

## Potentially Disruptive Innovations in U.S. Primary Care: Overview

Andy Ellner, MD, MSC, *Harvard Medical School Center for Primary Care*

**Disruptive innovation**, a term coined by Clayton Christensen, describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors. Disruptive innovations are typically considered to be those that have fundamentally changed an industry, such as the impact that Uber has had on the taxi industry. Although innovation of that scale has not yet happened in primary care, a number of new and innovative models and approaches are emerging. Dr. Ellner provided context for thinking about health system innovation and outlined five key trends (described below) that are enabling innovations in primary care.

Some important contextual points regarding innovation, global health systems, and U.S. primary care are applicable everywhere. As we transition toward sustainable development, increasingly focused on both expanding the number of people and range of services covered, system design becomes extremely important. As countries develop, the epidemiology of morbidity and mortality shifts from the dual burden of communicable diseases and maternal-child health to non-communicable disease and chronic conditions. Another key factor driving innovation in the U.S. is the crisis in value. Expenditures on healthcare in U.S. far exceed those in other developed countries, yet it has worse health outcomes than most other high-income countries. Finally, as the population increased, the availability of primary care providers has not kept pace with the need. Healthcare has not seen the gains in

labor productivity over the past 20 years that other industries have seen.

Health system performance in the 21<sup>st</sup> century requires a change in focus from acute to chronic disease, from a health system that reacts and rescues to one that engages and empowers, from a passive to an active patient role, and a shift in provider competence from technical excellence to leadership. With this reorientation comes the need for better health information technology. This has been a particular challenge in the U.S., where many electronic health record systems have been built on platforms primarily built for revenue capture and billing under a fee-for-service financing system.

Five key trends are enabling and driving innovations in primary care. First, capitated or global payment can support innovation that is nearly impossible with transaction-based, fee-for-service payments. Key elements of primary care such as continuity, access, comprehensiveness, and coordination, are difficult to support through transactional financing. High-functioning organizations that have made major care system improvements have leveraged payment approaches that are not based solely on fees for face-to-face visits. Second is a technology shift to more convenient interactions that include virtual care for acute and chronic conditions, incorporating better triage to help patients access appropriate care and reduce emergency department visits for non-emergent care, and e-consultations to break down barriers and provide opportunities between primary and specialist care. A third trend is task sharing that empowers patients to

better use the thousands of hours of health-related activities that happen outside the clinic visit by, for instance, engaging online resources. These interactions can be facilitated by care teams (supported by customer relationship management software) who help patients manage care through digital communication methods and tools. Many elements of healthcare can be standardized with clinical protocols and translated into algorithms that can be followed by patients and staff at various levels, freeing up physicians and other highly

trained clinicians to focus on areas of complexity. Fourth, leveraging big data and artificial intelligence can improve diagnostic accuracy and efficiency. Such techniques can also help predict risk for adverse events such as suicide or domestic abuse. And fifth, technology can be leveraged both to identify behavioral health challenges and to support people to live healthier lives by addressing those challenges.

[VIDEO: Disruptive Innovations](#)

[SLIDES: Disruptive Innovations, Ellner](#)

## Disruptive Innovations in U.S. Primary Care: A Digital Health Example

Sean Duffy, *Omada Health*

### KEY POINTS:

- A digital, remotely delivered intensive behavioral counseling intervention program can help seniors at risk for diabetes and cardiovascular disease achieve significant weight loss, reduce risk, and achieve meaningful medical cost savings.
- Data science can help to overcome challenges to scaling chronic disease prevention programs.
- Underserved patients display high engagement and satisfaction with a digital program despite lower digital literacy skills.
- Collaboration between researchers and a digital health company enabled iterative improvements in technology implementation to address challenges in low-income populations.

**Omada Health** is a specialty provider of intensive digital behavior change counseling with a mission to inspire and enable people everywhere to live free of chronic disease. The company developed the Omada diabetes prevention program, which combines behavioral science, social support, and technology. The 16-week program, integrated to web, mobile, and smart devices, is designed to help individuals lose weight and reduce behavioral risk factors for developing type 2 diabetes. The program guides participants toward reaching modest weight loss and activity goals through nutrition and behavioral changes.

For the first time in global human history, preventable chronic diseases account for greater mortality than infectious diseases. In the U.S., an estimated 87 million people have pre-diabetes. Research sponsored by the U.S. National Institutes of Health (NIH) demonstrated that a set of behavioral interventions can delay or prevent progression into type 2 diabetes. The Omada program was created to



scale touchpoints with patients after the NIH's first successful DPP in 2002 which demonstrated clear risk reduction in 1,000 patients with pre-diabetes who were brought into high-touch behavior modification. Research has demonstrated success in weight loss and reductions in hemoglobin A1C, a reflection of blood sugar.

Omada helps people make change that leads to weight loss, with a referral relationship to primary healthcare. The moment people learn of a change in their risk profile—when they have been told they have pre-diabetes—can be a moment of patient activation. Although healthcare providers regularly counsel patients to lose weight in response to a diagnosis of pre-diabetes, weight loss is extremely difficult, particularly without ongoing support. The multiple interactions from Omada provide support and caring outside of the clinic. *Omada* means “group” in Greek. The program matches people to groups and supports them with a health coach, facilitated peer support, and a curriculum with a clear cadence.

Data science has helped overcome the biggest challenges to scaling diabetes prevention programs to large populations. Omada uses the insights from current participants to improve the program for the next. Scientific and clinical experimentation drives continual improvement, supported by a clinical innovation team, a product engineering team, and a data science team. Omada is able to analyze specific behavior and demographic patterns to tune and tailor the program. By monitoring use, real-time, randomized and controlled in-product experiments are conducted in order to refine the program. For example, modifying the frequency at which participants receive feedback and correlating the time frame to behavioral changes can assist in improving the impact of feedback. This is contributing to the quantification of contributions of various factors that support behavioral change, including important components like goal setting, timelines, and social pressures. The data from the Omada program is fed back to the primary care provider to assure coordination with ongoing care.

[VIDEO: Disruptive Innovations](#) (at 25:30)

[VIDEO: The Omada Health Experience](#)

[SLIDES: Disruptive Innovations, Duffy](#)

