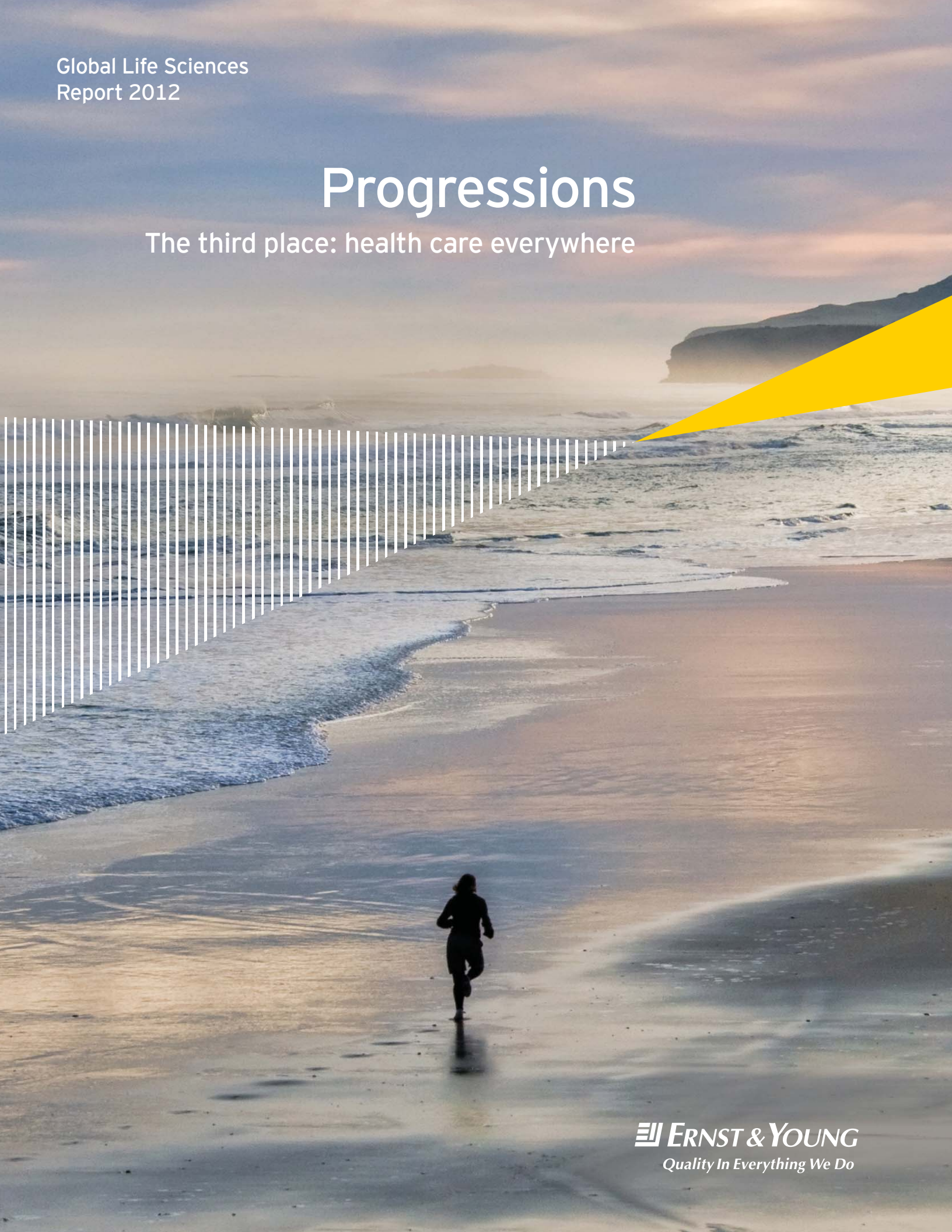


Global Life Sciences
Report 2012

Progressions

The third place: health care everywhere



**Changing behaviors
represents the single
biggest opportunity
to improve health
outcomes.**



To our clients and friends

Consider these recent developments:

- ▶ In 2011, as the first members of America's baby boomer generation reached retirement age and the world's population crossed the 7 billion threshold, pundits and policy makers considered the impact a rapidly aging population would have on our planet's scarce resources.
- ▶ In September, the United Nations General Assembly convened a global summit on a health issue that poses an urgent and global threat. The UN has convened such a summit only once before – in response to the AIDS epidemic – and it's remarkable that the 2011 summit focused not on an infectious disease pandemic, but on the threat of "non-communicable" chronic diseases.
- ▶ That same month, the Obama Administration hired Constance Steinkuehler as a White House senior policy analyst with a truly unconventional mission: analyze the potential for using video games to improve outcomes in health, education and a number of other areas.

What do these developments have in common? They are all indicators of the narrative we explore in this year's *Progressions*. The looming epidemic in chronic diseases, accelerated by aging populations and increasing prosperity, is threatening to overwhelm health care budgets and economic growth. Today – half a century after the first polio vaccine, four decades after declaring war on cancer, 30 years after the emergence of AIDS and the elimination of smallpox – we have tamed the most devious scourges that humanity has ever faced. What threatens us now is what should be the easy stuff – controlling our diet, exercising, drinking in moderation, taking our medicines.

Changing such behaviors represents the single biggest opportunity to improve health outcomes while bringing costs under control. But the "easy stuff" is far from easy. Despite concerted efforts by policy makers, providers and payers – not to mention the best intentions of individuals – it has been remarkably difficult to effect behavioral change.

This year's *Progressions* explores these trends and their implications for life sciences companies. As companies find themselves in the behavioral change business, they would do well to leverage behavioral economics, a discipline that is rich with actionable insights on the biases that guide our behavior and on the levers – from the immediate feedback of social networks to the rewards of games – that actually work. We examine behavioral economics in Chapter 2. But this is not just about patients' behaviors. Companies will need to change the ways they operate as well – to significantly extend their business models with more patient-centric value propositions and enduring relationships with patients. Chapter 3 explores these implications and calls for courageous leaders to set strategic direction, inspire innovation and stay the course. Lastly, we will need behavioral change across the health care ecosystem. In Chapter 4, we examine "collective impact" alliances, which could help address these challenges by aligning the incentives of individual stakeholders, creating common metrics, encouraging cooperation and redefining and broadening the "precompetitive" spaces where magic can happen.

This year's *Progressions* builds on themes we have explored in the "Pharma 3.0" reports of the last couple of years. But it also marks an important departure. As we discussed these trends with our clients, it became increasingly clear to us that they affect all of life sciences. So we have listened to our customers and changed our behavior: this year, *Progressions* is no longer just a pharmaceutical report. It is now a report for the entire life sciences sector.

