty care at academic institutions to empowerment of primary care providers to provide more highly skilled care closer to home. The needs of many patients with osteoporosis are currently not being met due to lack of local expertise in caring for this disease and limited access to care at specialty clinics due to long travel distances and substantial waiting times. Telementoring is not the same as telemedicine, which is traditionally defined as the use of audiovisual technology to provide medical care for individual patients at long distances. Telemedicine comes in many forms, ranging from primary care of patients with complex conditions to intensive care to teleradiology and telepathology. By contrast, telementoring uses audiovisual technology to connect a team of medical experts with many healthcare professionals, each of whom will then acquire skills to provide advanced levels of care for their patients and potentially for patients of other providers in the community. This 'hub and spoke' system, with teachers at a virtual center and learners anywhere there is an Internet connection, greatly leverages the patient care benefits beyond traditional one-on-one telemedicine. It combats professional isolation that is common in rural communities and allows more patients to receive expert care close to home, with greater convenience and lower cost than traveling long distances to specialty clinics. In the USA, telementoring may be particularly beneficial in reaching out to healthcare providers in Federally Qualified Health Centers, a network of clinics established to provide a primary care safety net for medically underserved patients, often located in rural areas far from academic medical centers. It is likely that many other countries have challenges similar to the USA in delivering high-quality medical care in rural communities; ECHO knows no boundaries and might be similarly effective in addressing these issues worldwide.

> "Outcomes measurements are necessary to assess success or failure of any therapeutic intervention."

Bone Health ECHO is designed with a multidisciplinary teaching team interacting with learning partners through a weekly video conference of case-based discussions about patients with osteoporosis and metabolic bone diseases. Each session also includes a brief didactic presentation on a topic of interest. The faculty includes physicians representing a range of medical specialties (e.g., internal medicine, endocrinology, rheumatology, orthopedics) plus individuals from other key disciplines, such as nutrition and physical therapy. Faculty are typically gathered together at one location for each session, but can be located anywhere; guest faculty from remote locations may log in as desired. Learning partners are usually physicians, nurse practitioners and physician assistants who typically, but not necessarily, provide patient care in rural communities where patients have limited access to specialty care. The learning partners present real patient cases with redacted reports to remove any identifiers; patient confidentiality is maintained and all sessions are compliant with the Health Insurance Portability and Accountability Act (HIPAA), an important consideration in the USA. A case presentation template is used as an educational tool to focus attention on critical bone-specific components of the medical history, physical exam, bone density tests and evaluation for secondary causes of osteoporosis. Sometimes metabolic bone diseases (e.g., Paget's disease of bone, osteogenesis imperfecta, tumor-induced osteomalacia, hypophosphatasia) are revealed in the course of evaluating a patient with low bone density or fractures, while at other times the patient may present with a bone disease that is clearly different than osteoporosis. The learning partners retain all responsibility for treatment decisions, so that faculty and other participants are not liable for any adverse occurrences. Discussion of the cases is directed to developing teaching points that benefit all participants in caring for their own patients with similar issues. Participants receive no cost continuing medical education credits.

Outcomes measurements are necessary to assess success or failure of any therapeutic intervention. Outcomes of HCV ECHO clinics were assessed by measuring virologic responses to treatment, comparing the results of the ECHO clinics with an academic center. New Mexico is the fifth-largest state in the USA, with about half the population living in rural areas, sometimes far removed from urban medical specialty care. The poverty rate is higher than the national average and the state has one of the highest rates of uninsured citizens in the country [14]. Prior to HCV ECHO, fewer than 1600 New Mexicans with chronic HCV, out of a total of about 34,000 patients, were receiving treatment for the disease [15]. Lack of treatment was attributed to many factors, including distance from specialty care, lack of medical training, treatment side effects and cultural issues. After participation of 21 HCV ECHO sites, a total of 407 patients who had received no previous treatment were enrolled in the outcomes study. It was found that ECHO sites

performed as well as an academic medical center for treatment of patients with HCV, with about 58% of patients in each group having a sustained virologic response [16]. The success of HCV ECHO was attributed to three knowledge routes – guidance from faculty specialists, participants learning from each other, and the brief didactic presentations, all serving to develop the clinical skills of participants to care for the patients. These favorable outcomes generated great interest in replicating the ECHO model for the care of other chronic diseases.

Bone Health ECHO will measure outcomes through surveys of learning partners to evaluate achievement of learning objectives for each session with input directed to modifying future session to better achieve the objectives, self-efficacy questionnaires, and review of healthcare claims databases for codes matching osteoporosis prescriptions, bone density tests, and fractures at baseline and after the intervention in rural ECHO communities. Teaching strategies will be shared, a common curriculum used, and outcomes data pooled with universities in other states participating in the Bone Health ECHO Collaborative, a consortium of collaborating ECHO sites. Success with these early Bone Health ECHO initiatives may stimulate the development of more Bone Health ECHO replication sites and contribute to reducing the burden of osteoporotic fractures.

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