



## the empowered consumer in the new healthcare ecosystem

A provider's ability to survive in the reshaped ecosystem will depend on how effectively it can meet the needs of today's healthcare consumers, who are empowered by new technologies.

### AT A GLANCE

- > In the new healthcare ecosystem, data constitute a shared language that connects payers, hospitals, accountable care organizations, and consumers.
- > The increasing empowerment of consumers makes it incumbent on healthcare providers to keep pace with the development of new technologies designed to meet consumers' demand for increased value; healthcare CFOs should take the lead in this effort.
- > The combination of business intelligence, big data, and data analytics has taken on increased importance today because of its implications for consumers, not only for healthcare managers and clinicians.

Health care is moving from a business-to-business model to a business-to-consumer model, a shift that has major implications for the industry. The development of new technological capabilities has empowered healthcare consumers by giving them greater access to information about medical conditions, the latest treatments, and relevant technologies. Healthcare decision makers should harness those new capabilities to meet growing consumer demand for increased value, which is also being advanced through healthcare reform.

In what we term the *healthcare ecosystem* for its interconnected actors, technologies from portable biomarker devices to interpretive algorithms are gathering more information from more interactions and communicating it more rapidly. This communication promises to reshape clinical practice by increasing consumer expectations regarding efficiency of care, and it has the very real potential to make higher-quality care available at a lower expense and cost.

### A Simple Case

Take the example of otitis media. Imagine that, in winter, a 2-year-old with a runny nose cries in distress, tugging at her ear. Her mother wraps her in a snowsuit as the child struggles in discomfort. Then come the tasks of navigating slippery ice, getting the child into a car seat with the straps set too tight for the bulky snowsuit, and enduring a long wait in a room full of equally unhappy children. After a physician conducts the ear exam, the mother has to re-bundle the child and strap her in the seat for the drive to the pharmacy, where they wait in line to fill a script and obtain the meds before heading home.

Now imagine the same scenario, but this time with an empowered consumer at the center. At the first sign of her child's distress, this woman takes out the otoscope attachment for the iPhone, calls the clinic for instructions on how to gently apply the otoscope to the ear, and snaps a picture of each eardrum to send to her physician. If the photos need to be enhanced, perhaps the process is repeated (and the option of a video conference or, of course, an in-person visit, always remains open). When the physician reaches a diagnosis, the script is called in and the pharmacy delivers the meds to the family's door—where the child has remained throughout the process.

In this ecosystem, data constitute a shared language that connects payers, hospitals, accountable care organizations, and consumers—and the consumer's voice is coming through more clearly than ever before. Providers, including finance leaders, should listen carefully.

### **The Consumer-Centric Transition: Retail Health Care**

In the retail industry, businesses have diversified their channels so that consumers can interact with products and services in ways that best suit them. Telehealth is a good example of the migration of that sort of retail wisdom to the healthcare sector—as in the case of the 2-year-old with the ear infection. The basic mindset that healthcare providers should meet consumers *on their terms* will be necessary going forward.

Today's healthcare consumers are accustomed to visiting health-related websites to learn about their circumstances and improve their well-being. Seeking the same connectivity they find in banking, investment, and transportation, they demand heightened access across the healthcare chain. Further, confronted by increasing out-of-pocket expenses, they are becoming more discerning about where they spend their money. Just as someone buying a big-screen TV online consults various sites to compare TV types, screen sizes, refresh speeds, delivery times, and, most of all, price, so too the empowered healthcare consumer can look at outcomes, reviews of

bedside manner, waiting times, convenience of parking, and other factors to make an informed choice about where to go for care.

The Centers for Medicare & Medicaid Services (CMS) is one agency responding to and fueling this empowerment. In a recent blog post, Jonathan Blum, principal deputy administrator for CMS, offers the following summary of the agency's recent activity:

Since 2010, the agency has released an unprecedented amount of aggregated data in machine-readable form, with much of it available at [www.healthdata.gov](http://www.healthdata.gov). These data range from previously unpublished statistics on Medicare spending, utilization, and quality at the state, hospital referral region, and county levels to detailed information on the performance quality of hospitals, nursing homes, and other providers.”<sup>a</sup>

In May and June of 2013, for instance, CMS reports included the average charges for the 100 most common inpatient services at more than 3,000 American hospitals, and for 30 selected outpatient procedures.

The exhibit on page 3 shows the factors and players involved in this shift from a product-centric to a consumer-centric operating model, and answers the question: How are data being integrated into this new ecosystem?

### **Technology in the New Ecosystem**

Changes in medical devices are a good example of this new emphasis on consumerism. In January 2014, the international technology market intelligence firm ABI Research predicted that, by the end of 2014, 90 million wearable computing devices will have been shipped—and the bulk of these are medical, wellness, and sports and activity devices. Noting that activity trackers are the most popular among these devices, and that this type of wearable device is being driven primarily by concerns about weight management

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a. Blum, J., “Historic Release of Data Delivers Unprecedented Transparency on the Medical Services Physicians Provide and How Much They Are Paid,” *CMS Blog*, April 9, 2014.