– Ernst & Young, *Global Life Sciences Center*

Contents

Introduction: the behavioral change business 6

Chapter



one



two

The third place: health care everywhere 12

The next big wave: behavioral change 15

Usama Malik
Bridgewater Associates, LP

Power to the people 17

Diego Miralles, MD
Janssen Healthcare Innovation

The personal health technology revolution 19

Eric Dishman
Intel Corporation

Sensors and sensibilities 20

Stephen Oesterle, MD
Medtronic, Inc.

Listening to patients 22

Itzik Lichtenfeld, PhD
First Life Research Ltd.

Interview

From insights to outcomes 23

Glen Tullman
Allscripts

A closer look

Accessing the markets of the third place 25

Frank Kumli, PhD
Ernst & Young Ltd.

Patients: nudging patient behavior 30

Interview

Nudging the invisible hand 37

George Loewenstein, PhD
Center for Health Incentives and Behavioral Economics at the Leonard Davis Institute

Interview

Minding patients' preferences 38

Jerome Groopman, MD
Pamela Hartzband, MD
Harvard Medical School and Beth Israel Deaconess Medical Center

Behavioral game changers 41

J. Leighton Read, MD
Alloy Ventures

Guiding principles for the behavioral change business 47



Business models: creative disruption	48
Bringing convenience and efficiency to health care	54
June Felix <i>Citigroup</i>	
A closer look	
Supply chains for a patient-centric world	56
Mark Yeomans <i>Ernst & Young LLP</i>	
A closer look	
Strategic finance drives shareholder value	63
Jeffrey Greene Ben Perkins <i>Ernst & Young LLP</i>	
A closer look	
Mapping strategic transformation	65
Dan Shoenholz Michael Botos <i>Ernst & Young LLP</i>	
Walgreens' strategic transformation	66
Alexandra Jung <i>Walgreens Health Services (formerly)</i>	
Guiding principles for business model disruption	67

The ecosystem: aligning for impact	68
A closer look	
Patients for life	72
Sanjeev Wadhwa <i>Ernst & Young LLP</i>	
Self-care through collective impact	73
James Firman <i>National Council on Aging</i>	
Index of charts	76
Acknowledgments	77
Global life sciences contacts	78

Introduction

The behavioral
change business

The behavioral change business

Background: health outcomes and behavioral change

Over the course of human history, we have seen two big advances in health outcomes. The first wave, beginning in the mid-19th century, came from the adoption of modern hygiene practices, which sharply reduced medical infections and improved post-surgery survival rates. The second wave, which has lasted for the better part of the 20th century, was enabled by breakthrough drugs and devices – products that have successfully waged war on numerous diseases, from smallpox and polio to cancer and HIV.

Today, we stand on the cusp of the third big wave of improvements in health outcomes – driven not just by new products, but by **behavioral change**. We are moving to a world in which more and more emphasis will be on gathering **evidence** to identify the interventions that are most effective at improving health outcomes, and then realigning the behaviors of all stakeholders – patients, providers, manufacturers and others – around these interventions.

This transformation is being catalyzed by the simultaneous occurrence of two forces: the increasingly urgent need to realign incentives and make health care costs **sustainable** (particularly in chronic diseases, where healthy behaviors such as diet and exercise could significantly curtail costs); and the coming of age of game-changing **technologies** such as mobile health, social media and electronic health records (EHRs). These two trends reinforce each other: the new technologies are boosting efficiencies and sustainability, while changing incentives are reducing resistance from stakeholders and encouraging adoption.

In prior issues of *Progressions*, we described two prominent examples of how changing incentives and technologies are driving behavioral change by key stakeholders:

- ▶ Patients are being transformed into “**superconsumers**.” Technologies such as social media and smartphone apps are empowering individuals with transparent information and greater control (mirroring trends in online shopping and banking). Meanwhile, incentives are driving patients to take more responsibility for their health decisions.
- ▶ Even as incentives are increasing for evidence-based approaches, technologies such as EHRs and social media are creating an explosion of data. These two developments are enabling a trend we termed “**value mining**” – the use of data mining to make determinations about the relative value of different interventions.

Superconsumers and value mining are just two examples of a larger trend that is part of the move to an outcomes-focused future: a relative **shift in power** away from providers and manufacturers and toward **patients** and **payers**.

The move to a world in which financial returns will accrue to those who can best demonstrate that they are significantly improving health outcomes is also creating tremendous opportunities for companies that have historically not been in the health business. Consequently, **non-traditional entrants** – retailers, information technology companies, telecommunications firms, etc. – are actively moving into the health arena.





Pharma's perspective: the progression of *Progressions*

So far, we have written about these changes through the lens of big pharmaceutical companies, because this shift is particularly compelling for big pharma, which has been grappling with historic changes for some time now. For the better part of a decade, numerous forces – the patent cliff, reduced R&D productivity, pricing pressures, globalization and demographics – have made the industry's long-standing blockbuster business model increasingly irrelevant. These pressures drove a transition we now refer to as the move from **Pharma 1.0** (the vertically integrated blockbuster model) to **Pharma 2.0** (today's models based on more diversified market portfolios and a broader focus on bottom-line returns rather than just top-line growth). This shift was explored in depth in the 2006-09 issues of *Progressions*, where we covered topics such as emerging markets, drug safety, new business models and finance transformation.

For pharma, then, the move to an evidence-based, outcomes-focused, behavior-driven world represents the third transformation of its business model, one we referred to as **Pharma 3.0** in the 2010 and 2011 issues of *Progressions*. In these two reports, we highlighted several implications for pharma companies, including:

- ▶ **Business model innovation.** Innovation is no longer just about products, but increasingly about business models. This will require rebalancing resources away from product innovation and

toward commercial model innovation. Companies will experiment with **multiple business models** through a “**commercial trials**” process and through **radical collaboration** with non-traditional entrants. It will become increasingly important to pay attention to how companies might fit into other industries' evolving business models.

