



Service innovation is urgent in healthcare

Leonard L. Berry^{1,2}

Received: 16 November 2018 / Accepted: 14 March 2019 / Published online: 24 May 2019
© Academy of Marketing Science 2019

Abstract

Healthcare is a service setting where meeting the needs of customers (patients and their families) is uniquely challenging. But the necessity, complexity, cost, and high-emotion nature of the service, as well as technological advances and competitive dynamics in the industry, make the imperative for *service innovation* in healthcare especially urgent. Forward-thinking healthcare institutions around the United States are succeeding in establishing a value-creating innovation culture and in implementing operational and strategic service innovations that benefit them and their stakeholders. They view continuous innovation as a non-negotiable goal, prize institutional self-confidence, and include patients and families on the innovation team. Cancer care, in particular, faces a pressing need for service innovation, and some progressive oncology centers are demonstrating what is possible to improve the patient and family service experience. The imperatives, now, are for service innovation to become part of the fabric of how all healthcare institutions, not just the groundbreakers discussed in this article, operate—and for academics in the field of marketing to play a crucial role in that effort.

Keywords Service innovation · Innovation culture · Value-creation · Cancer care

An emergency department nurse at a Martin Health System hospital in Florida could not locate an intravenous (IV) pump for a patient in a timely manner, a recurring problem. Martin, an adherent to the “Lean” quality-improvement philosophy, analyzed its nursing care processes and found that nurses in the hospital spent an average of 38 min per shift looking for equipment, taking precious time away from patient care. Some nurses even took to hoarding certain equipment so that they could access it quickly, contributing to a false perception of shortages. Further analysis indicated that Martin actually had an excess of IV pumps, compared with the national average of 1.2 pumps per hospital bed. What Martin lacked was an efficient system for nurses to obtain needed equipment.

Martin’s solution was to install “equipment supermarkets” that would stock necessary inventory in nursing units. The shelving was color-coded and numbered with the quantity of items for each color: green for ‘adequate supply’; yellow for ‘replenish soon’; red for ‘restock immediately’. The new

process effectively eliminated the time nurses wasted obtaining equipment, and hoarding behavior ceased (Toussaint and Berry 2013).

Martin Health System’s “equipment supermarket” exemplifies the essence of service innovation—a service process that offers a new benefit, or a new way to deliver an existing benefit, that is perceived by customers or those who serve customers as providing more value than available alternatives. A service innovation creates value by offering benefits to prospective adopters that exceed the monetary and/or non-monetary burdens of switching from the old to the new, thereby leading to meaningful adoption. Successful innovation requires a change in behavior that is unlikely to occur without true value creation. The value creation may start with the service provider (e.g., in the form of efficiencies and cost savings), but it must ultimately reach—and offer a net benefit to—the end customer in order to qualify as a true service innovation. Martin’s equipment supermarket—a new way to deliver an existing benefit—enabled nurses to spend more time on patient care. Moreover, by increasing the number of times an IV pump could be used in a day, the hospital was able to shrink its pump inventory by 100 units, saving \$300,000 (Toussaint and Berry 2013).

In addition to differing in the type of offered benefit (core or delivery), service innovations also differ in their degree of separability. The time and/or place of service *production* differ from the time and/or place of service *use* for a separable

✉ Leonard L. Berry
Berry@tamu.edu

¹ Mays Business School, Texas A&M University, College Station, TX 77843-4112, USA

² Institute for Healthcare Improvement, Boston, MA, USA

service; conversely, service production and consumption are synchronous for an inseparable service (Berry et al. 2006a). Dropping one’s automobile off at a dealership for a “checkup” is primarily a separable service; going to the doctor for a physical checkup is primarily an inseparable service.

Table 1 depicts the four dimensions of service innovations: type of benefit (core vs. delivery) and degree of separability (separable vs. inseparable). Most service innovations, whether operational or strategic in nature, fall somewhere in this four-cell matrix. *Operational service innovations* create customer value by improving existing processes and offering greater efficiency, timeliness, quality, or other enhancements to operational outcomes. *Strategic service innovations* redirect, to some degree, the course of the organization’s go-to-market strategy. Strategic innovation can be new to the organization but not the market, or new to both the organization and the market. Healthcare organizations must excel in both operational and strategic innovation.

This article addresses five primary topics. First, it describes the uniqueness of healthcare services. Second, it discusses the inefficiency and waste in healthcare that requires bold action. Third, it explains the need to establish an innovation culture in healthcare organizations and presents key essentials toward that end. Fourth, it highlights the opportunity for service innovation in cancer, an especially frightening and pervasive constellation of diseases for which patients and families can benefit enormously from innovative approaches to service delivery. Fifth, it outlines ways in which academics in the field of marketing can advance the research on healthcare service innovations. The article includes numerous examples of service innovation, to illustrate focal concepts and show what is possible when patient-centeredness, creativity, and boldness converge.

A different kind of service

Healthcare is a unique consumer setting: The service-quality challenge of serving a sick customer who may be anxious and in pain differs from that of serving one who is well. Healthcare is a “high-emotion” service that can create intense feelings such as fear, anxiety, and uncertainty before the service is even delivered (Berry et al. 2015). Indeed, illness causes some people to be far more sensitive, dependent, and/or demanding consumers than they typically would be (Berry and Bendapudi 2007).

In no other service is managing the “customer experience” more important than in healthcare. Marketing scholarship converges on the view that total customer experience is a multi-dimensional construct that incorporates customers’ cognitive, emotional, sensory, and behavioral response to human interaction, technology, facilities, and other stimuli (Lemon and Verhoef 2016; Schmitt 2003; Verhoef et al. 2009; Bolton et al. 2018; Edvardsson et al. 2010). The elements of customer experience need to be cohesively orchestrated for consumers-turned-patients—whose sensitivities, dependencies, and expectations are likely to be heightened during illness or injury. For patients with chronic or life-limiting disease, customer experience becomes an ongoing series of events that comprise a multitude of experiential “touch points.” In healthcare, there are many opportunities to fall short.

Most services are “want” services; healthcare is a “need” service, often a dreaded one. Services such as dining at a restaurant or streaming a movie online are “want” services; a colonoscopy or mammogram is a “need” service. Customer reluctance is a reality of healthcare. Healthcare, a highly personal service, may require individuals to divulge private information to (and sometimes undress in front of) a clinician

Table 1 Matrix of service innovations

TYPE OF SERVICE	TYPE OF BENEFIT	Core	Delivery
	Separable	Core/Separable	Delivery/Separable
Inseparable		Core/Inseparable	Delivery/Inseparable

Source: adapted from Berry et al. (2006a). Creating New Markets Through Service Innovation. *MIT Sloan Management Review*, 47 (2), 56–63

they are meeting for the first time. Healthcare services need to be customized to fit not only patients' medical conditions, but also their cultural preferences, mental states, family support at home, and financial capacity, among other factors that influence treatment planning. In effect, patients need "whole-person care" (Berry and Bendapudi 2007).

Healthcare can be an unsafe service (Makary and Daniel 2016). Too many patients are harmed by carelessness, poor staff communication, clinical incompetence or fatigue, unnecessary treatment, or some combination thereof. Each year several million U.S. patients get preventable infections during hospital stays for reasons ranging from clinicians' poor hand hygiene, to inadequate preparation of a surgical patient's skin with an antiseptic agent, to failure to raise the head of a mechanically ventilated patient's hospital bed, thereby causing pneumonia (Berrios-Torres et al. 2017; Anderson et al. 2014; Chassin et al. 2015). Patients also are vulnerable to medication errors, such as receiving the wrong drug or the right drug at the wrong dose, or receiving multiple drugs that interact adversely (Nuckols et al. 2014; Bates and Slight 2014; Wittich et al. 2014). Patients also may be harmed by overdiagnosis that results in overtreatment (Davies et al. 2018). Welch and colleagues write, "Over-diagnosis occurs when individuals are diagnosed with conditions that will never cause symptoms or death....There is nothing to be fixed...an over-diagnosed patient can only be harmed. And the simple truth is that almost all treatments have potential to do some harm" (Welch et al. 2011, pp. xiv-xv).

Another difference between healthcare and other services is its combination of complexity and importance. Some services (such as computer repair) are complex but not potentially life-changing or life-threatening. Healthcare is both complex and consequential—a "blackbox" service that gives clinicians the upper hand (Berry et al. 2015). Clinicians' technical knowledge, prestige, and position can cause patients to refrain from questioning a diagnosis or treatment plan that seems wrong. Consumers normally are in charge of what, how, and where they buy. In healthcare, clinicians hold most of the power, especially in cases of serious illness when anxious patients can feel highly dependent on doctors and avoid any behavior that may offend them (Berry et al. 2017a; Awdish 2017). Patient timidity stymies shared decision-making whereby clinician and patient pool their knowledge—the clinician's medical expertise and experience and the patient's self-knowledge—to identify the best plan, which may be to do nothing (Barry and Edgman-Levitan 2012). Too often, patients have little input into critically important decisions that directly affect them (Mulley et al. 2012; Dobler et al. 2017).

Still another profound distinction of healthcare is the array of challenges and stresses for those providing the service. In no other service role does a service provider sometimes have to tell individuals that they have an incurable disease. In only a few service roles, medical care being one, can a provider's mistake cause the customer severe harm, including death.

