CHAPTER 1

A Healthcare Vision for the Next-Level Healthcare Enterprise

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The healthcare industry is experiencing a seismic shift greater in scope and magnitude than ever before. One hundred years ago, healthcare evolved from a disorganized industry to an organized industry; today, it is even more rapidly evolving from an organized industry to a transformed industry. Soon, it will be standardized, commoditized, digitized, and globalized. This chapter provides a brief history of healthcare's evolution and discusses the extraordinary shifts that twenty-first-century healthcare requires.

EARLY TWENTIETH CENTURY: FROM A DISORGANIZED INDUSTRY TO AN ORGANIZED INDUSTRY

The late nineteenth-century US healthcare system was characterized by largely rural practitioners using traditional remedies passed down from physician to apprentice despite the rapid growth of scientific medicine in Europe. Physicians had no standards of practice, and they determined treatment modalities based on experience and

heuristic trial and error. Hospitals existed to care for seriously ill, injured, or infirm people and served to protect communities from communicable diseases that were typically the most common cause of death.

By 1900, the United States began to more widely adopt the germ theory of antisepsis and other, more scientific approaches advocated in European centers. Morbidity and mortality rates began to improve. As a result, there was greater interest in incorporating European methods, and in 1910 the Carnegie Foundation recruited Abraham Flexner to create a blueprint for how the European approach to healthcare could be adapted to the frontier and rural environments of the United States and Canada.

The Flexner Report encouraged universal standards for medical education, resulting in the closure of more than half the existing schools. It also encouraged two years of basic science education, two years of clinical preparation, and one year of internship prior to clinical practice. Hospitals affiliated with these new programs implemented a more scientific method, and professors were encouraged to engage in basic scientific research to promulgate new knowledge and approaches. Laboratories and sterile operating facilities became an integral part of the new centers of healing. These more complex medical institutions required professional management and coincided with the first business schools established to train business leaders in healthcare and other industries.

To encourage physicians to work together for the betterment of clinical quality, the American Surgical Society (now the American College of Surgeons) created the notion of an organized medical staff in 1919 as part of its first Minimum Standards for Hospitals. Similarly, in 1933, the American College of Hospital Administrators (later the American College of Healthcare Executives) was founded to encourage healthcare leaders to share information and to improve their professional skills and knowledge.

The adoption of a distinctly American version of the European model brought rich dividends, with the rapid growth of Western

scientific discoveries leading to the development of commercial antibiotics, sophisticated technology, and sterile equipment, as well as the rapid development of new vaccines. Healthcare organizations and physicians could now offer life-saving treatments more reliably; thus, the field rose in stature and skill.

The twentieth century saw many other great advances in healthcare. For example, anesthetic agents made better surgical outcomes routine, and improvements in water and food sanitation reduced communicable diseases. The introduction of the birth control pill gave women greater control over their reproductive lives, and advances in obstetric care made childbirth safer. Cardiac care improved, creating a significant reduction in morbidity and mortality. The advancement of radiologic imaging (including the introduction of computed tomography [CT] scans in the 1970s) obviated the need for most exploratory surgeries. Organ transplantation enabled those with failing organs to gain years of productive life.

Healthcare financing changed radically in the twentieth century, progressing from a cash-based system to an insurance-based system. This was in part the result of the influenza pandemic of 1918, which afflicted 25 percent of the US population and killed 675,000 Americans (many of whom were young and able-bodied), as well as 100 million people worldwide (Knobler, Mack, and Mahmoud 2005). To protect their pool of workers, great industrialists such as Henry Ford, John D. Rockefeller, and Andrew Carnegie pressured the federal government to support the introduction of third-party payment for healthcare. Many methods of health insurance coverage arose over the century. Employer-based healthcare coverage emerged in the mid-1930s following a spike in deaths during the Great Depression as a result of malnutrition and suicide. The Health Care Financing Administration, the precursor to the Centers for Medicare & Medicaid Services (CMS), was established in 1965. By the end of the twentieth century, approximately 40 million Americans (slightly more than 15 percent of US citizens) were left without any healthcare insurance coverage (Kaiser Family Foundation 2017).

The two major healthcare business models of the twentieth century became the physician's office and the hospital. At the physician's office, patients could receive care for routine or minor conditions, or they could obtain ongoing evaluation and treatment of major chronic conditions. At the hospital, patients with acute or significant medical and surgical conditions could be diagnosed, initially treated, and stabilized. In the late twentieth century, the emergency department (ED) became the after-hours physician's office and hospital gateway, treating both minor and major conditions and providing safety-net care for people without health insurance.

As a result of rapid biomedical advances, previously life-threatening conditions such as tuberculosis, HIV, and heart disease became chronic conditions that many patients could manage throughout their lives. Unfortunately, traditional reimbursement methodologies did not evolve with this trend, and many with chronic diseases went untreated or minimally treated through lack of incentives for hospitals, physicians, and patients.

The twentieth century saw tremendous growth in the number of physicians in the United States—from 131,640 in 1900 to almost 800,000 in 2000. There was also significant growth in the number of specialties and subspecialties—the American Board of Medical Specialties and the Accreditation Council for Graduate Medical Education now list almost 50 major medical/surgical specialties and more than 60 subspecialties. The number of hospitals grew as well, from just more than 200 in 1900 to more than 5,000 today.

A close working relationship evolved between the healthcare sector and corporate suppliers who contributed to and profited from the development of new technology. These advances added both value and cost to the system. By the conclusion of the century, healthcare made up 14 percent of the US gross domestic product, and observers began to use the term *medical–industrial complex* to characterize this phenomenon (first used by Ehrenreich and Ehrenreich in 1969).

THE CHALLENGES OF TWENTIETH-CENTURY HEALTHCARE

The great healthcare advances of the twentieth century resulted in greater medical access for at least 85 percent of US citizens and a 67 percent reduction in mortality rates (from 1 in 42 deaths in 1900 to 1 in 125 in 1998) (Francis 2018). However, a number of challenges emerged that must be addressed to create a sustainable twenty-first-century healthcare model.