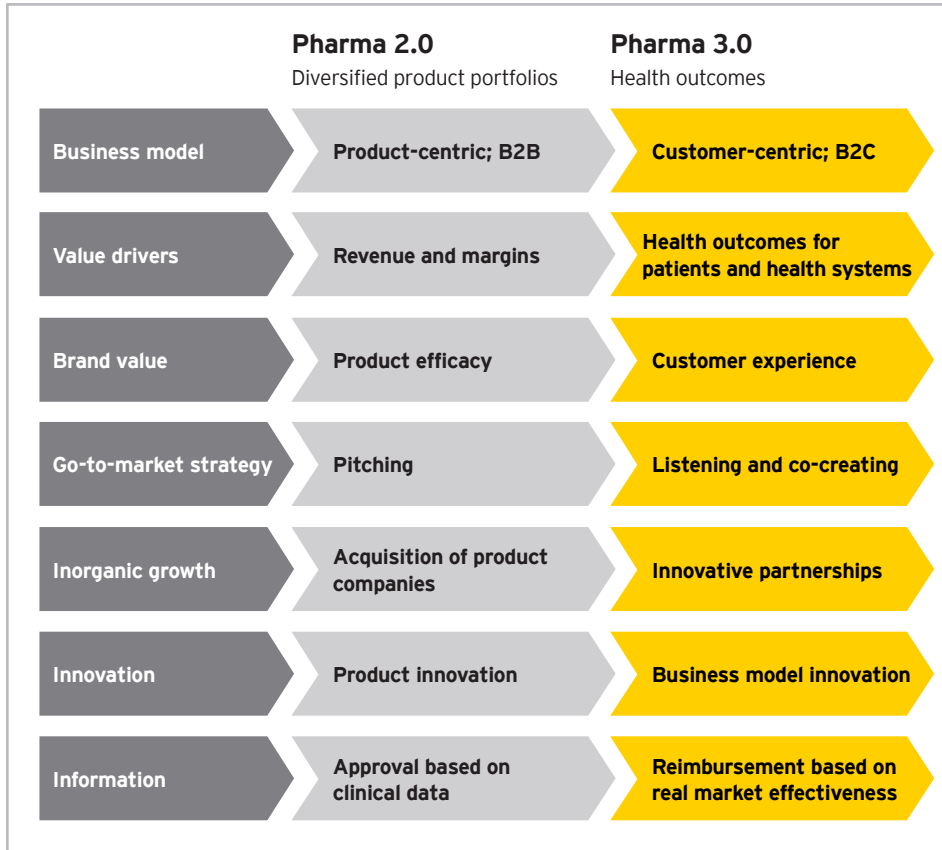
- ▶ **Connecting information.** Information is the currency of 3.0. As health care enters the world of “big data” and the “internet of things,” the ability to connect disparate information from diverse sources and extract insights becomes a core competency and driver of competitive advantage. Information technology is strategy, not overhead.
- ▶ **Co-creation and community engagement.** Co-creation of value with patients, payers, providers and partners will become a key value driver. In social media and other communities, pharma companies will need to engage meaningfully with stakeholders in open and transparent ways.

- ▶ **Getting to 3.0.** Lastly, getting to 3.0 will not be automatic. It will take coordinated change to metrics, standards, cultures and mind-sets. To gain acceptance as aggregators at the center of the system, pharma companies will need to articulate their strengths and address perceived conflicts of interest.

Much of this thinking was summarized in a schematic we referred to as the “House of 3.0,” which identifies three core competencies (connecting information for competitive advantage, radical collaboration and managing multiple business models) that needed to be built to complement companies' 2.0 strategies, structures and initiatives. It also lists several business processes – from business model development to community engagement and ecosystem risk management – that needed to be substantially enhanced or built anew.



Pharma 3.0: the shift from products to health outcomes



Source: Ernst & Young.

move to an
evidence-based,
outcomes-focused,
behavior-driven
world





This year's report: health care everywhere

As mentioned on page 7, we are in the midst of a dual shift in power toward patients and payers. This year's *Progressions* examines the first half of this shift: the patient, who is both increasingly empowered and increasingly central to making health care sustainable.

The key to making health care sustainable is addressing the growing challenge of chronic diseases. These already account for 75% of health care costs, and still the problem is projected to escalate dramatically thanks to demographic and macroeconomic trends. A critical component for bringing these costs under control will be the move to a health care-everywhere future in which care is more patient-centric, self-managed and delivered in more disaggregated settings. We refer to this as the move to health care's "third place" – an expansion beyond the first two places in which care has traditionally been delivered, the doctor's office and the hospital.

Once again, changing technologies and changing incentives are playing a central role in changing behaviors. Technologies such as smartphone apps, sensors, remotely connected monitors and social media are empowering patients to manage their care wherever they are located. Meanwhile, payers are embracing holistic approaches, thereby boosting incentives for remote care, home care, preventive monitoring and more. Models such as accountable care organizations are also shifting financial risk to providers – who will have to understand patients and influence their behaviors in order to successfully manage this risk.

The bottom line is that to be a successful player in the health care arena, a company needs to be in the "behavioral change" business. Success will in part be based on the ability to change the behaviors of patients, companies and the system as a whole:

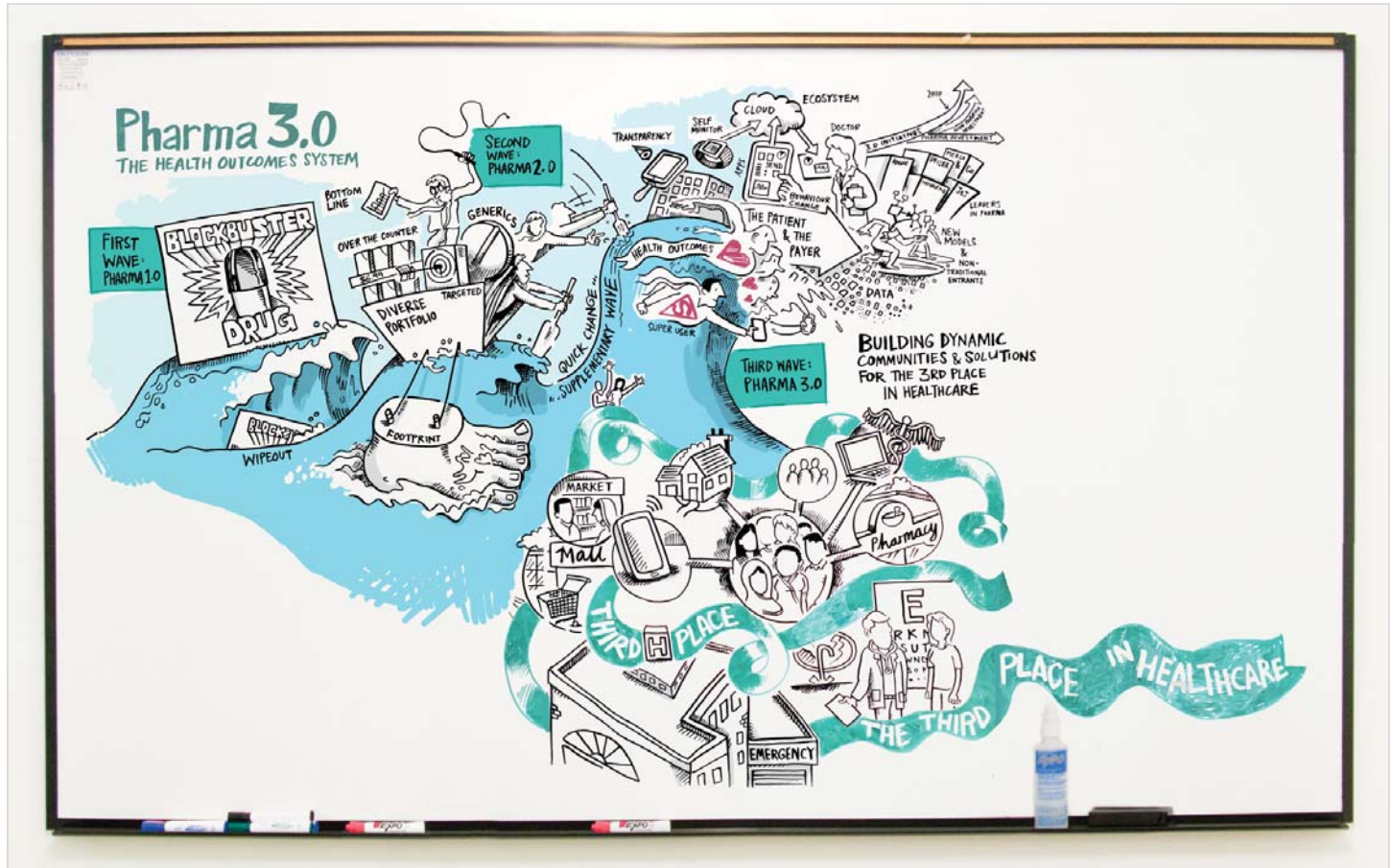
- ▶ **Patients: nudging patient behaviors.** Boosting adherence, bending the cost curve and shifting from treatment to prevention will require dramatic shifts in patient behavior. But patient behaviors have so far been notoriously resistant to change. The definition of personalized medicine may need to be expanded – it will no longer be just about genetics and targeted therapies but will also involve understanding behavior and customizing the individual experience. In Chapter 2, we explore how to leverage lessons from behavioral economics – a discipline that has come into its own in recent years and is replete with actionable insights for health care and other industries.

- ▶ **Companies: motivating creative disruption.** It is time to move beyond experimentation at the fringes. Life sciences companies need to significantly extend their business models with more patient-centric value propositions and enduring relationships with patients. The business models of the third place will be data-centric, behaviorally savvy, experience-focused, holistic and revenue-flexible. But companies will need to move quickly – the pace of change is accelerating, and a fast-follower strategy is not recommended. They will need courageous, curious and skilled change agents to marshal the resources needed for disruptive innovation and stay the course through ensuing failures and uncertainties. See Chapter 3 for more.

- ▶ **Ecosystem: aligning for impact.** Health care's stakeholders – governments, regulators, employers, payers, nonprofits – are aware that the system is broken and that we need a new system for delivering, consuming and paying for care. In Chapter 4, we examine "collective impact" alliances, which have tremendous potential for taking on such issues by developing a shared vision, aligning incentives, creating common metrics and more. By shifting the understanding of the business that companies are in, collective impact alliances have the ability to redefine "precompetitive" spaces and allow for a radically improved allocation of resources. As non-traditional players enter health care and patients are increasingly empowered, collaborations with a wide range of actors can better align interests to address some of the most stubborn obstacles to making health care sustainable. ▶

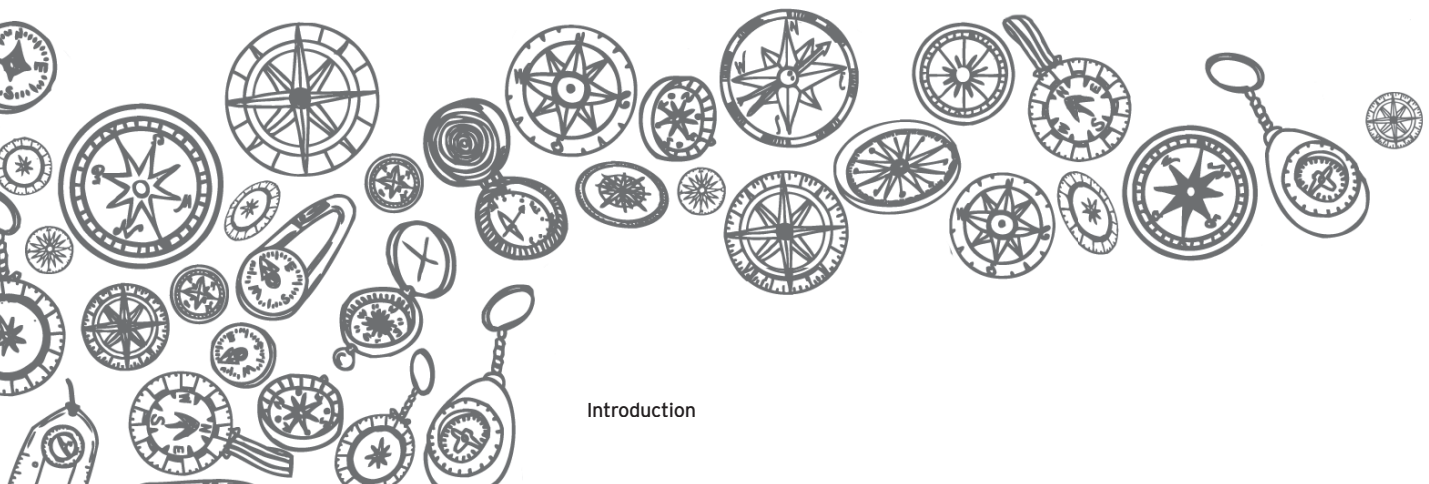


The next wave: the third place in health care



Source: Graphic recording of DesignShop® session held on 4 January 2012, drawn by Andy Parks of Optum DesignShop.

addressing the growing challenge of chronic diseases



Chapter one

The third place:
health care everywhere

The third place: health care everywhere

In brief

- ▶ Health care costs are becoming unsustainable, in large part due to a chronic disease epidemic fueled by unhealthy lifestyles, aging populations and increasing standards of living.
- ▶ To bring costs under control and improve health outcomes, patients and other stakeholders of the health care system will need to change their behavior.
- ▶ To enable these behavioral changes, the epicenter of the health care system is shifting from the two places in which health care has traditionally been produced, delivered, consumed and paid for – the hospital and the doctor's office – to a third place: the patient. Health care will become more patient-centric and ubiquitous – delivered wherever the patient happens to be.
- ▶ This shift is accelerating as changing incentives are shifting more financial risk to providers – who will need to change patient behaviors to manage this risk.
- ▶ Patients – who have grown increasingly comfortable with empowering technologies (e.g., smartphone apps, sensors, monitors, social media) – are taking a more active role in managing their health and are demanding a different model in the third place.
- ▶ Above all, the third place promises to change the game in health care – making costs more sustainable and providing new opportunities for growth and value creation.