These realities, combined with other pressures such as excessive workload, reduced autonomy, inefficient processes, and time-consuming documentation of the clinical visit, can transform what on paper seems to be a dream job—being a doctor—into a physically and emotionally draining occupation (Shanafelt et al. 2017; Downing et al. 2018; O'Shea 2018). Electronic health records (EHRs) in particular intensify the clerical burden and compete for clinicians' attention as they interact with patients (Shanafelt et al. 2018). Research reveals that U.S. doctors currently spend as much (or more) time on recordkeeping and other aspects of what is called "desktop medicine" as they do directly interacting with patients (Tai-Seale et al. 2017; Sinsky et al. 2016).

Burnout—a syndrome of exhaustion, cynicism, and reduced work-related effectiveness—is widespread among U.S. physicians (Shanafelt et al. 2017). Research-based estimates indicate that more than 50% of U.S. doctors show at least one sign of burnout (Shanafelt et al. 2015; Shanafelt et al. 2017). Burnout among physicians has been associated with greater turnover, higher rates of medical errors, and increased mortality incidence for hospitalized patients in their care (Wallace et al. 2009; Tawfik et al. 2018). Burnout is similarly afflicting nurses (McHugh et al. 2011; Shanafelt et al. 2015). Improving healthcare quality depends on sustained, determined and, at times, courageous actions to address and resolve the primary factors contributing to clinician burnout. Serving customers who are sick requires passion, idealism, energy, and purpose for the work, all casualties of work-related burnout (Swensen 2018).

Wasting precious resources

Healthcare costs in the U.S., the highest in the world on a per capita basis by far, are nearing 20% of the gross domestic product (Stey et al. 2018). Annual spending on healthcare in the U.S. of \$3.6 trillion dwarfs spending on education (\$1.1 trillion) and national defense (\$867 billion) (Altarum 2018; Fuchs 2018). The return on this investment is questionable. Life expectancy in the U.S., for example, actually decreased in 2015 and 2016, and only 8% of U.S. residents receive recommended preventive care (Borksy et al. 2018). Economic waste, defined by Fuchs (2009a) as any intervention with expected costs greater than expected benefits, is rampant in healthcare. Estimates of wasteful spending on healthcare in the U.S. range between one-quarter and one-half of total spending (Cutler 2018). If one assumes that one-third of medical spending is wasteful, then the aggregate cost of this waste is about 6% of the gross domestic product, which is two-thirds of the total revenue raised by individual households' federal income taxes (Cutler 2018). Excessive wasteful spending in healthcare is robbing American society of financial resources to address other societal needs. Fuchs (2018) concludes that

reducing healthcare spending by 10% would generate \$330 billion for other societal uses.

Administrative and operational waste are primary culprits, along with high prices for pharmaceuticals and physician services, compared to figures from other industrialized countries (Cutler 2018). Administrative waste results from a complicated, inefficient employer-and-government-based insurance system and documentation overload, among other factors (Fuchs 2009b). A report from the American Hospital Association concludes that the average-size U.S. hospital uses 59 full-time employees to perform administrative tasks related to regulatory compliance, at an annual cost of \$7.6 million (O’Shea 2018). Approximately 25% of total U.S. healthcare spending goes to administrative costs, three times what is spent on cancer care (Cutler 2018; Cutler et al. 2012).

Contributors to operational waste include inefficient processes; duplication of services related to poor care coordination, especially for older patients who see multiple physicians for different illnesses; medically unnecessary use of more-expensive specialists, services, and equipment; medical errors; and overtreatment (Stey et al. 2018; Berry et al. 2013; Berwick and Hackbarth 2012; Fuchs 2009b; Bentley et al. 2008; Bush 2007; Welch et al. 2011). Supply increases demand in healthcare, contrary to virtually all other services in which demand increases supply. The Dartmouth Atlas of Healthcare project has shown, empirically, that more physicians or hospital beds in a geographic market lead to more medical services provided on a per capita basis—with no improvement in population health (Bynum et al. 2016.)

Still another important source of waste is healthcare’s disproportionate emphasis on sick care rather than helping people stay well. As Shortell (2016 p. 1223) writes, “Disease prevention initiatives aimed at improving nutrition, physical activity, tobacco use, and related lifestyle behaviors are likely to have the greatest effect on slowing the annual increase in healthcare costs.” The best way to bend the cost curve in healthcare is to keep people healthy.

Toward a culture of innovation

Healthcare in the U.S. requires bold innovation. It costs too much, wastes too much, harms its customers too often, and can drain the joy of serving. A number of individual healthcare organizations are proving that true value-creating innovation can bring profound improvements to the market. But the healthcare delivery sector as a whole is playing defense rather than offense, reacting to market turbulence by getting bigger through mergers and acquisitions rather than investing in getting better (Fulton 2017; Gaynor et al. 2015). Achieving service innovation in healthcare must be an organizational cultural priority, including viewing continuous innovation as a non-negotiable cultural goal; prizing

institutional self-confidence; and including patients and families on the innovation team.

Viewing continuous innovation as a non-negotiable cultural goal

The culture of an organization is defined by how individuals in it behave; culture needs to be role-modeled and nurtured every day. A study of the 40 largest U.S. health systems revealed that 32 had established an executive position of chief innovation officer (Jain and Schulman 2018). Depending on how the role is conceptualized and structured—and the capabilities of the person in the role—this can be a positive step. However, such a step also can backfire because innovation is the responsibility of everyone in the organization and cannot be delegated to a specific department. The spirit of innovation—creating more value by improving on what exists—must start with the CEO and flow all the way down to the frontlines of the organization, where knowledge of inefficiencies, flawed processes, and customer needs and wants often is greatest (Toussaint and Berry 2013). As one health system chief innovation officer put it, “If the CEO doesn’t own innovation, the organization will eat it alive...The CEO has to own it, drive it, and value it” (Jain and Schulman 2018).

In 2009, the president and CEO of MedStar Health, a large integrated health system serving the District of Columbia and Maryland, sponsored the creation of the MedStar Institute for Innovation (MI₂), a unit whose mission is “to catalyze innovation that enhances health” (Samet and Smith 2016, p.7). If a dedicated innovation department or institute is to be established in the organization, MI₂ offers a good example of how to do it, as its purpose is to tap into the underutilized innovation energy and talent within the organization—that is, to turn potential innovators into actual innovators. The MI₂ group offers online courses on topics such as creative thinking, created an app that features a series of tools and approaches to facilitate innovative problem solving, and offers monthly “All Minds Meetings” consisting of TED-type presentations and “Thinking Differently” day-long sessions of innovative exercises and speakers. The MI₂ group also consults internally with departments or teams that are working on a difficult problem (Samet and Smith 2016). MedStar’s efforts are instructive in showing the potential of investing in an organizational unit of innovation champions that focus on strengthening a “bottom-up” innovation culture. The MI₂ group is innovative in nurturing innovations.

Innovative organizations embed in their cultures an unrelenting attitude that continuous innovation is an imperative, not an option. Business entrepreneur and historian Gary Hoover commented in a class lecture that “consumers will always get what they want. The only questions are: who will give it to them and when?” Innovative service organizations embrace the challenges of initiating changes within their

control to respond to changes beyond their control. The goal is to achieve a good fit between what and how target customers buy and what and how the organization markets to them. Such innovation is a necessary ingredient for successful competition.

Why an innovation culture is imperative in healthcare The imperative to innovate continuously comes in many forms, including the aforementioned egregious waste, declining performance, loss of talent, the emergence of nontraditional competitors, and advances in technology and in the new service options those advances make possible. Healthcare is experiencing all of those pressures. Many community hospitals are closing (Frakt 2018); burned-out clinicians are performing less effectively, and some are retiring early (Shanafelt et al. 2015; Tawfik et al. 2018); and nontraditional competitors (such as employer-based and retail store-based medical clinics) are gaining market share from conventional primary care clinics for treating low-acuity illnesses (Mehrotra 2013; Berry et al. 2014).

In a much publicized move, Amazon, Berkshire Hathaway, and JP Morgan Chase announced plans in 2018 to form an independent company to directly provide healthcare for its U.S. employees—clear evidence that these firms (and many others) are tired of waiting for healthcare quality to improve and costs to decline (Wingfield et al. 2018). CVS Health operated 9800 retail drug stores and 1100 in-store medical clinics in 2018. It also is a major pharmacy benefit manager (PBM) overseeing the prescription benefit plans affecting approximately 94 million consumers. In 2018, it announced plans to merge with Aetna, America's third-largest health insurance company with 22 million members. The proposed goal is to greatly expand convenient patient access to a broadening array of healthcare services (likely to happen) and to lower the costs of healthcare (doubted by many, due to stifling of competition) (Abelson 2018; Frakt and Garthwaite 2018). What is occurring for sure is that intertype competition—competition for the same customer among dissimilar competitors—is impacting healthcare. The need for bold innovation that offers superior benefit to patients and those who serve them has never been greater.

How technology can contribute to the innovation imperative

Technology is having a dramatic effect on healthcare delivery, transforming some services from *inseparable* to *separable*. Telemedicine services employ information communication technology to deliver healthcare services remotely. These rapidly growing services fall into two subcategories: technology used for diagnosis and communication among clinicians, and technology used between clinicians and patients (Christensen 2018). Patients need assistance, but they do not always need an in-person visit with a clinician to receive it. Telemedicine services, ranging from telephone communications with a clinician to remote internet-based diagnoses, electronically move information

rather than physically moving patients. Telemedicine can bring care directly into a patient's home and can be especially valuable to patients who are non-ambulatory, live far from in-person medical assistance, or have chronic diseases that require regular monitoring (World Health Organization 2016; Berry et al. 2003, 2014; Topol and Hill 2012; Barlow et al. 2006). Information technology in general, and telemedicine in particular, when well-designed to meet the needs of patients and those who serve them, can improve the productivity of labor- and skill-intensive healthcare services that have long been assumed to be invulnerable to productivity gains. The application of robotics in combination with artificial intelligence, big data, and other technologies in healthcare is underway—with the aims of bolstering clinicians' knowledge to improve diagnosis and treatment of patients, and increasing the productivity and convenience of service delivery (Habran 2018; Bhardwaj 2017; Wirtz et al. 2018).