Challenge: Unaligned Payment Methodologies and Revenue Cycles

With rare exceptions, the predominant healthcare payment methodology in the United States is a discounted and politicized fee-for-service system. This methodology creates significant incentives for healthcare organizations and physicians to "follow the money"—prescribing high-margin procedures, tests, and treatment modalities.

The system arose because suppliers support politicians through political action committees. These politicians oversee the funding for CMS, which in turn influences the Medicare Payment Advisory Commission's establishment of conversion-factor rates for Medicare reimbursement through work relative value units (wRVUs). The commission's payment methodology is emulated by most commercial payers and ultimately results in significant differentials in payment for various treatment modalities. For instance, the two most important causes of premature heart disease are smoking and obesity. However, the two highest reimbursement rates for the treatment of heart disease involve placement of cardiac stents and performance of coronary artery bypass grafts. Although effective for late-stage coronary artery disease, these do little to prevent heart disease in its earliest stages.

This payment methodology is based on a return on investment for suppliers and has less impact on long-term clinical outcomes, though the latter ought to be the major concern of a rational reimbursement methodology. To complicate matters, most payers will not disclose in advance the amount they are willing to contribute. Because of the lack of transparency over third-party reimbursement, healthcare organizations have had to create a fictional category called *gross revenues* or *gross charges* to overestimate likely payment, so that no money is left on the table, and then call the difference between the overestimation of reimbursement and actual payment *deductions from revenue* or *contractual allowances*. Worse, critical-access hospitals must provide Medicare cost reports based on historical, fictional costs recorded on their chargemaster (historic gross charges) to justify cost plus payments (101 percent of Medicare costs), which further distorts financial accounting. In short, the lack of appropriate incentives to bolster health and prevent disease, along with a lack of transparency for both costs and quality outcomes, has created perverse incentives that do not reward healthcare organizations or physicians for providing the best possible care to achieve optimal clinical and business outcomes.

Challenge: Non-Value-Added Clinical and Business Outcome Variation

Healthcare was originally established as a cottage industry that permitted each physician to determine the appropriate approach with each patient. This culture created enormous variation in the way physicians treated identical conditions. Similarly, healthcare leaders and executives, lacking real-time information or standards, followed an individualized trial-and-error, or heuristic, approach to management decisions using retrospective data. These approaches have created a significant range of outcomes, eloquently described by Atul Gawande (2004) in his landmark article "The Bell Curve." He recounts variations in survival and life expectancy for individuals with cystic fibrosis, each treated by different physicians and organizations in

their own way; these discrepancies in survival could be more than 25 years. Another example of the healthcare field's scattershot approach is found in organizations that are able to perform true cost accounting and measure the direct variable costs of treatment ordered by individual physicians for the care of patients with identical diagnosis-related groups (DRGs). The variation in cost can be as great as 1,000 percent, with those who spend less driving superior outcomes.

In 2013, the Advisory Board announced that preventable medical errors were the third leading cause of death in the United States, with 220,000 to 440,000 fatalities per year resulting from non-value-added variation. In fact, the Rand Corporation has asserted that appropriate care is administered only 45 percent of the time (National Center for Health Statistics 2018). Other manifestations of non-value-added variation include the following:

- Too much care rendered (e.g., excessive testing and procedures, inappropriate use of antibiotics)
- Too little care rendered (e.g., non- or undertreatment of hypertension while billions are spent on treatment of resultant strokes)
- Wrong care rendered (e.g., misdiagnosis, failure to diagnose, delay in diagnosis)

The challenge for all healthcare professionals is to reduce both clinical and managerial variation by eliminating non-value-added variation that places individuals and the organization at risk for both inferior outcomes and management waste. At the same time, we must preserve value-added variation that optimizes both clinical and business outcomes.

Challenge: High Costs

The United States currently spends $3.3 trillion on healthcare per year—almost 18 percent of the country's total gross domestic product

(CMS 2018b). This figure amounts to an almost 28 percent increase in healthcare expenditures for large employers and 25 percent of disposable income expenditures for the average American family over the past five years. Healthcare is the leading cause of personal bankruptcy among working Americans as a result of high-deductible policies, lack of insurance, and high out-of-pocket expenses for life-threatening chronic diseases. The average American family has approximately 90 days' cash on hand, including its total assets (e.g., home equity, retirement funds), and according to David Himmelstein and colleagues (2018), may be "only one serious illness away from bankruptcy."

As a result of the unfunded liabilities of the Medicare and Medicaid programs, the US healthcare system is the second leading cause of federal debt. According to the US Government Accountability Office (GAO 2018), our national debt is currently $21.3 trillion, with a virtual (unreported) deficit of $80 to $100 trillion. These figures are based on unfunded liabilities pertaining to Social Security (24 percent), interest on the national debt (16 percent; predicted to be the largest percentage in ten years), Medicare (14 percent), and Medicaid (9 percent). According to the GAO, to balance the federal budget by 2040, federal spending would have to be cut by 60 percent or taxes would have to be raised by 250 percent—neither of which is politically feasible (Chernew, Baicker, and Hsu 2010).

In 2000, large employers and purchasers founded the Leapfrog Group to exert political pressure on Washington to reform the US healthcare system. The Leapfrog Group now also provides safety ratings (from A to F) on more than 1,800 hospitals and healthcare organizations nationally. It is important to note that large employers are driving the national initiative to decrease the costs and improve the quality of healthcare through transformational projects.

Challenge: Fragmentation and Lack of Access

Healthcare transformation is an economic issue in the guise of a political conflict. Access is a major problem for people who are uninsured or underinsured, live in regions with physician shortages, cannot afford out-of-pocket costs, or live in low-income areas that cannot support qualified clinicians. These individuals may present to EDs well after they are in need of care or are dying and have nowhere to go. This backward approach drives up the cost of care for everyone (through risk sharing and undiluted high-risk pools) and increases both bad debt and charity care, placing healthcare organizations and patients at significant financial risk.