## How Integrated Data and Technology Affect the Healthcare Ecosystem

Integrated data and technology have various effects on each of the constituents of the healthcare ecosystem, including not only providers and payers, but also the pharmaceuticals and life sciences, wellness, and medical device segments of the healthcare industry.

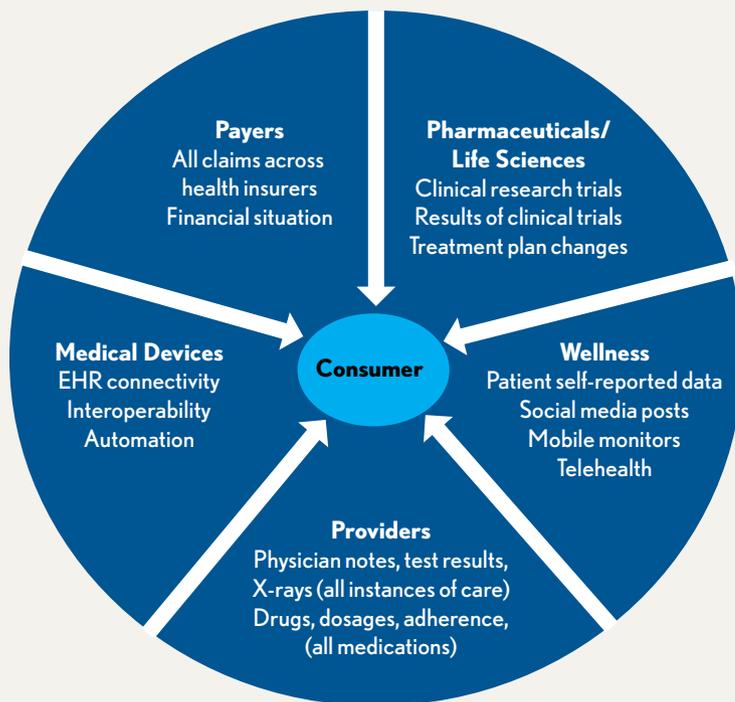
**Providers.** Healthcare providers are now required to produce and share information to achieve meaningful use incentive payments, and the government has tied payment levels to proof that patients understand and are adhering to their treatment plans. Electronic health records (EHRs), which contain details regarding all instances of care across locations—including physician notes, test results, and X-ray images—help providers and payers keep patients informed. Because all the patient’s medications across

pharmacies appear here, big data could aggregate this information to yield population-level insight to refine dosage standards—and improve adherence—for individual consumers.

**Payers.** Payers today have greater access to all claims across health insurers, enabling them to more fully understand the needs and motivations of individual patients and specific age groups. According to the Centers for Disease Control and Prevention, “Chronic diseases and conditions—such as heart disease, stroke, cancer, diabetes, obesity, and arthritis—are among the most common, costly, and preventable of all health problems.”<sup>a</sup> Preventing these conditions will require understanding patients’ contexts and

a. Centers for Disease Control and Prevention, “Chronic Diseases and Health Promotion,” May 9, 2014.

### INTEGRATED DATA AND TECHNOLOGY ACROSS THE HEALTHCARE INDUSTRY VALUE CHAIN



Source: UST Global.

motivations, and should translate into focused interventions, including financial incentives that can drive behavioral and lifestyle changes.

**Pharmaceuticals and life sciences.** Technology and data will enhance access to clinical research trials and apply those results to change treatment plans. Here, data will help the healthcare ecosystem capitalize on scientific studies by translating drugs tested in the artificial realm of controlled studies to the real world, where the genetic and social diversity of patients is significant. Again, context is critical. Treatments must fit in with consumers' complex lives and account for differing resources, interacting illnesses, and co-morbidities.

**Wellness.** The Wellness segment of the ecosystem includes patients' self-reported data, garnering knowledge from social media posts and social intelligence and combining it with harder information from mobile monitors and telehealth metrics. This segment is where "personal health records" (PHRs) come into play: As defined by the Office of the National Coordinator for Health

Information Technology, "[PHRs] contain the same types of information as EHRs—diagnoses, medications, immunizations, family medical histories, and provider contact information—but are designed to be set up, accessed, and managed *by patients*."<sup>b</sup> Programs such as the iPhone's "Health" app, for instance, invite consumers to manage health as they do their financial assets; for the younger set, a Nintendo game lets children with diabetes play a game wherein compliance with their treatment regimen upgrades their avatar.

**Medical devices.** Medical devices are crucial to this paradigm shift, given that device connectivity and interoperability are key to a fully contextualized EHR. Government regulation has great influence here; for example, stage 3 of meaningful use, as established by the Centers for Medicare & Medicaid Services, demands interoperability from medical technology.