Diabetic retinopathy (DR) is the leading cause of blindness among U.S. adults of working age (Cheung et al. 2010). Early detection and treatment of diabetes can prevent blindness from DR, yet many individuals with diabetes do not receive these services in a timely manner, if at all (Daskivich et al. 2017). Especially vulnerable are lower-income underinsured or uninsured patients. The Los Angeles County Department of Health Services, the largest publicly operated county health system in the U.S. serving low-income patients, developed a tele-retinal screening program offered through primary care offices as a way to improve screening rates and their timeliness, given the average wait time for an in-person examination by an eye-care specialist of 8 months or more. Specifically, the department established a retinal photography clinic, staffed by medical assistants and nurses who are trained and certified to take digital retinal images, and then upload them, using web-based software for eye-care specialists to review. Patients are scheduled for this service in advance by their primary care clinic. This service innovation has reduced wait times for eye-care specialist appointments by 89% (by moving patients with normal eye exams out of the queue for specialist appointments) and has increased annual rates of screening for DR by 16% (Daskivich et al. 2017).

Kaiser Permanente Northern California (KPNC), serving more than 3.4 million patients, offers more than 100 online services (including video), enabling patients to remotely view their personal medical records, make appointments, request prescription refills, securely communicate with clinicians via email, and in certain cases be diagnosed. For example, patients with a rash can email a digital image of it to a dermatologist and receive a definitive diagnosis 80% of the time. More than 70% of patients have registered on KPNC's website to use remote services, and internal surveys indicate widespread patient satisfaction with their use (Pearl 2014).

Dexcom, a commercial firm, has developed an app that continuously monitors individuals' glucose levels using any smartphone. The app sends an alert to individuals when their

glucose spikes, for example, after a meal, thereby prompting them to engage in physical activity such as taking a walk. Use of this app has resulted in improved hemoglobin A_{1C} levels (the standard test for diabetes), helping some patients reduce the need for medication and even lose weight (Zane and Wiler 2018).

Thomas Jefferson University Hospital, in Philadelphia, developed a virtual reality simulation of radiation therapy to help defuse the anxiety and fear of cancer patients before their first radiation treatment. Patients who experience the simulations are significantly less anxious and have a better understanding of the treatment than patients who only receive traditional preparation for their radiation experience that typically involves being apprised of benefits, risks, and side effects (Marquess et al. 2017).

How cost plays a role Service innovation may also be prompted when the cost of conventional service is unaffordable. This brings up the topic of *jugaad*, a frugal, flexible, inclusive approach to innovation increasingly applied to delivering healthcare in countries, such as India, with vast numbers of low-income families living in remote villages. The Hindi term *jugaad* combines improvisation with pragmatism to get more from less in providing healthcare to people who might not otherwise have any access to it (Prabhu and Jain 2015). The *jugaad* approach starts with deep understanding of the resource constraints and barriers to the conventional and looks for unconventional solutions to overcome them.

Dr. V. Mohan, a renowned diabetes specialist in India, wanted to help people in the country's rural areas with limited access to healthcare who have diabetes or are at risk for the disease (Radjou et al. 2012). Dr. Mohan's *jugaad* solution was a large mobile van (donated by the World Diabetes Foundation) that would travel from village to village outfitted with medical equipment and a satellite dish to transmit images. Village residents have an image of their eye taken and transmitted to a physician in the main clinic, enabling a prompt diagnosis that is sent back to a local health volunteer in the van. The patient is informed if disease is present and, if so, given the doctor's advice on managing it. The patient returns for checkups when the van returns. The health volunteers are selected and trained at Dr. Mohan's city hospital and then return to their village to perform this role (Prabhu and Jain 2015).

Jugaad, born of necessity in India, is highly relevant to wealthier industrialized countries, including the United States. U.S. healthcare needs to do more with less, too. Imagine if, within a 10-year period, a total of \$1 trillion of annual healthcare spending could be returned to society for other uses without compromising healthcare quality. The aforementioned Los Angeles County tele-retinal screening program for low-income residents, among many other examples, illustrates the opportunity for *jugaad* in the United States. U.S. healthcare needs a *jugaad* philosophy adapted to, and thus workable, in American society. Such frugality,

flexibility, and inclusiveness would strengthen the culture of innovation in U.S. healthcare organizations.

Prizing institutional self-confidence

An organization's self-confidence is a critically important but generally unrecognized building block of an innovation culture. In a previous field study of three innovative, high-performance health systems in Wisconsin—Gundersen Health in La Crosse, ThedaCare in Appleton, and Bellin Health in Green Bay—I observed institutional self-confidence facilitating unconventional thinking and bold service. These three independent, nonprofit, integrated health systems had the confidence to compete with larger health systems in major markets for medical talent; to actively learn from patient advisory boards, community partners, quality-improvement organizations, and researchers such as myself; and to publicly post their medical performance outcomes online. They believed they could control their destiny by focusing on becoming better, not necessarily bigger, than competitors. Their cultures favored asking “why not?” over “why?”

Institutional self-confidence is energizing and motivating, essential to innovation because maintaining the status quo requires less organizational energy than pursuing improvement (Samet and Smith 2016). Such confidence is closely aligned with optimism rather than arrogance. As Samet and Smith (2016, p. 5) write, “An innovation mindset is optimistic because it comes from a core belief that the future can be better than the present and that there is always a better way of doing something....” Gundersen, ThedaCare, and Bellin exemplify the institutional self-confidence and optimism that are vital to success in today's tumultuous healthcare climate.

Gundersen has developed one of the nation's most comprehensive, progressive care-coordination programs to better serve patients with complex health profiles. Experienced, subspecialty-trained nurses, the “care coordinators,” abetted by a system-wide electronic medical record, have regular personal contact with patients assigned to them and with their doctors in both hospital and outpatient clinic settings. The care coordinators ensure that patients are well informed about their medical conditions and treatments and have a “go-to” advocate, and that clinical care across multiple clinicians is coordinated. Gundersen's care-coordination program, started in 2003, is associated with reduced costs (including fewer emergency department visits and hospitalizations) and improved patient satisfaction (Berry et al. 2013).

ThedaCare launched a “collaborative care” model in 2007, to mitigate the fragmented care that often occurs in hospitals. A four-person team comprising a doctor, nurse, bedside pharmacist, and discharge planner (often a social worker) collaborates among themselves and with the patient and family to create a single care plan that is regularly updated in team huddles. The team takes the patient's history at hospital

admission, conducts a physical assessment, estimates a discharge date, and develops a treatment plan to meet that discharge target. The team huddles in specifically designed work stations outside the patient's room before and after the patient visit, updating the care plan as necessary. The presence of a bedside pharmacist, supported by computerized pharmaceutical databases, has improved medication safety. As one pharmacist told me, "80% of the efficacy is being there, seeing the patient. When all I see is paper, I lose all of that." ThedaCare's collaborative-care model has reduced the cost per case and the average length of stay—and has improved patient satisfaction and clinical quality performance measures (such as reducing the incidence of hospital-acquired pneumonia) (Berry and Dunham 2013; Bielaszka-DuVernay 2011).

For most of its more than 100 years of operation, Bellin Health did not provide oncology treatment, other than surgery. Cancer patients received outpatient treatment from private practice clinics. In the early 2000s, however, a combination of factors, including concerns expressed by Bellin's surgeons and patients about the quality and timeliness of oncology care that was available, prompted Bellin's management to decide to build an integrated cancer center from scratch, a considerable strategic investment. Bellin's board approved the idea contingent on management's bringing back a strategy that would substantially improve the quality of oncology care already available in the market. Management then conducted consumer research that informed the planning of an integrated cancer practice housed in an innovatively designed, freestanding facility with ample parking. All nonsurgical oncology services would be provided in the new facility—a "one-stop shop." Patients indicated in the research that they did not want to go to the hospital campus for their chemotherapy and radiation treatments, prompting a decision to build the cancer center several miles away from the hospital. Bellin opened its center in 2008 and surpassed its five-year growth and revenue targets in 2 years. Surveyed regularly, nearly 100% of patients indicate they are "highly likely" to recommend Bellin's oncology services to others (Berry et al. 2015).

Including patients and families on the innovation team

Another building block of an innovation culture in healthcare is using patient and family knowledge to spur improvement. Authentic encouragement to those being served to share ideas openly and safely, sparking the imagination of others, is a critical factor in service innovation. Service innovations that make a positive difference, from small operational improvements to strategic advances, are more likely when customer input is valued (Gill et al. 2017; Lee et al. 2015). Healthcare is for patients, and healthcare innovation requires their input—their ideas, concerns, needs, and wants—expressed from the basis of their experiences and self-knowledge. Invariably,

clinicians who themselves become seriously ill confess that their illness experience helped them understand the realities of being a patient and the importance of learning from the patient at a deeper level than they would have done before getting sick (Awdish 2017; Garnick 2018; Stern 2018).