According to the American Hospital Association, almost one-third of hospitals reported negative operating margins in 2016 and are in danger of poor financial performance in the future. Moreover, according to the Association of American Medical Colleges (Kirsch and Petelle 2017), there are many geographic regions that have significant physician and practitioner shortages. Some areas, such as Boston, are rich in specialty and subspecialty physicians (because of the many academic medical centers in the area) but have such primary care shortages that average wait times may exceed two months.

Even with reasonable access, our healthcare system is fragmented. Imagine a woman who discovers a lump in her breast. Is it cancer? The following represents a typical scenario for her treatment:

1. Sees her primary care physician for an examination. He confirms a lump and refers her to an imaging center for mammography (fee-for-service unit charge).
2. Undergoes a mammography (unit charges for imaging center and radiologist).
3. Sees her primary care physician. He informs her of a suspicious lesion and refers her to a surgeon for a breast biopsy (unit charge).

4. Undergoes a biopsy by a surgeon in an ambulatory surgery center (ASC). Biopsy result is read by a clinical pathologist (unit charges for surgeon, ASC, pathologist, and laboratory).
5. Sees her primary care physician. He informs her of the preliminary diagnosis of adenocarcinoma of the breast and refers her to an oncologic surgeon for staging procedure and evaluation (unit charges for surgeon and ASC).
6. Surgeon performs sentinel node biopsy (which is sent to a pathologist), and radiologist performs a positron emission tomography scan and relevant magnetic resonance imaging and CT scans to determine staging (unit charges for surgeon, radiologist, pathologist, ASC, imaging center, and laboratory).
7. Sees her primary care physician. He informs her that she has stage 2 adenocarcinoma and refers her for oncologic evaluation (unit charge).
8. Oncologist performs an evaluation, places her on chemotherapy, and refers her to a radiation oncologist, who starts radiation treatments (unit charges for oncologist, radiation oncologist, oncology facility, radiation center, pharmacist, oncology nurse who administers treatments, and infusion center).
9. Follows up with her primary care physician for ongoing surveillance and healthcare maintenance (unit charge).

This process typically takes between one and three months and involves physicians who do not work together, share an integrated electronic information system, or function in an economically or clinically aligned manner. In addition, the number of handoffs creates a high probability of error and, most important, a delay in the diagnosis and treatment of a potentially life-threatening condition. Our current healthcare system does not make it easy, convenient, or cost-effective for people to seek evaluation and treatment for complex, life-threatening conditions.

Challenge: Lack of Alignment and Engagement

Alignment has many meanings. In healthcare, alignment means that all stakeholders' self-interests coincide with optimized clinical and business outcomes. When all parties—patients, physicians, healthcare leaders, payers, regulators, and accreditors—are working toward the same fundamental goals and objectives, the system is aligned.

The definition of *engagement* is this context is closely related. When a stakeholder has a sense of "ownership" that results from alignment, that person or organization may be thought of as fully engaged. Unfortunately, most participants in healthcare are neither aligned nor engaged.

For instance, consider the financial motivations of the current healthcare system. Hospitals (despite the 3 percent Medicare penalty for readmissions) and physicians earn more with higher bed days, higher wRVU volume, more complex care, and more expensive procedures and tests. Payers earn more by denying benefits, denying access, paying physicians and healthcare systems less, and covering low-risk pools of healthy people. Patients save by purchasing high-deductible policies, not paying the balance of their bills, claiming disability, or divesting assets to access public benefits. This dynamic leads to what economists might call a *tragedy of the commons*, in which self-interest differs from the greater community interest and everyone loses over time. In healthcare, everyone must be engaged and aligned to produce optimal outcomes at low cost. This goal requires the input of all parties to create a system that works for everyone.

Challenge: Lack of Real-Time Information

As a result of its complexity, healthcare is the last sector to become fully digitized. The aim is real-time and predictive analytics that enable all parties to manage both clinical and business risks

effectively. However, what we have is an expensive, complex, and dysfunctional amalgam of paper and digital technologies that may not be compatible, interconnected, or functionally interoperable.

We have additional problems. The technology sector is evolving so rapidly that the latest application is often partially obsolete the day it is installed, and without a functional and international health information exchange (HIE), protected health information cannot seamlessly travel around the globe and be accessed on demand. Finally, most healthcare systems do not have access to a robust enterprise data warehouse (EDW) to convert data into role-based analytics that produce actionable information that each healthcare professional needs in real time to do her job effectively. Such analyses can provide highly selective, aggregated, actionable information concurrently so that both patients and enterprises can be managed optimally and effectively at any point and time of care.

POTENTIAL SOLUTIONS

The following represent potential solutions, many with proven value, that healthcare organizations currently pursue to address these contemporary challenges. They are potential because, like most new initiatives, unanticipated consequences may arise that must be addressed through rapid-cycle adjustments and improvements. However, organizations that react quickly are able to adapt to an evolving economic environment and write some of their own rules as they go.

Potential Solution: Aligned Payment Methodologies

The most important and fundamental change that must occur is the move from a volume-based (fee-for-service) reimbursement system to a value-based (at-risk global or capitated) healthcare payment model. The latter properly incentivizes providers and systems so that they

work to keep people healthy instead of profit when people are sick or injured. Much has been written about the perverse incentives of fee-for-service, but Elizabeth McGlynn and colleagues (2003) have provided the simplest explanation: Most people receive approximately 50 percent of the healthcare they should, either because the appropriate healthcare (e.g., preventive healthcare services) has little, if any, reimbursement attached to it or because the incentive to offer unnecessary services and procedures is so great.

Thus, the business model of healthcare must optimize cost-effective healthcare outcomes and not reward complications, waste, and unnecessary services. Many organizations are voluntarily moving toward a form of risk-based reimbursement by pursuing varied solutions (e.g., pay for performance, shared savings, bundled payment, global payment, capitated reimbursement). States such as California and Maryland are also moving in this direction—California through pursuit of reference-based capitated payments, and Maryland through global budgets for episodes of care and treatment.