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b. HealthIT.gov, "What Are the Differences Between Electronic Medical Records, Electronic Health Records, and Personal Health Records?" June 1, 2013.

and obesity, ABI concluded, "The collection and analysis of the captured personal performance data through associated websites and their communities is also a crucial element in building out the use-case."<sup>b</sup>

Medium-sized medical devices are also becoming more consumer-centric. Consumers are used to seeing point-of-care ultrasound machines at clinics, but may soon see them at their local pharmacy or grocery store. According to a 2014 Transparency Market Research report, the market for compact ultrasound devices is projected to grow at a compound annual growth rate of 11.5 percent, the highest rate by value of any category of ultrasound device during

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b. ABI Research, "Ninety Million Wearable Computing Devices Will Be Shipped in 2014, Driven by Sports, Health and Fitness," Jan. 30, 2014.

the 2013-19 forecast period.<sup>c</sup> These smaller, easily transported devices are often preferred in operating rooms, and government funding is supporting this market's growth.

With these small and medium-sized medical devices, technology is helping to fuel the consumer-centric transition because of its focus on bringing personal data to the individual's fingertips. These data also are being aggregated to improve clinical knowledge, enhance treatment plans, and ultimately make inroads against cost overruns and other perennial problems in health care.

### Insights from Big Data

The combination of business intelligence, big data, and data analytics is even more important

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c. Transparency Market Research, "Ultrasound Devices Market Expected to Reach USD 8.71 Billion Globally in 2019," June 23, 2014.

today because of its implications for the *consumer*, not only for healthcare managers and clinicians. Consider the following scenarios.

**Data and models of aftercare.** To drive down costs in the aftercare space, incentive programs should help the consumer make better and less costly decisions. Patients should be informed about the costs and outcomes associated with seeking post-acute care in an outpatient setting versus in an emergency department, for instance. Data analytics should be leveraged to explain risk and reward for a certain set of services to individual patients.

**Data and automation.** The automation of processes such as entering patient vitals into the electronic health record (EHR) helps to eliminate manual labor costs and minimize costly human errors. Device integration—where medical devices transmit data automatically to EHRs or to the cloud—helps to save time and avoid the sort of mistakes that are introduced when employees have to rekey information into databases, for instance. Mistakes in both data entry and data reading can be avoided through automation.

**Data and chronic care.** Another area affected by the newly empowered healthcare consumer is chronic care—and here too, there are ample opportunities for cost cutting and quality improvement using data analytics. Healthcare managers should build in incentives for consumers to comply with care management pathways, including adherence to prescription drug regimens, lifestyle changes, regular screenings, and other forms of monitoring.

Adherence offers an excellent glimpse into the concrete ways data can make quantifiable improvements to patient outcomes and satisfaction. The partnership Prescriptions for a Healthy America, which was convened to advance medication adherence, reports that study results have shown that half of all patients do not take their medications as prescribed; more than one in five new prescriptions go unfilled; and adherence is lowest among patients with chronic illnesses. The

partnership also notes, “Poor medication adherence results in 33 percent to 69 percent of medication-related hospital admissions in the United States, at a cost of roughly \$100 billion per year,” and “[The Network for Excellence in Health Innovation] estimates that total potential savings from adherence and related disease management could be \$290 billion annually—13 percent of health spending.”<sup>d</sup>

Today, however, we have remote and online data collection mechanisms to gauge adherence. This is not just a case of patient policing, either: Care coordinators are trained not only to educate patients about the effects of nonadherence, but also, more important, to listen to the factors keeping people from taking their medication. Gathering information such as side effects or adverse reactions from interactions with other prescriptions, the care coordinators can view obstacles to adherence more systematically. Analyzing data about side effects or certain combinations of drugs can in turn help inform clinicians’ prescribing.

In the new healthcare ecosystem, information about adverse reactions is considered actionable knowledge rather than a single individual’s problem. Data analytics advance the recognition that there is an adherence issue to an understanding of *why* there is.

### The Role of the CFO

To ensure that their organizations thrive in this new ecosystem and achieve organizational cost cutting while meeting increasingly educated consumer demand, healthcare CFOs must understand big data and put it to work. To be able to do so, CFOs must form even tighter relationships with CIOs. Concrete metrics will inform that collaboration, with technology the common denominator that will drive decisions for both realms while producing data that inform consumers as well.

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d. Prescriptions for a Healthy America, “Medication Adherence: A \$300 Billion Problem.”

Just like individual consumers, CFOs need information presented to them in an actionable form. Access and insights emerge through clear metrics and ordered information. Providers should employ real-time tools that track trends in the quality and cost of care simultaneously, allowing CFOs to decipher any meaningful relationships between the two metrics. To lead effectively in the new ecosystem, finance executives must embrace retail-oriented health care. They will need to harness mechanical advances to establish the metrics to chart their

progress in this new ecosystem, and act on their insights to drive performance around the quality and cost of care. ■

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