True patient-centeredness involves clinicians' determining not only what is the matter *with* the patient, but also what matters *to* the patient (Barry and Edgman-Levitan 2012). Some health systems incorporate the patient's voice into collective conversation and cultural awareness by beginning each management meeting with stories of patient experiences, positive and negative. Some health systems form patient advisory boards (which may include patients' family members). Kaiser Permanente is an active user of such advisory boards, and its cancer program, for example, uses oncology advisory councils in various regions and includes patients on process-improvement teams for each cancer type. Kaiser Permanente administrators report that using patient advisors speeds up needed change by prioritizing improvements and energizing the staff. Oncology program changes influenced by patient advisors include expanding the use of nurse navigation services and improving interactive patient-education materials, decision-making aids, and service timeliness (Berry et al. 2018a).

Institution-patient-family teamwork is one source of service innovation; clinician-patient-family teamwork is another. Few life experiences are crueler than pediatric cancer, but this blatant unfairness motivates some of the most empathetic creativity to be found in all of healthcare (Berry et al. 2018b). Empathy is viewing the situation from another's perspective, avoiding judgment when assessing the situation, recognizing emotion, and responding in a caring manner (Wiseman 1996). Effectively serving a child who 1 day is riding a bicycle and playing with friends and the next is undergoing an MRI scan (to find suspected cancer) requires empathetic creativity. Pediatric clinicians and staff have derived clever ways to reduce a child's fear of a procedure or treatment, including teaching the patient who fears needles to paint with a toy syringe or having the patient role-play chemotherapy by infusing a stuffed animal outfitted with a port (Berry et al. 2018b).

The Peter MacCallum Radiation Center, in Australia, illustrates the potential impact of clinician-patient-family innovation. One parent of a child with cancer recounts: "My son had general anesthesia for radiation therapy, but as he felt a lot of anxiety about this procedure, the team would allow him to sit on me during anesthesia. They also noticed that when he woke up, he got upset about lacking a shirt. Now the team puts his shirt back on before he wakes.... To me, these small acts were the ultimate kindness, reducing his anxiety and distress and, therefore, my own" (Berry et al. 2017b). This same patient, whom I will call "Ben," was understandably anxious during long hospital stays. To reduce his anxiety, Ben's parents and the clinical team discussed his likes and dislikes and drafted a list called "Ben's treatment rules," which was placed on his hospital room door. The list included Ben's preference for

silence during procedures and for minimizing the number of people in his room at one time (Danaher et al. 2017). This low-tech solution codified what mattered to Ben and improved his service experience.

Service innovation is urgent in healthcare. Now more than ever before, healthcare institutions need to invest in the will and capability to improve operationally and strategically as they aim to deliver a better return to their stakeholders, starting with the patients. Continually improving clinical and service quality while *simultaneously* reducing wasteful spending are complementary efforts in building an organizational culture where value-creating innovation is non-negotiable, the confidence to try prevails, and patients' and family members' learned experiences and priorities are heard. Choosing between quality improvement and cost reduction is no longer an option; healthcare needs both, now. The examples presented thus far show that it can be done. But these are pockets of excellence in the healthcare industry that can—and must—proliferate. I now turn to explore, in more detail, a sector of healthcare where the opportunity for inspired service innovation is especially pronounced—namely, cancer care.

Service innovation in cancer care

My most recent research focuses on how to improve the service journey cancer patients and their families undergo, from initial diagnosis through treatment, post-treatment and, in some cases, end-of-life care. The research included phase-one “key informant” interviews with cancer patients, family members, and oncology clinicians, among others, followed by phase-two site visits to eight progressive cancer centers, a hospice, and a community health center. The goals were to identify service shortfalls in cancer care in phase one and to study innovative solutions in phase two. More than 300 people were interviewed in the two phases, and all quotations in this section of this article come from those conversations. My work was inspired by the aforementioned Wisconsin study that included observation and interviews at two innovative cancer centers.

The research enabled me to develop a framework for organizing innovative service approaches in cancer care. I call it the “Five C’s of Cancer Service”: *coordinating* services, *orchestrating experience clues*, *enabling connection*, *valuing care continuity*, and *creating community partnerships* (see Fig. 1). “Cancer” may be the scariest word in all of healthcare; not surprisingly, then, cancer care has all of the characteristics of a high-emotion service: customer unfamiliarity with the service, lack of control over its quality, significant consequences if things go wrong, service complexity that gives the provider the upper hand, and the reality that the service comprises many discrete events over a long period (Berry et al. 2015). High-quality care in cancer is about more than the science; high-quality service is essential, too.

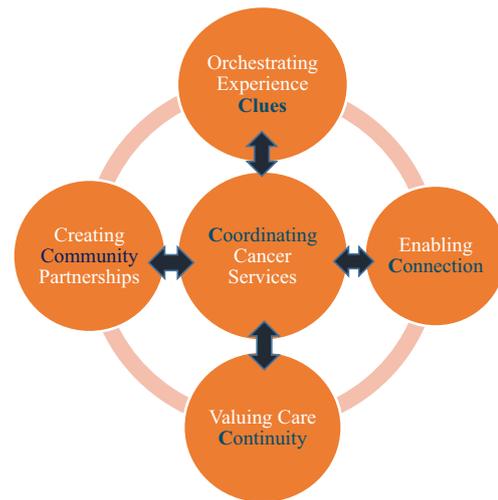


Fig. 1 Five C’s of cancer service

Coordinating cancer services refers to pooling interdisciplinary knowledge to fulfill cancer patients’ clinical, psychosocial, spiritual, and other needs and desires in a coherent, coordinated way. Both clinical and more-holistic coordination is needed. As one oncologist said, “Most cancer care in communities is fragmented....a cancer patient may see a surgeon, radiation and clinical oncologist separately.” Another oncologist observed, “Oncology practice provides treatment, but this is a fraction of the patient’s needs.” And an oncology nurse noted, “Where we lack is holistic care: psychosocial, nutrition, sexuality. Treat the whole patient.”

Utah-based Intermountain Healthcare offers “multidisciplinary clinic” days to address to the issue of uncoordinated cancer care. Typically within a week of being diagnosed, patients (often accompanied by family members) have a full-day appointment where they sit in a meeting room and are visited separately by members of the care team: surgeon, medical oncologist, radiation oncologist, nutritionist, social worker, and a nurse navigator who helps coordinate the sessions. The care team meets early in the day to discuss the patients’ cases and agree on tentative treatment plans, subject to modification once they visit the patients. Patients receive a written care plan that includes scheduled appointments (Berry et al. 2015).

Orchestrating experience clues refers to managing the many signals (clues) patients and families detect as they experience the service that providers offer. Well-managed clues can create positive feelings, such as trust and hope. Poorly managed clues can exacerbate negative feelings, such as anxiety and fear. The more important, variable, complex, and personal a service is, the more clue-sensitive customers are likely to be. Few, if any, services reflect these characteristics more than cancer care (Berry et al. 2016).

Three types of clues need to be managed (Berry et al. 2006b). *Functional clues* convey the technical quality or competence of the service. Anything in the experience that—by its

presence (e.g., a timely appointment) or absence (e.g., missing records)—signals the level of competence is a functional clue. As an oncologist noted, “When you have cancer, you don’t want to hear that ‘we can get you in in two weeks’.” *Mechanic clues* are emitted by stimuli associated with tangibles in the experience, such as the design of the service facility. A cancer center president explained: “You can go through the building, and you don’t think there are 10 patients in it. But right now there are probably 100 patients in the facility. It was designed to create a sense of privacy.” *Humanic clues* come from people, primarily service providers, in their body and verbal language, tone of voice, level of enthusiasm, and appearance. As a cancer patient said, “Nurse Nancy is very kind and sympathetic. She hugs me. She told me, ‘Don’t worry, the tumor is not so big’...she didn’t use medical words; she uses words [that are] easy to understand” (Berry et al. 2015).

Language is an especially powerful type of humanic clue in healthcare service. As one cancer patient explained, “Patients are ultra-sensitive to the doctor’s words as clues to whether they will live or die.” I asked cancer clinicians if there were any words or phrases they would never use with a patient. All respondents shared at least one “never phrase,” including the following (Berry et al. 2016):

“There is nothing more that we can do for you.” (implies abandonment)

“You are lucky it is only stage 2.” (trivializes a serious medical condition)

“Why did you wait so long to come in?” (creates a feeling of guilt)

“Let’s not worry about that now.” (not answering increases anxiety)

“You failed chemo.” (suggests the patient is at fault)

An affirming example of the power of humanic clues is this story of clinician-patient-family innovation: An elderly, frail man with advanced incurable cancer had a lifelong dream of making a family pilgrimage to Mecca. With curative treatment off the table, the oncologist’s discussions with the patient and family centered on the risks of a strenuous journey versus missing the last opportunity to fulfill a dream. The oncologist and care team prepared the patient and family for the trip, both medically and logistically, as well as possible. The patient and his family made the journey and returned. The patient passed away 3 months later, but a treasured family experience had been realized (Berry et al. 2017b).

Enabling connection refers to enhancing patients’ and families’ sense of control by facilitating their connections with the assistance they need when they need it. A cancer diagnosis turns a person’s world upside down, transferring a considerable degree of control over his or her daily life to the care team and institution. Cancer also is likely to greatly affect the patient’s family. Stress related to the perceived lack of control

can be partially mitigated through accessible, reliable, customized assistance. Just knowing that help is available when needed helps defuse negative emotion (Berry et al. 2015). A patient explained: “I had to go to the ER on a weekend three weeks ago. I had a high fever and couldn’t reach the doctor.” The patient’s father then chimed in: “You can’t get sick during the weekend. No one is around.”