Through the CMS Innovation Center, Medicare currently uses almost a hundred reimbursement methodologies (e.g., shared savings, bundled payments) that are often customized for organizations willing to take on risk and potentially improve the cost-to-outcome ratio for both CMS and Medicare beneficiaries. The center works with healthcare organizations to develop innovation models organized into the following categories:

- Accountable care organizations (ACOs) and shared savings programs to reduce costs and optimize quality
- Episode-based payment initiatives with cost and quality parameters for defined healthcare events, such as a hospitalization or elective procedure (e.g., joint replacement)
- Primary care transformation that provides incentives for adopting advanced primary care models (e.g., the patient-centered medical home, which combines preventive

care services, information technology and analytics, care coordination, and shared decision-making).
- Initiatives focused on Medicaid populations and the Children's Health Insurance Program, which include innovative programs such as Oregon's Coordinated Care Organization, Colorado's Regional Care Collaborative Organization, and Minnesota's Integrated Health Partnerships. (These are all ACOs for the Medicaid population, which have saved millions of dollars and improved care for high-risk populations.)
- Initiatives focused on the high-risk pool of dual-eligible Medicare and Medicaid beneficiaries who make up a disproportionate percentage of Medicare costs (because they require a systematic disease management or palliative care program and represent the greatest potential for cost savings and quality improvement)
- Experiments to accelerate the development and testing of new payment and service delivery models (e.g., through collaboration with the CMS Innovation Center to develop new ideas for reimbursement methodologies)—an opportunity for forward-thinking leaders who seek to develop more effective clinical and business models
- Initiatives to speed the adoption of best practices (e.g., coalitions of healthcare organizations, payers, health plans, providers, federal agencies, professional societies, and experts to promulgate best practices, speed the diffusion of innovations, and ensure the widespread availability of up-to-date treatments [CMS 2018a])

Organizations such as Intermountain Healthcare, St. Luke's Health System (Boise, Idaho), Baylor Healthcare System, Memorial Hermann Health System, Advocate Health Care, and Geisinger Health have developed three- to five-year strategic plans to manage the period of transition from fee-for-service to multiple at-risk payment systems). This change requires shifts in both the business

model and the care-delivery model; as readmissions, ED use, elective procedures, ancillary revenue, and office visits drop, the organization will be rewarded and not penalized for improving health and reducing both volume and capacity.

Any such fundamental changes to an organizational paradigm constitute a complex process, because most organizations require a capital reserve to compensate for a short-term loss of operating margin before they can invest in a population health infrastructure. Chapter 10 covers the operational and collaborative elements required to support these new care and payment models and describes a method to stage this difficult financial transition using the various operational components of population health.

Multiple payment methods are currently available to consider as transition models, enabling organizations to acquire the clinical, operational, information technology, and financial competencies necessary to make the full transition. Each model has its pros and cons. Consider exhibit 1.1.

Healthcare leaders may feel overwhelmed by the complexity and disruptive nature of these changes and may be tempted to resist the shift to these new models. Unfortunately, successfully fulfilling the new payment methodologies requires time and planning, but once a critical mass of payers (including CMS and commercial payers) adopts value-based payments, organizations that resist change will find themselves at a significant disadvantage. Fortunately, a growing number of financial accounting simulators or "gameification" programs can now run the numbers prior to such strategic discussions to determine which payment methodologies are appropriate for a given organization and market.

Potential Solution: Elimination of Non-Value-Added Clinical and Business Outcome Variation

Many organizations have begun the arduous process of eliminating non-value-added variation on both the clinical side and the

Exhibit 1.1: Possible Payment Methodology Models

Model	Benefits	Risks
Discounted fee-for-service	First step on the road to transformation	• Continuously decreasing payments • Necessity to exit as population health initiatives become more robust
Care coordination payments	Opportunities to employ nurse navigators and patient registries	Start-up and overhead costs
Pay for performance (P4P)	• Begins to focus delivery on specific outcomes • Begins process of physician alignment	Subsidization of ninetieth-percentile performers at the cost of lowest-decile performers
Bundled payments (most common DRGs, with payment for acute and post-acute care)	Gainsharing opportunities to align physicians and reduce operating costs	• Volume incentivized • Potential losses if cost reductions are not realized
Shared savings	• Begins to focus on lower cost of care; opportunities for shared-savings gains • Focus on agreed-on quality measures	• Possibility of shared losses or no gains • Diminishing returns over time • Significant start-up and overhead costs
Risk-based global or capitated payments	Focus on prevention, disease management, palliative care, and wellness with aligned incentives and metrics	Inappropriate withholding of essential services if appropriate risk-based incentives are not incorporated

management side. This process is challenging because it involves changing the fundamental culture of both clinicians and leaders, both of whom value independence and the autonomy to make decisions in a customized and personalized way. The key to shifting the culture is to reassure everyone that value-added variation—customization and personalization that add value to cost-effective care—will always be supported. Only the adverse part of professional autonomy (that which inadvertently harms people and adds waste) must be eliminated.

The Memorial Hermann Physician Network (formerly the Memorial Hermann Health Network Providers and Memorial Hermann Physician Clinically Integrated Network) began this process when it was founded in 1982. Its evolution accelerated around 2008 when, under the former president Dr. Keith Fernandez (2013), the physicians began to standardize their work. They formed more than 200 clinical program committees, which evaluated the top 20 DRGs of their respective specialties and developed a single evidence-based approach to each diagnostic entity, consulting available scientific literature, clinical guidelines, and the clinical judgment of group members. They agreed that, when encountering a patient with an uncomplicated DRG, they would follow the clinical guidelines they established, but they gave each practitioner the right to divert from the guidelines with the understanding that each exception would be peer audited within 24 hours. They also decided that whenever any new or significant information emerged, the group would meet to decide whether to incorporate it into the existing standard. For instance, when it was discovered that prostate-specific antigen studies had a higher-than-predicted rate of false positives, the urologists modified the pathway for the evaluation of prostate cancer to rely more heavily on other clinical findings. They also would occasionally use exceptions to modify the pathway itself in the event that the customization worked better than the standardized approach.

