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Building virtual communities of practice for health

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Advances in medical research and innovation mean little if they do not reach the patients who need them. Too often, specialised medical knowledge remains within the walls of academic and tertiary care centres in capitals and major cities, inaccessible to much of the world's population due to geographical distance and economic disparity. To “ensure healthy lives and promote well-being for all at all ages”, UN Sustainable Development Goal 3, a more efficient and equitable way to disseminate new scientific knowledge and evidence-based expertise is needed.

During the past two decades, technology-enhanced communication and collaborative learning initiatives have converged to produce innovative and powerful learning platforms. The rise of Internet-based communication has spurred a revolution in online education and knowledge sharing, from massive open online courses (MOOCs), such as Coursera, to online learning platforms (eg, Khan Academy) and continuing education resources (eg, the University of Washington's HIV Web Study). Collaborative learning in health care has evolved rapidly; the Institute for Healthcare Improvement's collaborative learning model offers one leading example.¹ Telemedicine also allows long-distance training for health-care professionals,² an effective method to deliver patient-centred, contextual medical curricula,³ and supportive supervision. Additionally, online social networking enables communities of practice⁴ that “offer the potential to bring together temporally and geographically dispersed actors to work towards a common purpose”.⁵ Through technology, communities of practice are being implemented across health-care areas, such as integrated care,⁶ pain management,⁷

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health visiting services,⁸ and nurse education.⁹ These virtual communities enable collaborative learning that transcends geography.¹⁰

What if virtual communities of practice were built intentionally to disseminate expert medical and public health knowledge and experience to help extend quality care? What if they connected front-line health-care workers in the primary care setting with teams of local and international specialists, who mentored and coached them in managing patients? What if communities of practice transformed core public health functions, such as disease surveillance and public health emergency response, by creating and supporting interactive networks of communication, coordination, and collaboration that connect districts to regional, national, and super-national levels of the health system?

The non-profit Project ECHO (Extension for Community Healthcare Outcomes) is an example of an initiative that is building such communities of practice in more than 23 countries on six continents. ECHO's collaborative model of medical education and care management uses multipoint video conferencing to enable virtual case-based communities of practice and learning that connect specialist teams at local, regional, and international academic medical centres and centres of excellence with primary care teams of doctors, nurses, pharmacists, behavioural health specialists, and community health workers in rural and underserved locales. Primary care teams and specialists hold weekly virtual teleECHO sessions focused on complex, chronic conditions, such as HIV, tuberculosis, hepatitis C, cancer, and women's reproductive health, or on core public health functions or emerging health systems challenges. Front-line clinical and public health practitioners present de-identified patient, population health, and health systems quality improvement cases to the interprofessional specialist team for discussion and recommendations for patient or population health management. Through routine engagement that involves coaching and mentoring in teleECHO clinics, providers and public health specialists become experts and over time acquire the knowledge and skills to treat patients with complex conditions and manage critical public health programmes within their communities.^{11,12}



Virtual communities of practice such as those that use the Project ECHO model go beyond MOOC-style virtual classrooms by developing knowledge networks that promote real-time

multidirectional learning and teaching, with a strong emphasis on peer-to-peer sharing and learning. Knowledge delivery and mentoring are combined with opportunities for live discussion and problem solving in situations where meeting in person is impractical and cost-prohibitive.

The success of virtual communities of practice is dependent on basic infrastructure such as electricity and internet bandwidth. However, cloud-based video-conferencing platforms are now accessible to nearly anyone with a webcam-enabled computer, tablet, or smartphone, and the growth of cellular availability in sub-Saharan Africa and low-income countries has enabled many new applications of technology in health.^{13,14} Additional challenges to the implementation of virtual communities of practice include the need for clinical and public health experts and participants to have protected time to participate, and adapting a model of learning that is non-hierarchical, participatory, and dynamic in contexts where such an approach might be unfamiliar. Despite these challenges, ECHO programmes are being implemented in Argentina, Australia, Brazil, Canada, Côte d'Ivoire, Ecuador, Egypt, Georgia, India, Kazakhstan, Kenya, Mexico, Namibia, Tanzania, Uganda, the UK, Uruguay, and Vietnam.