Connection can be proactive (the provider initiates contact) or reactive (the patient or family initiates contact). Henry Ford Cancer Center pharmacists telephone all patients taking oral chemotherapy drugs at home at least once a week to monitor side effects, answer questions, and make sure the drugs are being taken appropriately. Oral chemotherapy is more convenient for the patient, but it is not safer just because it is in pill form. A similar example of proactive, medication-related connection comes from Kaiser Permanente, which places its infusion pharmacies (where chemotherapy drugs are prepared) right next to the chemotherapy treatment areas. This proximity allows infusion pharmacists to easily enter the treatment spaces to meet their patients, answer questions about side effects and other matters, and build relationships. Patients have a direct phone line to the pharmacy, obviating the need to go through a call center.

Henry Ford’s Cancer Center has placed “OncoStat clinics,” a strategic innovation, throughout its market area to offer timely access to patients suffering from the disease or treatment side effects. Clinicians specializing in cancer care have access to patients’ electronic records, which may not be the case in an emergency room. The OncoStat clinics, an example of “reactive connection,” have improved both patient access to convenient urgent care and clinical flow in the main cancer center because there are fewer nonscheduled patients requiring care (Berry et al. 2018a).

Valuing care continuity refers to viewing cancer as a life-changing journey for patients who require ongoing care, aligned with the patients’ and families’ needs and desires. The end of primary cancer treatment does not mark the end of patients’ need for assistance, whether with physical symptoms (such as fatigue, chronic pain, or long-term treatment side effects) or mental and emotional manifestations (such as when the cancer is life-limiting or when prognosis is good but, as research has documented, patients fear recurrence) (Doyle 2008; Aziz and Rowland 2003; Cheng et al. 2005; Mellon et al. 2006). One patient echoed many others with this comment: “There is anxiety when therapy comes to an end and you are ‘cut loose.’ I am seven years out now and still anxious before a mammogram. No one prepared me for that.”

Seton Medical Center’s cancer practice established an innovative cancer survivorship clinic to serve patients 2 years post-treatment and beyond. Staffed by an internist specializing in the late effects of cancer treatment and a nurse coordinator, the Seton Cancer Center, based in Austin, Texas, offers post-treatment patients care continuity in cooperation with patients’ primary care

physician and oncology team, as needed. The survivorship clinic provides post-treatment services that are uncommon in primary care—for example, bone-density testing for younger adult patients, checking endocrine levels, and doing skin assessments. The survivorship clinic team is best equipped to reassure patients when no signs of recurrence are evident.

Creating community partnerships refers to mobilizing community resources to help ease the path for cancer patients and their families. A cancer practice cannot adequately address all of the medical or related non-medical needs that can arise for a patient and family members when cancer strikes. For example, medical expenses can devastate a household's financial stability, even for patients with health insurance. Community financial support is necessary for a cancer center to help patients in financial distress. Numerous studies have documented the financial hardship faced by many families who confront cancer (Meeker et al. 2016; Shen et al. 2017; Chino et al. 2018). Many lower-income patients lack transportation to and from medical appointments and would be helped by community philanthropy to fund gasoline cards, taxi, or Uber/Lyft services. An oncology nurse explained, “We see a lot of inner-city patients who start treatment but don't finish. Transportation is an issue. Buses are unreliable, and some don't have family to bring them.” A husband of a cancer patient said: “I had to leave my job to help my wife. All our savings went. I wish they could help a family struggling financially.”

Newly diagnosed patients could benefit enormously from a community “buddy” system (organized by the cancer center) whereby a trained community volunteer who is post-treatment for a similar cancer counsels the new patient on what to expect and related concerns. The University of Alabama Birmingham Health System has implemented an innovative program in which “lay” (peer) volunteers from the community provide patients and families emotional, informational, problem-solving, and logistical assistance. The program has significantly improved patient satisfaction and reduced overall costs of care (Rocque et al. 2016, 2017; Berry et al. 2018a).

More than 1.7 million people in the U.S. were newly diagnosed with cancer in 2018 (Cancer Facts and Figures 2018). Sooner or later, directly or indirectly, cancer touches most of us. Easing the path of cancer patients and their families through meaningful service innovation is an opportunity that is still far from being fully realized. As one cancer center administrator said, “We cannot always control the clinical outcome, but we can control the patient experience.”

How academics in marketing can contribute to healthcare innovation

Few, if any, services influence people's quality of life more than healthcare. No other type of service uses more resources or will

face more substantial challenges in the foreseeable future. Healthcare in the U.S. (and elsewhere) needs the expertise, objective reasoning, and fresh ideas—unpolluted by politics—that marketing academicians can offer (Berry and Bendapudi 2007). Researchers with deep knowledge in services, consumer behavior, data analytics, qualitative research, and other specializations have so much potential to contribute to more-efficient and effective healthcare delivery, thereby benefiting individuals, communities, corporations (which pay for a lot of healthcare), the economy, and society as a whole.

Academic marketing can play a much bigger role in conducting research that moves healthcare forward, that tests and refines innovations that benefit patients and the professionals who serve them, and that improves quality while reducing waste. Seizing this opportunity will not be easy, however. Because healthcare is a unique, complex constellation of services, it presents an intellectually challenging domain of investigation. Researchers will need to make an ongoing commitment to studying healthcare; to reading the relevant literature in medicine, clinical care, and health policy; and to spending time in healthcare organizations, interacting with and observing clinicians and others who deliver the services on the front lines. They will need to develop a network of collaborators from inside healthcare, in order to benefit properly from their experiences and knowledge as pertinent studies are designed and influential articles about the research findings are written. Academics in the marketing field also must seek to publish in the journals that clinicians, thought leaders in medicine, and healthcare policymakers read, in addition to the marketing and business journals read by their own colleagues.

Marketing academics increasingly use healthcare as a setting for a particular study. To make a more meaningful contribution requires moving from referring merely to the broad context of healthcare to focusing intently and deliberately on healthcare as part of a career research trajectory, from developing research *projects* to scoping and sequencing well-delineated research *paths*. A research project is a singular event that may have inherent value but that typically has limited influence on its own; a research path is a series of related projects that build on one another cumulatively in order to more comprehensively address an important matter. In short, a research path has greater potential impact because it reflects an ongoing commitment to advancing knowledge and then applying that knowledge in practice.

Given the need to make tenure in a research-oriented business school, the opportunity to commit to a research vocation in healthcare may be more practical for tenured marketing faculty. Many talented marketing academics are well-positioned to make this commitment if they wish. Commitment, not talent, is where the deficit lies—for now. Even so, tenured faculty can groom junior faculty who share their desire to contribute to the healthcare literature, including partnering on projects that fit a junior faculty member's overall research program in services,

consumer behavior, or other specializations. In effect, pre-tenure projects can become post-tenure paths.

A number of comprehensive research agendas have been published that are relevant to healthcare service innovation research, including healthcare delivery (Berry and Bendapudi 2007), service innovation (Helkkula et al. 2018), service design and innovation (Patricio et al. 2018), customer experience (Lemon and Verhoef 2016; Bolton et al. 2018), organizational climate (Bowen and Schneider 2014), and others. These research agendas appropriately offer an array of investigative questions or projects that represent useful starting places for longer-term efforts. Below I outline a set of five research paths that directly relate to the subject of this article, service innovation in healthcare.

Service innovations that fail The study of innovation is central in marketing. Researchers can learn lessons that inform future healthcare innovations by linking what is known about innovation in the fields of marketing and business with dedicated analysis of important healthcare innovations that have not succeeded. Investigations that are specific to healthcare will be crucial to conduct, given the uniqueness of many of healthcare's features (e.g., its payment system, competing vested interests such as insurers versus hospitals). Failed innovations offer fertile ground for investigation.

Consider, for example, health maintenance organizations (HMOs), an especially promising innovation that was designed to improve health and reduce wasteful spending. One key innovation was “pre-payment” of an HMO with a risk-adjusted, flat, per capita (capitated) fee for all of the care that the HMO provided to patients (Mirabito and Berry 2010). Using this payment innovation, instead of the conventional “fee-for-service” structure (which incentivizes “sick care” rather than “well care”), created an incentive for HMOs to invest in preventive health to keep patients well and for their primary care doctors to consider more carefully whether a patient really needed a specialist referral or a particular diagnostic test. The HMO movement expanded rapidly in the 1980s and 1990s, but it then lost momentum and fell into disfavor (Coombs 2005). Some HMOs remain successful in the U.S., but what once appeared to be the new prevailing model for healthcare never came close to realizing its potential.

The HMO movement faltered in large measure because of a growing perception, by both patients and physicians, that cutting costs was taking precedence over improving people's health (Kao et al. 1998; Grumbach et al. 1999). This perception was reinforced by the reality of internal pressures on doctors in certain organizations (including some for-profit HMOs) to withhold specialist referrals, tests, and procedures that may not be needed. Stakeholder trust is essential in healthcare, and HMOs lost much of it over time (Robinson 2001; Grumbach et al. 1999; Mirabito and Berry 2010), leaving fee-for-service as the predominant method of payment today. Careful analysis of the

HMO's rise and fall would be likely to reveal lessons to guide future innovations and avoid repetition of mistakes. The fundamental idea of keeping people healthy was sound; the idea's execution was not. Figuring out why, from a marketing perspective, the implementation largely failed is an area worthy of exploration.