Based on its innovative committee system, Memorial Hermann was able to accomplish improvements relative to many other healthcare organizations. Memorial Hermann achieved a 5 percent reduction in length of stay, a 91 percent reduction in hospital-acquired

infections, a 66 percent reduction in general complications, a 43 percent reduction in 30-day readmissions, and a 23 percent reduction in mortality rate (Fernandez 2013).

Payers took note. Aetna immediately offered the physician group a new contract with premium payment—a move eventually duplicated by United and Blue Cross Blue Shield, the other major payers in the region. Aetna further incentivized participation by offering significant bonuses, to both physicians and management, for every 10 percent increase in payer network membership. In addition to this new pay-for-performance premium (paid on the backs of performers in the lowest tenth percentile), the group was able to save the system more than $500 million in costs over the first three years (2008–2011) by eliminating the majority of vendor groups and simplifying its supply chain.

Memorial Hermann's results are impressive, but achieving them does not mean abandoning physician autonomy. In his book *The Checklist Manifesto*, Atul Gawande (2009) emphasizes that the purpose of standardization is not to diminish the essential role of the professional clinical or business leader but rather to reduce complexity to a manageable level so that critical executive decisions can be made in a more accurate, effective, and timely way.

Most healthcare systems are just beginning the journey toward greater efficiency. Their tool kits contain new models of clinical integration and alignment that allow them to manage both clinical and business variation in real time. Chapters 4, 6, and 10 cover these topics in more detail.

Potential Solution: Elimination of Cost-Prohibitive Systems

When it comes to driving down costs, large employers in the United States are pushing the hardest. Their influence over politicians trickles down to the US Department of Health and Human Services, which, in turn, oversees CMS, the agency that sets Medicare rates.

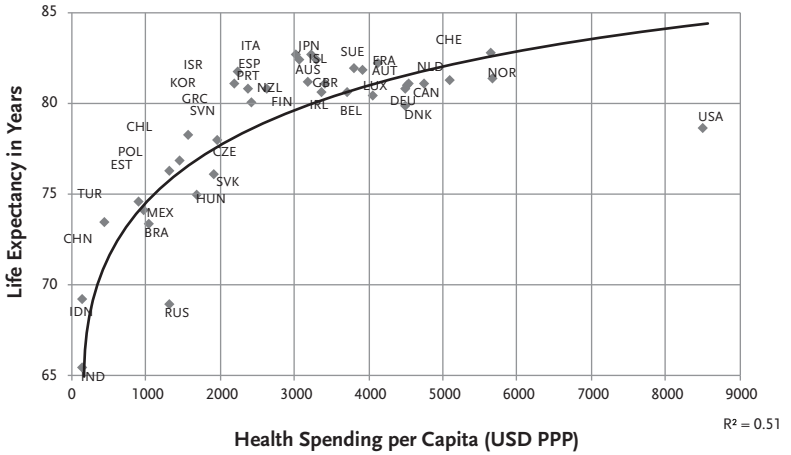
Large employers seek to change policy because healthcare expenses pose a real threat to their ability to compete in a global market. For example, Ford Motor Company now spends more on healthcare than it does on raw materials for its auto assembly process. This situation has created a tremendous competitive disadvantage for US companies in global markets.

In 1975, sociologist Samuel Preston mapped out the comparative relationship between per capita healthcare spending and life expectancy, called the *Preston curve* (Organization for Economic Cooperation and Development [OECD] 2018). Exhibit 1.2 shows a 2011 Preston curve for countries around the world. Not only do Americans spend almost twice as much on healthcare as people do in other industrialized nations, they also live shorter lives. The US healthcare system emphasizes expensive tests and procedures to treat the later stages of disease while shortchanging prevention and early treatment, which are far more cost-effective.

Large employers do the following to lower the cost of healthcare:

- Transfer risk to employees (beneficiaries) through defined contributions to tax-deferred health savings accounts, which enable workers to self-insure over time as they put money aside for their future healthcare needs.
- Provide incentives to employees who use employer-created, narrow, tiered networks, and choose practitioners and organizations that demonstrate high quality and low cost through the creation of private exchanges (marketplaces); these exchanges consist of healthcare organizations and providers who offer a bundled-payment contract with guaranteed contractual outcomes.
- Employ disease management programs to standardize care for high-cost, high-risk illnesses and other causes of absenteeism and presenteeism (employees who come to work unable to perform their jobs fully).
- Use navigators (often advanced-practice nurses with public health backgrounds who understand the entire

Exhibit 1.2: International Preston Curve, 2011



Source: Adapted from OECD (2018).
Note: USD PPP = US dollars purchasing power parity

health ecosystem, including relevant payer contracts), and establish registries (databases that use predictive analytics to identify at-risk employees).

- Contract directly with healthcare organizations throughout the country to provide high-cost services to employees at a discount.

For example, Walmart contracts with Cleveland Clinic, Mayo Clinic, Geisinger Medical Center, Scripps Health, Scott & White Memorial Hospital, Virginia Mason Medical Center, and Mercy Hospital to provide bundled-payment agreements that guarantee quality outcomes. If a covered procedure must be redone, the follow-up care is performed at no cost to Walmart. The company is able to pay for all travel and living expenses for its employees and their family members who seek care at designated centers of excellence and still reap significant savings (estimated to be hundreds of millions of dollars annually). In 2016, Walmart announced that any surgery

performed outside its centers of excellence network would be paid at 50 percent of the rate for in-network care (Emerick 2016).

US citizens adapt this idea on a global level to pursue high-value, low-cost care through international medical tourism. In 2017, approximately 2 million Americans sought healthcare abroad to save up to 95 percent on costs, often for life-threatening conditions. For those with chronic illnesses such as cancer or hepatitis C, for which out-of-pocket expenses may exceed $100,000 annually in the United States, their travel may be the difference between solvency and bankruptcy. Medical tourism is now a $246 billion sector, growing at a rate of approximately 15–25 percent annually throughout the world. Relative to the US market, estimated savings from medical tourism range from 20 percent (Brazil) to 95 percent (India) (Woodman 2015).