Advancing health outcomes, sustainably

Over the last century or so, modern medicine has made tremendous advances. Building on the improvements in health outcomes that first emerged from better hygiene, waves of breakthrough drugs and vaccines have alleviated the destruction waged by once-lethal infections. Long-standing scourges such as smallpox and polio have been either entirely eradicated or hounded to the edge of extinction. Personalized medicines, sophisticated imaging and targeted diagnostics have reduced many cancers from near-certain death sentences to manageable, even curable, conditions.

Accompanying these advances – indeed, to no small extent *enabled* by them – have been tremendous improvements in the quality of human life. We are living longer than prior generations, thanks to improved maternal health and the taming of childhood and other diseases. Incomes and standards of living have gone up, in part enabled by the fact that healthier people are more productive. And as nations once referred to as “less developed” have opened their economies and unleashed the productivity of their citizens, these advances are spreading to a growing number of emerging markets.

It is somewhat ironic that one of the biggest threats to human health (and, by implication, to our economic security) is that we are in danger of becoming victims of our own success. As medical advances have raised longevity, rising incomes have reduced family sizes in many parts of the world, creating demographic time bombs as fewer workers are available to support larger numbers of retirees and patients. As people are living longer, the incidence of neurodegenerative diseases such as Alzheimer's is expected to increase. More broadly, we are on the cusp of a chronic disease epidemic, as lifestyle-related

conditions such as heart disease and type 2 diabetes escalate due to aging populations and growing prosperity in emerging markets.

The numbers are startling. Chronic diseases account for more than 75% of health care costs in the US. And while these ailments are often thought of as “diseases of affluence,” the facts suggest otherwise. They already account for more than half of health care costs in developing countries, and the World Health Organization expects that by 2020, 60% of the disease burden from chronic diseases will occur in the developing world.

We are on the cusp of a chronic disease epidemic, as lifestyle-related conditions such as heart disease and type 2 diabetes escalate due to aging populations and growing prosperity in emerging markets.

Meanwhile, policy makers in both developing and developed countries are attempting to expand access to larger segments of their populations – adding to the pressure on costs. The end result is that health care systems around the world are becoming unsustainably expensive. Health care costs, already outpacing inflation, could crowd out other expenditures and hurt economic growth. In the US – the world's largest health care market, where health care already accounts for more than 17% of GDP – the Congressional Budget Office has stated that “the single greatest threat to budget stability is the growth of federal spending on health care.” And in China, health care reforms are at least partly motivated by the need to maintain social stability.



The behavioral change business

Given these demographic and macroeconomic shifts and the attendant epidemic of chronic and non-communicable diseases, public and private payers are increasingly focused on improving the

In essence, everybody engaged in health care will inevitably find themselves in the behavioral change business.

cost/benefit dynamics of the system – which they can only do by emphasizing prevention over treatment, and health outcomes over process. To that end, we believe that the big advances in outcomes are less likely to come from breakthrough products than from another source, one that is both seemingly simple and promisingly potent: behavioral change. As eloquently articulated by Usama Malik in the article on page 15, individuals' actions will be the single largest determinant in the health outcome equation.

Chronic diseases are frequently referred to as “lifestyle” diseases, for good reason. They are often directly driven by specific behaviors – unhealthy diet, sedentary lifestyles, weight gain, smoking and failing to adhere to treatment regimens. Monitoring and changing such behaviors could yield tremendous advances in health outcomes while also helping to contain costs. Preventing someone from getting diabetes in the first place, for instance, is not just better for the patient – it is also far more cost-effective for the system. Monitoring chronic diseases in real time is a similar “win-win,” since identifying and promptly correcting a declining health condition (e.g., escalating blood pressure or blood sugar) is better for patients while also being more cost-effective than the alternative of hospitalization. As incentives change across the system, interventions that succeed in understanding and influencing behaviors – toward healthier lifestyles, real-time monitoring, better medication adherence and more – will have the best shot at improving outcomes and securing payment.

In essence, everybody engaged in health care will inevitably find themselves in the behavioral change business.

prevention over treatment





The next big wave: behavioral change



Usama Malik
Bridgewater Associates, LP
Senior Management



In just the last 200 years, humans have doubled life expectancy – a measure that had barely budged in the previous 5,000 years. This happened because of two key developments. First, better sanitation and hygiene contributed to an enormous increase in longevity. Second, the introduction of modern medicines and better nutrition, starting in the early 20th century, created the next big wave of improvements in health and life spans.

But then progress stopped. In fact, recent studies suggest that we may be the first generation in 200 years to not outlive our parents – life expectancy might actually drop. What changed? A big part of the answer is that unhealthy behaviors – such as smoking, weight gain, poor diets and stress – are exacting an increasing toll on health outcomes and human longevity.

Going forward, therefore, progress in improving health outcomes will be renewed by the understanding, application, codification and democratization of behavior science and behavior modification. Those who crack the code will not only create abnormal growth opportunities but also positively contribute to society in disproportionate ways.

At the center of this transformation are the natural and social sciences' study of the human mind and the drivers of both rational and irrational behavior. As we gain critical knowledge, it is conceivable that in the coming decades, we may also have some tools to be able to predict behavior at an individual level based on various biological and environmental markers. The hope is that if we better understand the internal triggers (hunger, fatigue, fear, sadness, etc.) and external stimuli (friends, communities, environment, etc.) that drive harmful behaviors, we can construct better incentives to steer consumers toward healthier behaviors.

Yet behavioral change is a complex process requiring significant personal responsibility and the right balance between paternalism and individual management of health and lifestyle choices. Fortunately, myriad tools are available to help with this.

These could include social networks to keep us accountable and become our cheerleaders, providers from specialists to retail clinics that engage consumers on a personal level, and technologies to capture data for patients to help enable healthy routines and decisions. New incentives, such as financial, behavioral (commitment contracts, loss aversion, etc.) and those practices borrowed from other industries that tug on the emotive nature of humans, can powerfully impact the way all of us engage with our own health.