Service innovations that succeed If the failures are worth studying, the successes in healthcare services innovation obviously are, too. At the 2018 Institute for Healthcare Improvement (IHI) National Forum, Jason Leitch, National Clinical Director of Healthcare Quality and Strategy for the Scottish Government, discussed a patient feedback innovation from Scotland called “Care Opinion.” The innovation allows patients (and their families) to tell a story of their healthcare experience online, to which clinicians have the option of responding. Leitch reported that 96% of the stories receive such a response. In one story, the mother of an infant in the neonatal unit was concerned that the strong perfume worn by a nurse in the unit could be harmful to her newborn. The chief nursing officer at that hospital saw the story and, in just a few hours, implemented a no-perfume policy in the neonatal unit. This is, of course, a small operational improvement, but analysis of the marketing angle has tremendous potential. Think of it: a nationwide patient-provider communications network with a 96% provider response rate, and a new hospital policy implemented within a few hours—the keen expertise of marketing academicians would be valuable in exploring the how and why of this successful innovation (and others). Ongoing study of healthcare innovation successes, both operational and strategic, is likely to unearth useful lessons both for the healthcare field itself and, complementarily, for the marketing and business literature on innovation.

Marketing and measuring need services Most service research focuses on services that customers want to buy—what they desire. Healthcare services research would benefit from greater attention to improving the marketing of services that people need but do not want. For instance, how do you market screening tests, such as mammography and colonoscopy, to people whose doctors recommended them? How best do you educate the general population on how to quickly detect the symptoms of a possible stroke and get needed treatment given the short time window in which strokes can be most effectively treated? How do you best engage people to take their prescribed medications? These services are needed, but often ignored, making customer persuasion (a basic goal of marketing) a difficult task. Healthcare needs to learn how to improve its persuasion capabilities so that services with evidence-based benefits can be used optimally, without underuse or overuse. This work is crucial for improving individual and population health, and marketing researchers have an important role to play.

A related, also promising, research path is the measurement of patient satisfaction and service quality in healthcare. Conventional measurement approaches used in academic marketing fit “want” services better than “need” services. I have observed many such examples in my healthcare studies. A doctor I observed as he worked with patients said to one patient, gently, “You wouldn’t feel that you had a full experience if I didn’t remind you to stop smoking.” This physician was extremely warm to the patient throughout the visit. Conventional measures used in marketing and in healthcare would reflect that it was a good service experience because of how it made the person feel. But would the service have been objectively better if delivered more emphatically: “Your smoking may be slowly killing you. You must stop. Let me help you stop smoking, starting today.” However, a service delivered in this manner may yield a poor patient-satisfaction score for the doctor (Berry and Bendapudi 2007). New measurement ideas, and evidence on their value, are important areas to explore.

The balance between high-tech and high-touch services As a complex, high-emotion service, healthcare delivery has an essential reliance on the human “touch.” This service feature has literal manifestations, as during physical examinations, procedures, and surgery; and figurative ones, as during conversations and shared decision-making between patient and clinician. As such, in-person, interactive services are central in healthcare. How should the importance of human touch be maintained as technology rapidly infiltrates myriad facets of healthcare delivery, ranging from in-home doctor visits conducted virtually through Skype, FaceTime, or other applications; to patients’ use of armband or other sensors that monitor health conditions remotely; to the increasing use of service robots, a topic that Wirtz et al. (2018) discuss in detail?

Notably, Kaiser Permanente Northern California, with its more than 100 internet, mobile, and video services, now conducts more virtual patient visits than in-person visits in serving more than 3.4 million patients in that region (Pearl 2014). Not coincidentally, Kaiser Permanente (KP) is an HMO that survived the broader HMO fallout and, today, is widely considered one of the most innovative U.S. health systems and clearly is a technology leader. Paid on a flat-fee (capitated) basis for delivering healthcare services, KP does well when it keeps patients healthy and delivers services efficiently. It had a bottom-line reason to be an early, active investor in service-delivery technology. Finding the right balance between high-tech and high-touch, as KP has done, is a central issue in healthcare service innovation. Academic marketing can help healthcare find that right balance going forward.

How to create healthy communities Healthcare is at a tipping point, in that researchers and other experts are now starting to recognize that social determinants—the quality of people’s

available education and housing, early childhood development, income levels that provide for basic needs and personal dignity, social support, nutrition and physical activity, and other factors—far outweigh clinical care in influencing overall health and how long a person lives (Marmot 2015; McGinnis et al. 2002).

In a compelling presentation at the 2018 IHI National Forum, Dr. Donald Berwick, a renowned leader in healthcare improvement, showed a slide of a subway map in New York City with a red line drawn from one subway stop in an affluent area to another stop in a lower-income area. He then pointed out that life expectancy drops 20 years from the affluent ZIP code to the non-affluent one! “The subway map will tell you the story,” Berwick stated. Similar maps could be drawn in many other U.S. cities. In America, lower social status, educational level, and income correlate with poorer health. Healthcare delivery may not be local, given the growing use of virtual technologies to deliver care; health itself, however, is local.

Consider the case, in Atlanta, Georgia, of the East Lake Foundation, which redeveloped a new community on the site where a public housing project had once been. New market-rate and subsidized townhomes, villas, and apartments were built for a diverse mix of families of varying incomes. More than 1300 people lived in these residences in 2018. The Foundation built the Charles Drew Charter School, whose students academically outperform the state average. Violent crime in the community dropped by 97% from 1995 to 2017. The East Lake community is a bold, innovative solution to the tyranny of poverty and its tragic health effects. The community was designed with considerable input from area residents and professionals.

Marketing background and skills would be particularly useful in developing more innovation successes like the Villages of East Lake, as the community is called. Specifically, marketing academics could contribute, as part of a well-executed research path, to the design and rollout of these types of “purpose-built communities” by investigating the lessons to be learned from existing communities of this type; exploring the population characteristics that contribute to an optimal resident mix; studying the priorities of prospective residents and other stakeholders (such as businesses and donors) to learn which community attributes offer the most appeal and value; and developing “business and social case” pitches necessary to attract job-creating organizations, a robust array of retailers, quality education, and other essential infrastructure. Planning, funding, and creating a purpose-built community with a marketing perspective would be especially valuable and, possibly, make the difference between achieving success and confronting failure.

Conclusion

Service innovation in healthcare is not only possible, as the examples in this article show, but imperative. The healthcare

sector has not traditionally faced strong external pressure to be innovative in service delivery, but it does now. Wasteful spending is pervasive, and pressure to contain costs is intense. Market dynamics are changing rapidly, and a healthcare organization's economic security is no longer a given. Nontraditional competitors and nontraditional technology, among other market forces, require a broad-based movement toward improving efficiency and clinical and service quality, in order to address the expectations that most patients now have as they increasingly see healthcare through a consumer lens. The uniqueness of healthcare as a service makes implementing service innovation challenging. Yet, individual health systems (whether in cancer care or other medical areas) have clearly embraced the innovation service challenge, operationally and strategically. What remains is for that imperative to spread more widely and systematically, with the participation of researchers in the field of marketing, so that attending to the "customer experience" becomes one of the primary aims in how healthcare is delivered in the United States.