How can healthcare organizations lower their cost structures significantly? The traditional wisdom was to use techniques such as Lean or Six Sigma to both simplify and standardize processes, eliminating waste and lowering costs by 10–15 percent. However, to compete with health systems internationally, both business and care models must restructure to lower costs by 50–60 percent or more. Then Americans with disposable income will be able to stay in the United States for care, with patients from other nations coming to take advantage of more sophisticated American technology at costs equivalent to those abroad.

Thus, the following must occur:

- *Reduction of labor costs*. Providers should be able to perform all healthcare activities at the top of their license. Organizations will monitor labor costs through real-time and predictive labor analytics (see detailed discussion in chapter 10).
- *Reduction of supply chain costs*. Healthcare entities can simplify and modernize the supply chain through the use of value analysis, computerized and automated supply

chain tracking systems, and supply chain analytics (see chapter 10).

- *Development of new business and clinical models*. More cost-effective approaches to risk-stratifying subpopulations include addressing the socioeconomic (nonclinical) determinants of health (this issue will be discussed at length in chapter 11).
- *Construction of a retail medicine infrastructure*. The US healthcare system must be able to provide acute care services (outside of the ED and urgent care) to those who have minor conditions or economic challenges but are otherwise healthy (chapter 11 focuses on this issue).
- *Creation of an e-health infrastructure*. We can provide ongoing healthcare services to healthy people with minor acute problems and those with stable chronic diseases through a far more cost-effective e-health approach (see chapter 11).
- *Cooperation with national and state agencies*. Many patients with terminal conditions receive futile care that is responsible for almost $1 trillion in healthcare expenditures annually but that adds few, if any, years of quality health. Healthcare organizations should team up with governments to develop national and regional approaches to easing this problem (this issue is discussed at length in chapter 11).

Potential Solution: New Models for Unified and Accessible Care

Several new models of healthcare delivery have been described to address issues of healthcare access and fragmentation, most prominently in the groundbreaking book *The Innovator's Prescription* (Christensen, Grossman, and Hwang 2009). The three models include *solution shops* for complex undifferentiated problems;

value-added processes for significant, serious, or potentially life-threatening conditions; and *facilitated networks* for chronic conditions that add significant costs to our system.

Solution Shops

Remember the example given earlier of the woman with a lump in her breast who goes through a lengthy ordeal to receive breast cancer treatment? What if this process could be done more efficiently?

In an alternate vision, this woman could see a team made up of all the specialists and subspecialists she visited along her journey as well as a care coordinator, a social services specialist, and a pharmacist. Instead of seeing independent, unaffiliated practitioners, she could see physicians organized into a service line of like-minded professionals willing to develop best-practice, evidence-based approaches to the diagnosis and treatment of breast conditions. In place of a fragmented process with multiple handoffs that cause information to fall through the cracks, there could be one standardized, seamless process that eliminates delays in this potentially life-threatening situation.

The woman could dispense with the long process of visiting providers in disparate or unaffiliated organizations. Instead, she could see practitioners who use a completely integrated health information management (HIM) system to acquire and share information in real time. Rather than a fee-for-service, per-unit reimbursement approach, the physicians, practitioners, and facilities could be paid with either a bundled fee or a global services fee that incentivizes all to arrive at a cost-effective and timely solution to this patient's complex and potentially life-threatening problem.

The Mayo Clinic does this process as well as any organization in the United States, but it still has some distance to go. It accomplishes its greater alignment through an employment model (although any alignment model is sufficient) that emphasizes the cooperation of physicians and leaders, all of whom work together to create standardized processes.

The Innovator's Prescription describes Mayo's process. Jerome Grossman, MD, one of the three authors, died of renal cell carcinoma

with metastasis to the heart shortly before the book's publication. He had sought a diagnosis from some of the finest specialists in the world—in vain—and finally went to the Mayo Clinic. There, his problem was identified by a team that included a nephrologist who suggested this rare disease. On his return from the Mayo Clinic, Dr. Grossman reportedly said, "They have a process! It's not a one-size-fits-all process. Every patient has a different disease, but they have a practiced way to treat every patient uniquely" (Christensen, Grossman, and Hwang 2009).

Obviously, most people do not have access to care at the Mayo Clinic. Nor is the organization designed to cost-effectively diagnose all clinical problems or large enough to accommodate even a fraction of them. However, Mayo represents a model we should be moving toward for people with complex, undiagnosed, and potentially serious conditions.

To reach this goal, healthcare organizations must be willing to

- align with all relevant practitioners through some form of at-risk contracts;
- create service line or clinical institute (horizontally integrated service lines) structures to reorganize and standardize care for defined conditions (see chapter 7);
- build an integrated HIE supported by clinical and business analytics to provide information in real-time decision supports, such as those provided by IBM Watson, or proactively through predictive analytics (this will be discussed in greater detail in chapters 8 and 11); and
- create at-risk bundled- or global payment contracts with payers and large employers to incentivize such optimized care.

This model, referred to as a *solution shop*, should be consistent with local cultures and sensibilities but focus on developing solutions to complex and potentially life-threatening clinical problems in a timely and cost-effective manner.

Value-Added Processes

It is now well established that healthcare services that are complex, high-risk, and high-cost should be regionalized so that a smaller number of organizations can improve outcomes and lower costs. Hundreds of studies now confirm the benefits of evidence-based referrals. Many healthcare leaders throughout the country are committed to advocating for the needs of patients first by establishing new policies to triage, guide, and manage high-risk care.

These aims require new ideas. In a *New England Journal of Medicine* article, David Urbach (2015) describes the volume pledge taken by physician and administrative leadership at several prominent medical centers. In an effort to ensure patient safety and secure optimum healthcare outcomes, they commit to disallowing certain predefined, high-risk procedures by low-volume surgeons or facilities.

Despite 36 years of "exhaustive" research in this area, financial incentives (for both surgeons and hospitals) still reward low-volume facilities for taking on high-risk cases, though counter to the best interests of the patient, surgeon, and organization (Urbach 2015). This issue is highly controversial because many organizations cannot (or feel they cannot) give up these services in a fee-for-service environment that rewards organizations that provide this level of high-margin care.