Other industries – retail, consumer products, financial services and even airlines – have been utilizing behavioral economics for many years, even before formal studies in the field were widespread. There are scores of examples of powerful brands in the consumer and retail world that have created an emotional affinity based on quality, luxury or other elements. Meanwhile, in the pharmacy industry, major chains such as Walgreens and CVS have largely displaced the independent pharmacy model, because customers value convenient access.

Another parallel with other industries is the democratizing power of technology. From retail to air travel to brokerage, industries that were once domains where experts and technocrats made decisions around what consumers should be doing have been transformed into democratic spaces where technology allows consumers to make informed decisions for themselves. To empower patients to change their behaviors, we need to do the same thing in health care, and new technologies are already making that possible.

The bottom line is that to take on the next big challenge of changing patients' behaviors, companies will need to change their own behaviors as well. More than ever, life sciences firms will need to look outside their walls for new ideas and different approaches – and behavioral economists and customer-centric models from other industries can provide a useful starting point.



The third place: health care everywhere

To address the challenge of behavioral change, the epicenter of the health care system – how health care is produced, delivered, consumed and paid for – will move beyond the two places in which it has traditionally been delivered, the hospital and doctor's office. This involves two critical shifts:

1. To drive behavioral change by patients, health care will become **more patient-centric**. We are already seeing the beginnings of this shift. New technology platforms are giving patients increased access to information and greater control over the management of their health. Meanwhile, constituents throughout the health care system – from providers to payers to life sciences companies – are attempting to better understand the behaviors, needs and preferences of patients.
2. Health care will be delivered in **more dispersed** and disaggregated settings – a change that could make health care much more sustainable by enabling more real-time monitoring, early detection, prevention, self-management and efficient usage of resources.

These two concepts together lead to a future that we refer to as the emergence of health care's **third place**. The term "third place" was coined by sociologist Ray Oldenburg, whose books *The Great Good Place* and *Celebrating the Third Place* argue that locations such as cafes, bars, bookstores and barbershops are essential for creating a sense of community. He calls these locations our "third places," to distinguish them from our "first places" (home) and "second places" (work).

Starbucks – which often uses the term when describing its mission – is one company that has successfully created a technology-enabled third place for millions of city dwellers and laptop warriors. Starbucks' value proposition is based on more than its coffee – the company has succeeded by providing a complete community-based experience that includes wi-fi access, food, music and more.

To address the challenge of behavioral change, the epicenter of the health care system – how health care is produced, delivered, consumed and paid for – will move beyond the two places in which it has traditionally been delivered, the hospital and doctor's office.

Third places are not just about attracting customers to new locations. In health care, as in many other examples, they have often been built by going to where customers already are. Airports, for instance, were initially designed merely to facilitate travel. However, it soon became apparent that airports could be much more – and they now include shopping malls, food courts, nail salons, lounges and bookstores.

As health care moves into the realm of its third place, it will be delivered in diffused settings through telehealth, home care and self-management by patients. To succeed, payers, providers and life sciences companies will need to bring increased urgency to the challenge of extending their business models to build lifelong relationships with patients.

The third "place" is wherever the patient happens to be. It is both every place and no place. For health care, the third place is the patient.

In fact, in a health care-everywhere world where patients are empowered by transparent information, mobile technologies and online platforms, the third "place" is wherever the patient happens to be. It is both every place and no place. For health care, *the third place is the patient*.

Health care's move to the third place is being enabled by **changing technologies** and **changing economic incentives**. Ultimately, however, it is being adopted because of its **game-changing potential** to make health care more efficient and sustainable – and thereby change the ways value is created. We explore each of these drivers next.

Power to the people



Diego Miralles, MD
Janssen Healthcare Innovation
Head



Today's health systems need to move from disease care to health care to reduce the tremendous waste that is endemic in our health systems. This will involve empowering patients to manage their own health – to choose preventive actions, engage in real-time monitoring and more.

Yet, many professionals in the health care business often think patients cannot handle their health information. Providers, for example, have typically guarded how much information they give a patient and discouraged over-the-counter diagnostic tests – the belief has been that patients would not have enough information or expertise to make good decisions with the information, or they would simply be overwhelmed. The result has been a tremendously asymmetrical relationship between the providers of health care and the consumers of health care.

In scores of other industries, consumers have been empowered in ways that we now take for granted but which were unimaginable at the outset. Fifty years ago, if you told anybody in the banking industry that people could responsibly use a machine on any street corner to gain access to their money and conduct banking transactions, they would have been very skeptical. They would have worried about consumers making mistakes and falling victim to fraud.

At around the same time, if you had predicted that consumers at gas stations would one day actually pump their own gasoline, you would have been told that that would be incredibly dangerous and unlikely. After all, gasoline is highly flammable and potentially explosive.

And who would have envisioned just 20 years ago that travelers would be able to book a trip around the world on their own – leaving as soon as the next day – without ever needing to talk to or meet with a travel agent? Most people would have thought that travel arrangements are too complicated and that travelers could not manage the information and make reservations themselves without making mistakes, or would simply not be able to identify the highest-quality arrangements for a given budget.

There's a recurring theme here: when there are opportunities to give more power to consumers, the established players often resist on the basis that the consumer lacks the expertise and resources to handle it. This same conflict now exists in

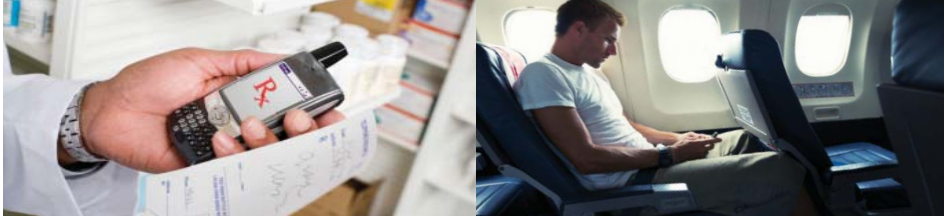
health care. Empowering and trusting patients with their own information could unleash huge efficiencies in health care.

There has been a lot of discussion about consumers having access to their own genomic data. The first thing to note here is that the portals that have been set up are excellent – the data is displayed in a way that is very understandable, probably more so than the average physician's explanation to a patient. Also, we must remember that today, HIV and pregnancy testing – perhaps two of the most life-changing diagnoses – are available throughout the world over the counter, and the medical community resisted these, as well. The evidence suggests that consumers are much wiser and more capable of managing their own health than is believed.

Another important way to inform patients is to bring transparency to the health care system; this will introduce a real marketplace. Consider what a new company, Castlight Health, is doing to help consumers “find better quality at a lower price.” Similar to the way shoppers can search Amazon for best buys on consumer products, patients can use Castlight to search and find a list of providers for a specific medical treatment, including information on co-pays and out-of-pocket costs, as well as quality assessments. Imagine how health care-related behaviors will change if we enable transparency within the cost and quality of health care – if it became easy to see that one hospital charged \$4,000 more for a procedure than another one, without any difference in quality.