References

- Abelson, R. (2018). Consolidation of CVS health with Aetna wins approval. *The New York Times* (October 11), B1-2.
- Altarum. (2018). Health care spending growth and its share of economy exhibit remarkable stability. Retrieved October 18, 2018 from <https://altarum.org/Health-Care-Spending-Growth-and-Share-of-Economy-Exhibit-Stability>.
- Anderson, D. J., Podgorny, K., Berrios-Torres, S. I., Bratzler, D. W., Dellinger, E. P., Greene, L., et al. (2014). Strategies to prevent surgical site infections in acute care hospitals: 2014 update. *Infection Control and Hospital Epidemiology*, 35(S2), S66–S88.
- Awdish, R. (2017). *In shock: My journey from death to recovery and the redemptive power of hope*. New York: St. Martin's Press.
- Aziz, N. M., & Rowland, J. H. (2003). Trends and advances in cancer survivorship research: challenges and opportunity. *Seminars in Radiation Oncology*, 13(3), 248–266.
- Barlow, J., Bayer, S., & Curry, R. (2006). Implementing complex innovations in fluid multi-stakeholder environments: experience of "telecare". *Technovation*, 26, 396–406.
- Barry, M. J., & Edgman-Levitan, S. (2012). Shared decision making: pinnacle of patient-centered care. *New England Journal of Medicine*, 366(9), 780–781.
- Bates, D. W., & Slight, S. P. (2014). Medication errors: what is their impact. *Mayo Clinic Proceedings*, 89(8), 1027–1029.
- Bentley, T. G. K., Effros, R. M., Palar, K., & Keeler, E. B. (2008). Waste in the U.S. health care system: a conceptual framework. *The Milbank Quarterly*, 86(4), 629–659.
- Berrios-Torres, S. I., Umscheid, C. A., Bratzler, D. W., Leas, B., Stone, E. C., Kelz, R. R., et al. (2017). Centers for disease control and prevention guideline for the prevention of surgical site infection, 2017. *JAMA Surgery*, 152(8), 784–791.
- Berry, L. L., & Bendapudi, N. (2007). Health care: a fertile field for service research. *Journal of Service Research*, 10(2), 111–122.
- Berry, L.L., & Dunham, J. (2013). Redefining the patient experience with collaborative care. *Harvard Business Review*. Retrieved October 15, 2018 from <https://hbr.org/2013/09/redefining-the-patient-experience-with-collaborative-care>.
- Berry, L. L., Seiders, K., & Wilder, S. S. (2003). Innovation in access to care: a patient-centered approach. *Annals of Internal Medicine*, 139(7), 568–574.
- Berry, L. L., Shankar, V., Parish, J. T., Cadwallader, S., & Dotzel, T. (2006a). Creating new markets through service innovation. *MIT Sloan Management Review*, 47(2), 56–63.
- Berry, L. L., Wall, E. A., & Carbone, L. P. (2006b). Service clues and customer assessment of the service experience. *Academy of Management Perspectives*, 20(33), 43–57.
- Berry, L. L., Rock, B. L., Houskamp, B. S., Brueggerman, J., & Tucker, L. (2013). Care coordination for patients with complex health profiles in inpatient and outpatient settings. *Mayo Clinic Proceedings*, 88(2), 184–194.
- Berry, L. L., Beckham, D., Dettman, A., & Mead, R. (2014). Toward a strategy of patient-centered access to primary care. *Mayo Clinic Proceedings*, 89(10), 1406–1415.
- Berry, L. L., Davis, S. W., & Wilmet, J. (2015). When the customer is stressed. *Harvard Business Review*, 93(2), 86–94.
- Berry, L. L., Jacobson, J. O., & Stuart, B. (2016). Managing the clues in cancer care. *Journal of Oncology Practice*, 14(4), 407–410.
- Berry, L. L., Danaher, T. S., Beckham, D., Awdish, R. L. A., & Mate, K. S. (2017a). When patients and their families feel like hostages to health care. *Mayo Clinic Proceedings*, 92(9), 1373–1381.
- Berry, L. L., Danaher, T. S., Chapman, R. A., & Awdish, R. L. A. (2017b). Role of kindness in cancer care. *Journal of Oncology Practice*, 13(11), 744–750.
- Berry, L.L., Deming, K.A., & Danaher, T.S. (2018a). Improving nonclinical and clinical-support services: Lessons from oncology. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes*, Retrieved October 15, 2018 from [https://mcpiqjournal.org/article/S2542-4548\(18\)30046-8/fulltext](https://mcpiqjournal.org/article/S2542-4548(18)30046-8/fulltext).
- Berry, L.L., Modi, H., & Danaher, T.S. (2018b). How lessons from childhood cancer care could improve adult cancer care. *The Conversation*, Retrieved October 15, 2018 from <https://theconversation.com/how-lessons-from-childhood-cancer-care-could-improve-adult-cancer-care-94542>.
- Berwick, D. M., & Hackbarth, A. D. (2012). Eliminating waste in U.S. health care. *Journal of the American Medical Association*, 307(3), 422–425.
- Bhardwaj, G. (2017). How five technologies are shaping the future of health care. *Forbes Community Voice*. Retrieved October 18, 2018 from <https://www.forbes.com/sites/forbestechcouncil/2017/12/14/how-five-technologies-are-shaping-the-future-of-health-care/#2d8d22941023>.
- Bielaszka-DuVernay, C. (2011). Redesigning acute care processes in Wisconsin. *Health Affairs*, 30(3), 422–425.
- Bolton, R. N., McColl-Kennedy, J. R., Cheung, L., Gallan, A., Orsingher, C., Witell, L., & Zaki, M. (2018). Customer experience challenges: bringing together digital, physical and social realms. *Journal of Service Management*, 29(5), 776–808.
- Borksy, A., Zhan, C., Miller, T., Ngo-Metzger, Q., Bierman, A. S., & Myers, D. (2018). Few Americans receive all high-priority, appropriate clinical preventive services. *Health Affairs*, 37(6), 925–928.
- Bowen, D. E., & Schneider, B. (2014). A service climate synthesis and future research agenda. *Journal of Service Research*, 17(1), 5–22.
- Bush, R. W. (2007). Reducing waste in U.S. healthcare systems. *Journal of the American Medical Association*, 297(8), 871–874.
- Bynum J.P.W, Meara ER, Chang CH, Rhoads JM, Bronner KK. (2016). Our parents, ourselves: health care for an aging population. Lebanon, NH: *The Dartmouth Institute of Health Policy & Clinical Practice*. Retrieved November 14, 2018 from http://www.dartmouthatlas.org/downloads/reports/Our_Parents_Ourselves_021716_embargoed.pdf.
- Cancer Facts & Figures (2018). *Atlanta: American Cancer Society*; 2018. Retrieved November 14, 2018 from <https://www.cancer.org/content/>

- dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2018/cancer-facts-and-figures-2018.pdf
- Chassin, M. R., Mayer, C., & Nether, K. (2015). Improving hand hygiene at eight hospitals in the United States by targeting specific causes of noncompliance. *The Joint Commission Journal on Quality and Patient Safety*, 44(1), 4–12.
- Cheng, K. K. F., Thompson, D. R., Ling, W. M., & Chan, C. W. H. (2005). Measuring symptom prevalence, severity and distress of cancer survivors. *Clinical Effectiveness in Nursing*, 9(3–4), 154–160.
- Cheung, N., Mitchell, P., & Wong, T. Y. (2010). Diabetic retinopathy. *Lancet*, 376(9735), 124–136.
- Chino, F., Peppercom, J. M., Rushing, C., Nicolla, J., Kamal, A. H., & Altomare, I. (2018). Going for broke: a longitudinal study of patient-reported financial sacrifice in cancer care. *Journal of Oncology Practice*, 14(9), e533–e546.
- Christensen, J.K.B. (2018). The emergence and unfolding of telemonitoring practices in different healthcare organizations. *International Journal of Environmental Research and Public Health*. Retrieved October 15, 2018 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5800160/>.
- Coombs, J. G. (2005). *The rise and fall of HMOs*. Madison: University of Wisconsin Press.
- Cutler, D. M. (2018). What is the health spending problem? *Health Affairs*, 37(3), 493–497.
- Cutler, D., Wikler, E., & Basch, P. (2012). Reducing administrative costs and improving the health care system. *New England Journal of Medicine*, 367(20), 1875–1878.
- Danaher, T. S., Brand, S. R., Pickard, L. S. S., Mack, J. W., & Berry, L. L. (2017). How a child with cancer moved from vulnerability to resilience. *Journal of Clinical Oncology*, 35(27), 3169–3171.
- Daskivich, L. P., Vasquez, C., Martinez, C., Tseng, C. H., & Mangione, C. M. (2017). Implementation and evaluation of a large-scale teleretinal diabetic retinopathy screening program in the Los Angeles county department of health services. *JAMA Internal Medicine*, 177(5), 642–649.
- Davies, L., Petitti, D. B., Martin, L., Woo, M., & Lin, J. S. (2018). Defining, estimating, and communicating overdiagnosis in cancer screening. *Annals of Internal Medicine*, 169(1), 36–43.
- Dobler, C. C., Midthun, D. E., & Montori, V. M. (2017). Quality of shared decision making in lung cancer screening: the right process with the right partners at the right time and place. *Mayo Clinic Proceedings*, 92(11), 1612–1616.
- Downing, L. N., Bates, D. W., & Longhurst, C. A. (2018). Physician burnout in the electronic health record era: Are we ignoring the real cause? *Annals of Internal Medicine*, 169(1), 50–51.
- Doyle, N. (2008). Cancer survivorship: evolutionary concept analysis. *Journal of Advanced Nursing*, 62(4), 499–509.
- Edvardsson, B., Enquist, B., & Johnston, R. (2010). Design dimensions of experience rooms for service test drives: case studies in several service contexts. *Managing Service Quality: An International Journal*, 20(4), 312–327.
- Frakt, A. (2018). A hospital die-off hits rural America hard. *The New York Times* (October 30), B1–2.
- Frakt, A. B., & Garthwaite, G. (2018). The CVS-Aetna merger: another large bet on the changing U.S. health care landscape. *Annals of Internal Medicine*, 168(7), 511–512.
- Fuchs, V.R. (2009a). Eliminating “waste” in health care”. *Journal of the American Medical Association*, 302 (22), 2481–2482.
- Fuchs, V. R. (2009b). Cost shifting does not reduce the cost of health care. *Journal of the American Medical Association*, 302(9), 999–1000.
- Fuchs, V. R. (2018). How to make US health care more equitable and less costly—begin by replacing employment-based insurance. *Journal of the American Medical Association*, 320(20), 2071–2072.
- Fulton, B. D. (2017). Health care market concentration trends in the United States: evidence and policy responses. *Health Affairs*, 36(9), 1530–1538.
- Garnick, M. B. (2018). Filling in the gaps. *Journal of the American Medical Association*, 319(20), 2079–2080.
- Gaynor, M., Ho, K., & Town, R. J. (2015). The industrial organization of health care markets. *Journal of Economic Literature*, 53(2), 235–284.
- Gill, M., Sridhari, S., & Grewal, R. (2017). Return on engagement initiatives (ROEI): a study of a business-to-business mobile app. *Journal of Marketing*, 81(4), 45–66.
- Grumbach, K., Selby, J. V., Damberg, C., Bindman, A. B., Quesenberry, C. J. R., Truman, A., et al. (1999). Resolving the gatekeeper conundrum: what patients value in primary care and referrals to specialists. *The Journal of the American Medical Association*, 282(3), 261–266.
- Habran, E., Saulpic, O., & Zarlowski, P. (2018). Digitalisation in healthcare: an analysis of projects proposed by practitioners. *British Journal of Health Care Management*, 24(3), 150–155.
- Helkkula, A., Kowalkowski, C., & Tronvoll, B. (2018). Archetypes of service innovation: implications for value cocreation. *Journal of Service Research*, 21(3), 284–301.
- Jain, S.S. & Schulman, K.A. (2018). Committing to transformation: Chief innovation officers and the role of organizational redesign. *Health Affairs Blog*. Retrieved October 15, 2018 from <https://www.healthaffairs.org/doi/10.1377/hblog20180920.793517/full/>.
- Kao, A. C., Green, D. C., Zaslavsky, A. M., Koplan, J. P., & Cleary, P. D. (1998). The relationship between method of physician payment and patient trust. *The Journal of the American Medical Association*, 280(19), 1708–1714.
- Lee, J., Sridhari, S., Henderson, C., & Palmatier, R. (2015). Effect of customer-centric structures on long-term financial performance. *Marketing Science*, 34(2), 250–268.
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(November), 69–96.
- Makary, M.A., & Daniel, M. (2016). Medical error—the third leading cause of death in the U.S. *British Medical Journal*, 353, i2139. Retrieved November 14, 2018 from http://healthofamericans.org/files/Medical_error.pdf.
- Marmot, M. (2015). *The health gap: The challenge of an unequal world*. London: Bloomsburg Publishing.
- Marquess, M., Johnston, S. P., Williams, N. L., Giordano, C., Leiby, B. E., Hurwitz, M. D., Dicker, A. P., & Den, R. B. (2017). A pilot study to determine if the use of a virtual reality education module reduces anxiety and increases comprehension in patients receiving radiation therapy. *Journal of Radiation Oncology*, 6(3), 317–322.
- McGinnis, M. J., Williams-Russo, P., & Knickman, J. R. (2002). The case for more active policy attention to health promotion. *Health Affairs*, 21(2), 78–93.
- McHugh, M. D., Kutney-Lee, A., Cimiotti, J. P., Sloane, D. M., & Aiken, L. H. (2011). Nurses’ widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. *Health Affairs*, 30(2), 202–210.
- Meeker, C. R., Geynisman, D. M., Egleston, B. L., Hall, M. J., Mechanic, K. Y., Bilusic, M., Plismack, E. R., Martin, L. P., von Mehren, M., Lewis, B., & Wong, Y. (2016). Relationships among financial distress, emotional distress, and overall distress in insured patients with cancer. *Journal of Oncology Practice*, 12(7), 663.
- Mehrotra, A. (2013). The convenience revolution for treatment of low-acuity conditions. *Journal of the American Medical Association*, 310(1), 35–36.
- Mellon, S., Northhouse, L. L., & Weiss, L. L. (2006). A population-based study of the quality of life of cancer survivors and their family caregivers. *Cancer Nursing*, 29(2), 120–131.
- Mirabito, A. M., & Berry, L. L. (2010). Lessons that patient-centered medical homes can learn from the mistakes of HMOs. *Annals of Internal Medicine*, 152(3), 182–185.
- Mulley, A. G., Trimble, C., & Elwyn, G. (2012). Stop the silent misdiagnosis: patients’ preferences matter. *British Medical Journal*,