To address this dilemma, Clayton Christensen, Jerome Grossman, and Jason Hwang (2009) advocate for a value-added process—more commonly known as a *focused factory*—that includes the following components:

- Singular focus with a standardized approach, culture, and service
- World-class quality, cost-effectiveness, and service
- Team-based approach that allows practitioners to adapt and standardize processes based on the latest available evidence
- Reimbursement model based on bundled payments or global payments for outcomes

- Strong regional and worldwide brand

A well-known example of this approach is the Shouldice Hernia Centre in Thornhill, Ontario, Canada. The center was founded in 1945 by a surgeon frustrated by the number of surgical failures in what ought to be a straightforward procedure—the repair of commonly occurring hernias. He standardized a surgical repair process, taught other surgeons how to apply this approach, and began performing large numbers of hernia operations with outstanding outcomes at low costs. Today, Shouldice performs more than 7,500 hernia repairs annually in five operating rooms. Each of its surgeons performs at least 700 procedures per year and enjoys a 99.5 percent success rate after more than 300,000 repairs. Similar examples include the Heart Center at the Cleveland Clinic and the central line–focused factory at the Cedars-Sinai Medical Center, which takes a standardized, evidence-based approach to the insertion of all peripherally inserted catheter and arterial lines.

Facilitated Networks

As the authors of *The Innovator's Prescription* point out, the vast majority of day-to-day decisions about medications, diet, exercise level, lifestyle, and attitudes are made by patients themselves, based on their own personal values and beliefs, nonclinical determinants of care (e.g., socioeconomic, genetic, and environmental factors), and peers who experience the same clinical conditions. Alcoholics learn from alcoholics, people with diabetes from other people with diabetes, and schizophrenics from schizophrenics. Thus, physicians' attempts to enforce dependence on medical advice may be neither productive nor effective. Enabling patients to have access to supportive peer groups—and good medical advice when needed—is an important role for any healthcare system.

The role of these *facilitated networks* is to support self-empowered care, not deliver it. Examples include Alcoholics Anonymous, d-Life (for people with diabetes), and the Restless Legs Syndrome Foundation. Physicians and healthcare organizations have a role to play

in coordinating, guiding, and facilitating the care of patients with chronic diseases, and a viable business model for this approach emphasizes a capitated or global services fee for supporting these facilitated network groups and facilitating access.

Potential Solution: True Patient and Stakeholder Alignment and Engagement

Most industries are going through a new form of consumer empowerment, in which consumers are no longer dependent on others for services, knowledge, or even guidance. For instance, most people plan their own travel without a travel agent, bank on demand without a banker, and purchase clothing online without a salesperson. It should not come as any surprise that the same changes are coming to healthcare. To provide a sense of empowerment to individuals and stakeholders, a healthcare organization must make a deliberate attempt to align its interests with those of all stakeholders, including physicians, consumers, payers, accreditors, and community agencies. The key is that alignment must be compelling enough to convince people to sacrifice some of their independence to contribute to the greater good and more cost-effective outcomes.

Health insurance is a case in point. When all people participate (particularly low-cost, healthy ones), the insurance is more affordable for everyone, particularly those with the greatest need (and cost). Similarly, if a patient is willing to sacrifice some of her personal choice by conforming to evidence-based recommendations and treatments, the cost for everyone's care drops as a result of a dilution of the high-risk pool by optimizing clinical outcomes.

More and more state governments, such as those of Minnesota and Oregon, are implementing Medicaid managed care programs in which Medicaid beneficiaries partner with healthcare providers and systems to lower the overall cost of care while improving outcomes. Medicare managed care programs use private-sector coverage to provide incentives for patients who seek to receive radiologic and

laboratory testing or ambulatory surgery at lower-cost venues in their state. For instance, Anthem Blue Cross Blue Shield in New Hampshire noted that the difference in cost for an abdominal CT scan at various facilities ranged from $750 to $2,850. On the other hand, if the beneficiary is willing to drive to the lower-cost venue, the insurance carrier will pay $150. However, if the beneficiary chooses a higher-cost venue, the higher cost will come out of the person's deductible. Although traditional Medicare and Medicaid programs cannot, under federal law, penalize beneficiaries for making unwise healthcare decisions, they can legally incentivize patients to make decisions that will ultimately lower costs and improve outcomes.

These trends are leading toward a transparent healthcare market in which all quality, safety, service, and cost data are publicly shared, enabling patients, payers, physicians, and leaders to make good choices based on consumer knowledge of both quality and cost. Increasingly, healthcare systems and payers are negotiating dynamic pay-for-value contracts with transparent metrics that permit parties to share information and understand key variables (e.g., cost, quality), enabling the agreements to modulate over time based on changing conditions. These instruments are discussed in chapter 11.

One of the greatest opportunities for engagement and alignment is between and among payers, healthcare systems, and both employed and self-employed physicians through at-risk arrangements. Chapter 4 provides more detail on this rapidly growing phenomenon.

Potential Solution: Real-Time Information for All Stakeholders

A common question from healthcare consultants is, "What is the lag time between the provision of care and accurate information on how well you did or how much it cost?" With rare exceptions, the typical answer is one to three months. Virtually every other industry has reached a point where information can not only be gleaned in real time but also anticipated with relative accuracy through

predictive analytics. Healthcare is embarking on a transformation that the banking industry began in 1969, when the first ATM was introduced in the United States. Banking can now be performed around the clock almost anywhere in the world through a computer, smartphone, or tablet using encrypted information and secure firewalls. To provide comprehensive services, the healthcare sector must support the same.

To achieve this, the following fundamental building blocks must be assembled:

- All healthcare-related information (e.g., clinical, financial, demographic) must be digitized to enable the seamless transmission of cloud-based information throughout the internet.
- All healthcare entities and stakeholders must be connected through an HIE so that all participants in any healthcare system can access real-time information from participating systems anywhere in the world.
- Via an EDW, data must be converted into role-based clinical and business analytics that give every participant in the system the information needed to fully and optimally participate (see chapters 8 and 11 for a more detailed discussion of this process).
- Every organization must have some form of data governance to organize how data and analytics are created, used, shared, and managed, both within and beyond the system's boundaries, to ensure their credibility, integrity, and security.
- Both national and international standards must be created to ensure that data and analytics systems are compatible and interoperable and that they meet minimum standards for accuracy and privacy.
- Small healthcare organizations and practices must be able to connect with a larger system to access contemporary infrastructures and tools.