As patients are becoming more empowered, access to information has grown. Just think about the changes we've seen in the last several years – the volume of information available on the internet and, more recently, new technologies and mobile apps that are giving more control and information to patients. Can the transition to this world of transparency and big data seem overwhelming? Will patients need decision-support tools to make sense of all this information? Absolutely. We need to help patients navigate this new world.

But first, we need to trust them with control over their own information and some degree of medical autonomy. This way, they can better manage their own health and bring value to the system.



Changing technologies

The health care-everywhere revolution is being enabled by new technologies that have the potential to take health care delivery beyond the doctor's office and the hospital. From a sea of sensors to smartphones and social media websites, these technologies are giving health care professionals and caregivers the ability to serve patients in numerous settings, while giving patients more information and more control over managing their own health.

Smartphone apps

As we've discussed in prior issues of *Progressions*, health and medical apps are among the fastest-growing categories of apps on smartphones. There are now thousands of health apps aimed at consumers on these platforms. *MobiHealthNews* predicts that by August 2012, on the iPhone alone there will be more than 13,000 consumer health apps and about 6,000 apps aimed at medical professionals.

Not surprisingly, many of these apps have so far targeted chronic disease patients, to enable education, healthy lifestyles, decision support, disease management, monitoring, analysis of data, communication with providers and caregivers and more.

Sensors and monitors

Of course, smartphones are much more than phones. Their real power comes from the fact that these mobile computing devices are packed with sensors – cameras, microphones, accelerometers, gyroscopes, GPS sensors. By combining information from these sensors with the always-connected nature of smartphones and tablets, creative app designers have developed countless new ways of enhancing our daily lives. Numerous apps, for instance, allow grocery shoppers to scan an item's barcode using their phone's camera and instantly find a lower price across the street or a healthier selection in the next aisle.

Since many of the sensors in smartphones are related to physical motion, they are also enabling a slew of health-related apps. From the RunKeeper app (which uses GPS data to track runners' routes, speed, distance and altitude) to the CrunchFu app (which uses your smartphone's motion-detecting capabilities to create a speaking physical trainer for stomach crunches), apps are ingeniously combining all sorts of real-world data to help consumers with exercise and more.

While smartphones have been in the vanguard, the connected-sensor revolution is by no means limited to these devices. In last year's *Progressions*, we talked about health care's move to "the internet of things." We continue to see plenty of evidence of this, as embedded sensors are transforming all sorts of everyday items into smart, connected objects that can help us manage our health. From smart running shoes, bikes and watches from companies such as Nike, Wahoo Fitness and Polar to smart bathroom scales like the Withings WiFi Bodyscale, sensor-enabled objects can track distance covered, calories burned, BMI and a slew of other statistics. Meanwhile, Ford Motor Company is truly taking health care everywhere by developing an in-car health management system with numerous partners, including Medtronic, Microsoft and Healthrageous, to monitor vital statistics, analyze and report data and provide personalized healthy guidance.

But even as everyday objects are becoming sensor-embedded and wirelessly connected – a trend that Eric Dishman of Intel Corporation refers to as "the medicalization of consumer devices" – we are starting to see medical devices evolve to become more patient-centric and patient-empowering ("the consumerization of medical devices").



The personal health technology revolution



Eric Dishman

Intel Corporation

Intel Fellow and Global Director, Health Innovation



Over the next decade, as much as 50% of health care will shift from the hospital and clinic to the home and community. New technologies will drive in-home care, at-workplace care and in-car care – thereby improving prevention, detection, behavior change and caregiver support.

A wide range of personal health technologies are coming into their own – something we refer to as the consumerization of medical devices and the medicalization of consumer devices. We will increasingly conduct virtual visits with doctors, nurses and care coaches through our cell phones, tablets and laptops. A lot of care can be done in quick snippets – 10 seconds of interaction with your doctor – and doesn't require a face-to-face visit. Cancer patients shouldn't be sent to germ-filled hospitals for chemotherapy. It would be far safer and cheaper for them to have home infusion, but the current system is not set up that way.

An increasing array of diagnostics will conduct real-time monitoring in our everyday lives. Sensors will look for changes in how we move to detect neurological risk. Tiny implantable devices will analyze blood chemistry in real time and let a doctor know if our drugs are not being metabolized correctly. Not so long ago, an ultrasound was an expensive device the size of a cart or a room. Today, it's quickly becoming a cell-phone-sized device available to every primary care clinic. As the optics and technology improve, it could soon become just another app on a smartphone. In this future, we will no longer have to go to the diagnostics – the diagnostics will always be available to us.

Another game changer is personalized genomics. The cost of sequencing a genome has fallen from nearly US\$100 million per genome a decade ago to below US\$5,000 today. In a few years, I expect it to be essentially free. Some clinics will have access to genomic computing clusters building personalized models of their patients that doctors will use to design customized treatments. Clinicians will need decision-support tools to make sense of all this data and coordinate large patient populations.

Technology can play a key role in enabling behavioral change. At Intel, we've conducted numerous pilots and identified 12 patient segments based on their responsiveness to different technologies – cell phones, social media, etc. For instance, we got a group of seniors to dramatically increase their daily walking by combining social networking, smart pedometers, monitoring using smart televisions, and incentives they cared about (e.g., donating money to a preferred cause).

Financial incentives and public policy are starting to catch up. At Intel, we track health reform in 22 countries, and we see a global trend toward collective payment – paying groups of providers to manage the health of a population based on value rather than volume of procedures. This will take a decade or so to play out, but it's a game changer.

New roles and business models

These changes will require new roles and business models for everyone. Patients and informal caregivers will need to be educated to empower more remote care and self care, and information technology and decision-support tools can play a critical role here. Hospitals will no longer have a business model based on filling as many hospital beds as possible. Instead, they will have fewer beds and develop ancillary services in the community to enable a networked continuum of care. Rather than being segmented by disease categories, medtech will likely reorganize into in-home or in-community technology platforms that can serve multiple disease states. Pharma companies may acquire new capabilities – software, IT, service delivery – and become brokers delivering a wide range of care services around a particular disease state and drug.

These changes will not be easy. Revolutions seldom are. But they promise a vastly improved future – a health care system with better quality, increased access and lower costs.

Sensors and sensibilities



Stephen Oesterle, MD

Medtronic, Inc.