- 345(nov07 6), e6572. Retrieved October 19, 2018 from <https://www.bmj.com/content/345/bmj.e6572>.
- Nuckols, T. K., Smith-Spangler, C., Morton, S. C., Asch, S. M., Patel, V. M., Anderson, L. J., Deichsel, E. L., & Shekelle, P. G. (2014). The effectiveness of computerized order entry at reducing preventable adverse drug events and medication errors in hospital settings: a systematic review and meta-analysis. *Systematic Reviews*, 3(1), 56–68.
- O'Shea, J. (2018). Patient-centered, value-based health care is incompatible with the current climate of excessive regulation. *Health Affairs Blog*. Retrieved October 15, 2018 from <https://www.healthaffairs.org/doi/10.1377/hblog20180927.405697/full/>.
- Patricio, L., Gustafsson, A., & Fisk, R. (2018). Upframing service design and innovation for research impact. *Journal of Service Research*, 21(1), 3–16.
- Pearl, R. (2014). Kaiser Permanente northern California: current experiences with internet, mobile, and video technologies. *Health Affairs*, 33(2), 251–257.
- Prabhu, J., & Jain, S. (2015). Innovation and entrepreneurship in India: understanding *jugaad*. *Asia Pacific Journal of Management*, 32(4), 843–868.
- Radjou, N., Prabhu, J., & Ahuja, S. (2012). *Jugaad innovation: Think frugal, be flexible, generate breakthrough growth*. San Francisco: Jossey Bass.
- Robinson, J. C. (2001). The end of managed care. *The Journal of the American Medical Association*, 285(20), 2622–2628.
- Rocque, G. B., Partridge, E., Pisu, M., Martin, M. Y., Denmark-Wahnefried, W., Acemgil, A., Kenzik, K., Kvale, E. A., Meneses, K., Li, X., Li, Y., Halilova, K., Jackson, B. E., Chambles, C., Lisovicz, N., Fraud, M., & Taylor, R. (2016). The patient connect program: transforming health care through lay navigation. *Journal of Oncology Practice*, 12(6), 551.
- Rocque, G. B., Partridge, E., Pisu, M., Martin, M. Y., Denmark-Wahnefried, W., Acemgil, A., Kenzik, K., Kvale, E. A., Meneses, K., Li, X., Li, Y., Halilova, K., Jackson, B. E., Chambles, C., Lisovicz, N., Fraud, M., & Taylor, R. (2017). Resource use and Medicare costs during lay navigation for geriatric patients with cancer. *JAMA Oncology*, 3(6), 817–825.
- Samet, K. A., & Smith, M. S. (2016). Thinking differently: catalyzing innovation in healthcare and beyond. *Frontiers of Health Services Management*, 33(2), 3–15.
- Schmitt, B. H. (2003). *Customer experience management: A revolutionary approach to connecting with your customers*. New York: Free Press.
- Shanafelt, T. D., Dyrbye, L. N., & West, C. P. (2017). Addressing physician burnout: the way forward. *Journal of the American Medical Association*, 317(9), 901–902.
- Shanafelt, T., Swensen, S. J., Woody, J., Levin, J., & Lillie, J. (2018). Physician and nurse well-being: seven things hospital boards should know. *Journal of Healthcare Management*, 63(6), 363–369.
- Shanafelt, T. D., Hasan, O., Dyrbye, L. N., Sinsky, C., Satele, D., Sloan, J., & West, C. P. (2015). Changes in burnout and satisfaction with work-life balance in physicians and the general U.S. working population between 2011 and 2014. *Mayo Clinic Proceedings*, 90(12), 1600–1613.
- Shen, C., Zhao, B., Liu, L., & Shih, Y. (2017). Financial burden for patients with chronic myeloid leukemia enrolled oral anticancer medications. *Journal of Oncology Practice*, 13(2), 118.
- Shortell, S. M. (2016). Bending the cost curve: a critical component of health reform. *Journal of the American Medical Association*, 302(11), 1223–1224.
- Sinsky, C., Colligan, L., Li, L., Prgomet, M., Reynolds, S., Goeders, L., Westbrook, J., Tutly, M., & Blinke, G. (2016). Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. *Annals of Internal Medicine*, 165(2), 753–760.
- Stern, A. P. (2018). Doctoring while sick—is living with cancer making me a better or worse doctor? *New England Journal of Medicine*, 379(12), 1104–1105.
- Stey, A., Kanzaria, H., & Brook, R. (2018). How disruptive innovation by business and technology firms could improve population health. *Journal of the American Medical Association*, 320(10), 973–974.
- Swensen, S. J. (2018). Esprit de corps and quality: making the case for eradicating burnout. *Journal of Healthcare Management*, 63(1), 7–11.
- Tai-Seale, M., Olson, C. W., Li, J., Chan, A. S., Morikawa, C., Durbin, M., Wang, W., & Luft, H. S. (2017). Electronic health records logs indicate that physicians split time evenly between seeing patients and desktop medicine. *Health Affairs*, 36(4), 655–662.
- Tawfik, D. S., Profit, J., Morgenthaler, T. I., Satele, D. V., Sinsky, C. A., Dyrbye, L. N., Tutly, M. A., West, C. P., & Shanefelt, T. D. (2018). Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. *Mayo Clinic Proceedings*, 93(11), 1571–1580.
- Topol, E., & Hill, D. (2012). *Creative destruction of medicine: How the digital revolution will create better health care*. New York: Tantor Audio.
- Toussaint, J. S., & Berry, L. L. (2013). The promise of lean in healthcare. *Mayo Clinic Proceedings*, 88(1), 74–82.
- Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlensinger, L. A. (2009). Customer experience creation: determinants, dynamics, and management strategies. *Journal of Retailing*, 85(1), 31–41.
- Wallace, J. E., Lemaire, J. B., & Ghali, W. A. (2009). Physician wellness: a missing quality indicator. *Lancet*, 374(9702), 1714–1721.
- Welch, G. H., Schwartz, L. M., & Woloskin, S. (2011). *Over-diagnosed: Making people sick in the pursuit of health*. Boston: Beacon Press.
- Wingfield, N., Thomas, K., & Abelson, R. (2018). Amazon, Berkshire Hathaway and JP Morgan team up to try to disrupt health care. *The New York Times*, Retrieved October 19, 2018 from <https://www.nytimes.com/2018/01/30/technology/amazon-berkshire-hathaway-jpmorgan-health-care.html>.
- Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Vinh Nhat, L., Paluch, S., & Martina, A. (2018). Brave new world: service robots in the frontline. *Journal of Service Management*, 29(5), 907–931.
- Wiseman, T. (1996). A concept analysis of empathy. *Journal of Advanced Nursing*, 23(6), 1162–1167.
- Wittich, C. M., Burkle, C. M., & Lanier, W. L. (2014). Medication errors: an overview for clinicians. *Mayo Clinic Proceedings*, 89(8), 1116–1125.
- World Health Organization. (2016). *From innovation to implementation—eHealth in the WHO European region*. Geneva: World Health Organization.
- Zane, R.D., & Wiler, J.L. (2018). Embracing technology to save primary care. *NEJM Catalyst*. Retrieved on October 18, 2018 from <https://catalyst.nejm.org/tech-save-primary-care/>.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.