Potential Solution: Disruptive Innovation

Contrary to popular opinion, the notion of disruptive innovation, as popularized in *The Innovator's Dilemma* (Christensen 2011) and *The Innovator's Solution* (Christensen and Raynor 2013), does not encompass unusual or innovative ideas that suddenly emerge to disrupt and supplant an existing industry. It represents an exit, by the industry itself, of its own "low" end, to permit new entrants to arrive, gain a foothold, and work their way upstream.

How does this phenomenon work from a pragmatic perspective? As healthcare reimbursement declines, both physicians and healthcare leaders are forced to focus on increasingly profitable procedures and services to maintain a sustainable margin—so they advertently (or inadvertently) abandon such basic services as preventive medicine, mental and behavioral health care, and wellness initiatives. This gap provides an opportunity for new entrants—such as Walgreens, CVS, and Walmart—to bring an entirely different business model to bear on these low-end demands. For instance, the retail pharmacy industry brings a much lower cost structure to the creation of retail medicine units, which can be housed in a structure already devoted to diverse sales models. In addition, these businesses can offer attractive customer-based benefits and services such as short-notice appointments, decision support tools, customized health maintenance plans, integration with payers, and pharmacy benefits management to create a seamless solution for consumers frustrated by the lack of easy access to basic medical services.

Another significant disruptive innovation is the development of e-health platforms and solutions that enable immediate access to qualified physicians worldwide for a relatively low cost and with excellent, reproducible results for high-volume, low-risk conditions. Many otherwise healthy patients are not interested in a traditional and personal relationship with a physician but rather want on-demand, convenient appointments with a qualified physician for the management of minor medical/surgical conditions.

This innovation is not surprising, as it has already occurred in many other fields. All business sectors are rapidly moving to a completely digitized, convenient model that can be accessed on any smartphone. In the medical field, this additional resource can function as a supplement to the relatively expensive and inconvenient traditional healthcare delivery process, which lacks a consumer-focused approach. People with unique, complex, difficult-to-diagnose, or tough-to-manage clinical conditions always require a more customized and individualized model of care that includes a team-based approach. Most individuals, however, can be cared for with less in-depth attention. Think of the traditional model of physician, hospital, and ED as the Ritz-Carlton and other disruptive models as less expensive, though "good enough," lodgings that may be lower quality but serve their purpose in a far more pragmatic and cost-effective way. The healthy majority will be served, and likely satisfied, with lower-cost options, while the sickest (or wealthiest) will require or demand a higher level of service.

PUTTING IT ALL TOGETHER

The challenge with twentieth-century healthcare was that it had two predominant business models—the physician's office and the hospital—both of which provided care for everyone whether they were sick or well. Too much care was provided to the healthy majority, and too little was given to the unhealthy minority with serious and often complex conditions.

This imbalance has led to the need for population healthcare models in which groups of covered lives (e.g., Medicare recipients, commercial payers) are risk stratified through predictive analytics. These groups are then sorted into subpopulations by cost and risk so that healthcare resources can be rationalized into a more sustainable and cost-effective model. The redistribution of resources makes sense because the so-called vital few, who require the greatest resources,

shift costs onto the healthy many, affecting the cost of care for all. In short, overall care must be system based and risk stratified to ensure a more sustainable and pragmatic availability of resources.

Managing actuarial risk (covered in chapter 9) is essentially the ability to stratify covered lives by risk and, within a defined global budget, to manage each subpopulation—all while optimizing outcomes and working within a defined medical loss ratio (percentage of the premium dollar used for the direct care of beneficiaries). This approach is now a fundamental competency of any healthcare system meeting the expectations of pay-for-value contracts.

There will always be people who choose or can afford more personalized services (think a private investment adviser, banker, cook, lawyer), per the primary business model in the twentieth century. However, the majority of people will choose services that are quick, easy to access, available around the clock, reliable, transparent, and affordable. Offering this type of healthcare requires a more commoditized, automated, and standardized approach, particularly for the high-volume, low-risk services that make up the majority of healthcare encounters. This type of care can be easily provided through e-health services, retail clinics, home health services, advanced primary care models, and interactions with navigators and care coordinators (all discussed in chapter 11).

There will be a need to identify, through predictive analytics, patients who make up the vital few and require more specialized, in-depth, timely, and multidisciplinary services led by physicians and executed by care coordinators. These people may require palliative care (intensive disease management) for life-threatening conditions; disease management for serious conditions; solution shops for significant, undifferentiated problems; focused factories for high-risk, high-cost conditions; and facilitated networks for complex, chronic diseases that require peer-supported, interdisciplinary care (see chapter 11).

Thus, so-called patient-centered care will not merely take individual considerations, values, and preferences into account when providing healthcare. Instead, it will be the ultimate transfer

of control from physicians and healthcare organizations back to consumers, beneficiaries, and patients. Patients will make rational healthcare decisions based on the best available information, enabled by physicians, healthcare organizations, payers, accreditors, and community agencies.

Stand-alone healthcare organizations will not be capable of providing the comprehensive and varied services discussed in this chapter. At a minimum, they will need to collaborate with, align with, or join larger networks that can support the full complement of HIM, population health, and actuarial management infrastructure.

Thus, healthcare will increasingly be provided through sophisticated and fully integrated networks or systems that can link patients with healthcare resources in a coordinated and seamless way to produce optimized, cost-effective outcomes. While the twentieth century featured the cottage industry model of independent physicians working around a stand-alone hospital, the twenty-first century will be about comprehensive, clinically integrated systems built to serve the greater good of patients and aligned with payers, creating innovative ways to deliver improved services at ever-lower costs. The remainder of this book addresses that vision.

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