VIEWPOINT

# How Disruptive Innovation by Business and Technology Firms Could Improve Population Health

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**In 1990 the Centers for Disease Control** and the US Preventive Services Task Force launched Healthy People 2000. The goals were to increase healthy life span, reduce disparities, and provide access to preventive services for all individuals in the United States. According to data for 2015 and 2016 from the National Center for Health Care Statistics, life expectancy in the United States has decreased for the last 2 years in a row, disparities persist, and only 8% of US residents receive recommended preventive care.[1] Meanwhile, health care costs, which are currently the highest in the world, will likely reach 20% of the US gross domestic product in the coming years.

Business and technology firms pride themselves on being able to solve complex problems and have increasingly entered the health care market. Large companies like Walmart first entered the health industry because these companies noted that accessible and low-cost services were lacking in the existing system of care. Aetna-CVS maintain that together they can further develop the retail clinical market CVS started and complement it with the purchasing power of the payer Aetna. Amazon has publicly announced its interest in developing similar advances specifically for its employees.

However, these developments involving business and technology organizations are unlikely to benefit patients who have complex health care needs and rely on extensive resources and infrastructure of modern-day health care institutions. The developments are also unlikely to benefit extremely disenfranchised patients, who are often among the highest utilizers of the health care system but may have limited access to reasonable-quality housing and food, which are important determinants of health. Yet there are opportunities for the business and technology sector to make important contributions to population health. Some of the major challenges in improving population health involve a combination of unhealthy lifestyle choices and limited access to care.[2] Sedentary lifestyles, high intake of sugar and high-fat processed foods, and high rates of gun violence and drug abuse are common in some parts of the United States. Much of the existing health care system infrastructure is outdated and fragmented, requiring patients and families to take initiative and overcome considerable barriers to caring for their health.

The entrance of the business and technology sector into the health care market creates an opportunity because of the accessible platforms, analytics, and marketing expertise that many of these companies already have in place. The ability of these firms to increase connectivity, collect data, predict preferences, and forecast market choices could be leveraged to create a 2-pronged approach to improving population health by helping to promote healthy lifestyle choices and reduce barriers to access.

Business and technology companies could market products that promote healthy lifestyles. Self-management applications, most well studied in diabetes, have been shown to lead to improvement in hemoglobin $A_{1C}$ levels, particularly when combined with support from clinicians.[3] Supervised exercise using smart technology platforms significantly increases activity compared with conventional lifestyle counseling in patients with chronic obstructive pulmonary disease.[4] Mobile phone–based mental health interventions decrease symptoms of depression.[5] Wearable technology products are actively being piloted by Apple.

Although many of these devices and programs may be evidence-based ways to improve health, clinicians have been unable to effectively promote widespread adoption. Widespread adoption requires marketing expertise and technology support that may not exist after the clinical trials are finished. Business and technology could fill that gap and help market these products and spread adoption of evidenced-based technologies. A business case could be made to entrepreneurs about the profitability of new dynamic services, and with the guidance of the clinical community, business and technology companies could identify effective, evidence-based interventions. Such services may be particularly profitable if costs are reimbursed by insurance, as occurs in the drug and alcohol rehabilitation industry. For insurers, these public health interventions could lead to a considerable return on investment.[6] Business and technology firms marketing products and services that encourage individuals to track and change unhealthy habits could meet the first goal of promoting healthy lifestyles.

The second goal, improving access to health care, is more difficult. This is partly because of the complex insurance structure in the United States that limits care based on ability to pay. Nonetheless, the business and technology sector could assist in addressing this issue. First, business and technology firms could improve access online to health care clinicians. Online platforms could be further developed that connect patients to clinicians in a low-cost way to address basic nonurgent health concerns and improve access to the health care system without the cost or time associated with a conventional clinician visit.[7] Engagement with

clinicians and existing health information technology communities will be of utmost importance to develop platforms tailored to provide the highest quality of care, in a secure Health Insurance Portability and Accountability Act (HIPAA)–compliant forum that is interoperable with existing electronic health systems. Second, these same platforms could give people access to their own individual health information. If patients had access to their own health records, redundant testing may be reduced and patients may be able to leverage knowledge of their own health in future health care system interactions. These technology platform interfaces would need to facilitate communication across health and nonhealth systems, and the record-keeping technology in shelter, mental health services, and rehabilitation services should be accessible to all other health platforms.

The clinical community should continue to work with business and technology companies to enable these companies to successfully develop products that are medically accurate, evidence-based, clinician-supervised, HIPAA-compliant, and interoperable with current electronic medical records. Collectively, business and technology sectors could be encouraged to enter the health care market in a way that complements existing health care infrastructure and its many limitations. These companies could increase their revenue as well as make a first step toward improving population health in the United States.


## ARTICLE INFORMATION

**Published Online:** August 16, 2018. doi:10.1001/jama.2018.10782

**Conflict of Interest Disclosures:** All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Kanzaria reported being an unpaid clinical advisory board member for Collective Medical; receiving reimbursement for travel and accommodation-related expenses; and receiving consulting fees from Castlight Health. No other authors reported disclosures.


## REFERENCES


1. Borsky A, Zhan C, Miller T, Ngo-Metzger Q, Bierman AS, Meyers D. Few Americans receive all high-priority, appropriate clinical preventive services. *Health Aff (Millwood)*. 2018;37(6):925-928. doi:10.1377/hlthaff.2017.1248

2. Decker SL. Acceptance of new Medicaid patients by primary care physicians and experiences with physician availability among children on Medicaid or the Children's Health Insurance Program. *Health Serv Res*. 2015;50(5):1508-1527. doi:10.1111/1475-6773.12288

3. Veazie S, Winchell K, Gilbert J, et al. Rapid evidence review of mobile applications for self-management of diabetes [published online May 8, 2018]. *J Gen Intern Med*. 2018. doi:10.1007/s11606-018-4410-1

4. McCabe C, McCann M, Brady AM. Computer and mobile technology interventions for self-management in chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2017;5:CD011425.

5. Tighe J, Shand F, Ridani R, Mackinnon A, De La Mata N, Christensen H. iBobbly mobile health intervention for suicide prevention in Australian Indigenous youth: a pilot randomised controlled trial. *BMJ Open*. 2017;7(1):e013518. doi:10.1136/bmjopen-2016-013518

6. Masters R, Anwar E, Collins B, Cookson R, Capewell S. Return on investment of public health interventions: a systematic review. *J Epidemiol Community Health*. 2017;71(8):827-834. doi:10.1136/jech-2016-208141

7. Daskivich LP, Vasquez C, Martinez C Jr, Tseng CH, Mangione CM. Implementation and evaluation of a large-scale teleretinal diabetic retinopathy screening program in the Los Angeles County Department of Health Services. *JAMA Intern Med*. 2017;177(5):642-649. doi:10.1001/jamainternmed.2017.0204