Namibia's Ministry of Health and Social Services has a weekly HIV teleECHO programme to support physicians, nurses, and pharmacists who care for more than 80 000 patients with HIV in more than 15 regional and district hospitals and health centres.¹⁵ In India, the Government's National Institute for Tuberculosis and Respiratory Diseases has established a tuberculosis teleECHO programme that supports 25 district tuberculosis office teams across Delhi who care for nearly 60 000 patients annually with active tuberculosis; the focus of this programme is to strengthen care for the more than 3000 patients with drug-resistant tuberculosis who receive care each year. In Uruguay, the Universidad de la República collaborates with the MD Anderson Cancer Center in the USA to run a multinational cervical cancer teleECHO programme that trains providers throughout Latin America. In the UK, Northern Ireland Hospice has implemented a teleECHO programme for palliative care, and the Health and Social Care Board of Northern Ireland has expanded the initiative to offer teleECHO programmes for 24 different conditions, including chronic obstructive pulmonary disease, dementia, and diabetes. Globally, Project ECHO is increasingly being adapted to support community-health-worker initiatives; maternal and child health services; public health programme management; quality improvement; and essential public health systems, such as laboratories, field epidemiology, and surveillance initiatives, and other areas of relevance for global health security.

Virtual communities of practice like Project ECHO facilitate use of scarce health-care resources to promote continual learning and collaboration, breaking the distance barrier that blocks timely access to medical and public health knowledge and expertise in many parts of the world. As characterised within the Sustainable Development Goals, the magnitude and complexity of efforts to reduce preventable morbidity and mortality require continued focus on adapting innovative strategies for learning collaboration and telementoring to new settings and new challenges. To achieve healthy lives and wellbeing for all, the right knowledge must get to the right place at the right time for those who need it most.

References

1. Institute for Healthcare Improvement. The breakthrough series: IHI's collaborative model for achieving breakthrough improvement. IHI Innovation Series white paper Boston: Institute for Healthcare Improvement, 2003.
2. Gröne O, Garcia-Barbero M. Integrated care: a position paper of the WHO European office for integrated health care services. *Int J Integr Care* 2001; 1: e21. [PubMed: 16896400]
3. Bramsted KA, Prang M, Dave S, Shin PN, Savy A, Fatica RA. Telemedicine as an ethics teaching tool for medical students within the nephrology curriculum. *Prog Transplant* 2014; 24: 2947.
4. Wenger E, Snyder W. Communities of practice: the organizational frontier 2000 <https://hbr.org/2000/01/communities-of-practice-the-organizational-frontier> (accessed June 6, 2017).
5. Sims J. Communities of practice, telemedicine and online medical communities. *Technol Forecast Soc Change* 2016; published online Sept 8. 10.1016/j.techfore.2016.08.030.
6. Díaz-Chao A, Torrent-Sellens J, Lancasta-Tintorer D, Saigí-Rubió F. Improving integrated care: modelling the performance of an online community of practice. *Int J Integr Care* 2014; 14: e007. [PubMed: 24648835]
7. Meins A, Doorenbos A, Eaton L, Gordon D, Theodore B, Tauben D. TelePain: a community of practice for pain management. *J Pain Relief* 2015; 4: 177. [PubMed: 25964869]
8. Ikioda F, Kendall S. Transformation of health visiting services in England using an online community of practice. *Health Policy Technol* 2016; 5: 298–306.
9. Portoghese I, Galletta M, Sardu C, Mereu A, Contu P, Campagna M. Community of practice in healthcare: an investigation on nursing students' perceived respect. *Nurse Educ Pract* 2014; 14: 417–21. [PubMed: 24480096]
10. Jiménez A, González-González I, Saigí-Rubió F, Torrent-Sellens J. The co-learning process in healthcare professionals: assessing user satisfaction in virtual communities of practice. *Comput Human Behav* 2015; 51: 1303–13.
11. 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: 2199–207. [PubMed: 21631316]
12. 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 (Millwood)* 2011; 30: 1176–84. [PubMed: 21596757]
13. Kahn JG, Yang JS, Kahn JS. "Mobile" health needs and opportunities in developing countries. *Health Aff (Millwood)* 2010; 29: 252–58. [PubMed: 20348069]
14. Poushter J, Oates R. Cell phones in Africa: communication lifeline Washington, DC: Pew Research Centre, 2015.
15. Namibian Ministry of Health and Social Services. Namibia Country Operational Plan (COP) 2016 strategic direction summary 5 25, 2016 <https://www.pepfar.gov/documents/organization/257636.pdf> (accessed May 10, 2017).