Senior Vice President for Medicine and Technology



Sensors and connectivity

Over its 62-year history, Medtronic has largely developed implantable and other devices to treat patients with chronic degenerative diseases. This will remain a high-growth market – chronic diseases are becoming increasingly important because of demographic shifts. But I think the biggest opportunities for medical device companies such as ours are to enhance our support for patients across the continuum of care – not just treatment, but also prevention, diagnosis and disease management – and to expand our business models into patient-centric services that provide clear customer economic value.

With the convergence of key technologies such as IT software, telecommunications, data processing power and low-power technology, we can empower patients across the continuum of care to remotely manage their devices and health. For instance, we plan to develop implanted sensors to track blood pressure data for patients with heart failure and warn patients that are on harmful trajectories. We can use mobile phone technology to monitor the blood sugar of diabetics, notify them of significant changes and educate them on choices and implications. We are setting up an OnStar-type call center for patients with heart failure or diabetes where relatives or caregivers could be notified if a patient's condition deteriorates.

These technologies provide patients more control and autonomy in managing their devices. Patients will probably never reprogram certain implanted devices, such as pacemakers and ICDs, but they are already managing and adjusting their own spinal pain stimulators. And we are pursuing a closed-loop system whereby our sensors will drive an insulin pump and turn it off when a patient's blood sugar is falling.

Bottom-line sensibilities

This isn't just about technology. It's also good economics – these approaches will allow us to manage health care in more efficient and cost-effective ways. Continuous data from wearable and implantable sensors could improve drug adherence. It could keep people out of hospitals by identifying patients who are trending toward hospitalization several days in advance – truly significant when you consider that a major consumption of health care dollars in the US (\$40 billion annually) is for hospitalized patients with heart failure.

It's not just the system that would save money. Hospitals would benefit, since they are penalized for readmissions within 30 days under the new US health care reform legislation. And manufacturers could lower the cost of servicing devices, since programming in numerous situations – new implants, pacemaker revisions, operating rooms – could be done remotely instead of requiring site visits by service reps.

Emerging markets

In many ways, emerging markets are leading the way. Since insurance is not very prevalent in these markets and patients typically pay for health care themselves, we are finely attuned to educating patients, understanding their needs and giving them the most relevant features at an affordable price. In Beijing, we have set up our first patient education center – a high-end, high-touch facility, somewhat like an Apple Store, where patients can walk in off the street and ask questions about diabetes or heart failure.

The paucity of providers is similarly driving patient empowerment. India has 1.3 billion people, but only 90 electrophysiologists. So we simply cannot employ the Western model of using electrophysiology clinics to manage implanted pacemakers and ICDs. Instead, we are making the programming, reprogramming and follow-up of these devices much simpler, through new systems of data transfer and analytics – providing both clinical and economic value.

Looking ahead: empowered patients

We are only getting started down this path. Over the next decade, we will likely see increasingly powerful and ubiquitous mobile phones further extending a physician's reach for people in many parts of the world. Mobile phones will give patients more control over programming and running implanted devices.

We are moving toward a future with smaller implantable sensors, patient-controlled mobile devices, real-time data, remote services that assist patients and caregivers, and more. These trends will give forward-looking companies new opportunities and revenue streams. And most important, they will make health care more transparent and effective for patients and more efficient and cost-effective for the system.



But the consumerization of medical devices is only getting started. In two articles on pages 19 and 20, Dishman and Stephen Oesterle of Medtronic paint an evocative picture of what's ahead – and how revolutionary it could be. Implanted and wearable sensors for real-time monitoring systems will alert remote caregivers or providers, enabling timely intervention and saving both lives and money. Closed-loop systems could even make adjustments and interventions themselves, without needing action from human third parties. Patients will have more control over calibrating and programming their implanted sensors and devices, giving them greater autonomy and flexibility.

The automatic, always-on, always-with-you nature of mobile technology has the potential to remove human weakness from the equation. Monitoring becomes continuous. Data becomes more accurate. Prevention becomes real.

As they spread rapidly, these ubiquitous and untiring sensors will vastly improve key aspects of health care that are critical for a more efficient approach to chronic diseases – exercise, diet, prevention, monitoring. Imagine the benefits for an elderly patient of having an implanted sensor monitor her blood pressure in real time, regardless of where she is, analyze it continuously and automatically alert the patient, caregiver and/or nurse as needed. The automatic, always-on, always-with-you nature of mobile technology has the potential to remove human weakness – laziness about testing, inaccurate recording of data – from the equation. Monitoring becomes continuous. Data becomes more accurate. Prevention becomes real.

Social media

As discussed in the last two issues of *Progressions*, social media are playing a significant role in empowering patients with relevant information about their conditions. Sites such as PatientsLikeMe, AskaPatient and Healthtreatment combine the experiences of large numbers of individual patients, allowing them to discuss symptoms, treatments, side effects, statistics and personal experiences with their peers.

The real power of a site such as PatientsLikeMe, however, is that it doesn't just feature verbal discussions – patients also enter data about their disease's progression on an ongoing basis, and the site allows users to analyze this aggregated data in meaningful ways. For instance, patients can compare their progress against a cohort of others with a similar profile. If they are considering a third-line treatment, they can chart the effectiveness of that intervention on a relevant subset of patients that have tried a similar treatment regimen.

The ability to aggregate and analyze data from social media is now being taken to the next level. In 2011, First Life Research launched a new online platform, Treato, that collects data from multiple social media websites and uses natural language processing and artificial intelligence to identify trends. (For more on First Life Research and Treato, refer to the article by Itzik Lichtenfeld, the company's CEO, on page 22.) Sickweather, a Maryland-based start-up, is developing an application that can forecast regional outbreaks of numerous indications – influenza, allergies, ear infection, pink eye and more – by searching for relevant discussions on social networks such as Facebook and Twitter.

But social media can do more than provide patients with relevant data. Since these platforms are social by design, patients are not just passive recipients of information. They can interact with each other, learn from each others' mistakes and give each other feedback and encouragement. This interactivity and capacity for real-time feedback can have a powerful effect on behavioral change – something we discuss in greater detail in Chapter 2.

As they get a taste for the empowerment that comes with these new technologies, patients' expectations are changing, and we expect they will demand even more transparency and control.

Accompanying the proliferation in new platforms is a rapid increase in consumers' acceptance of and fluency with these technologies. A growing body of surveys continues to demonstrate that consumers in many global markets are increasingly comfortable using social media and the web to access health information. As they get a taste for the empowerment that comes with these new technologies, patients' expectations are changing, and we expect they will demand even more transparency and control. In the US, in particular, the aging baby boomers – the original "me generation" – will probably have very different expectations and demand much more personalized, convenient, in-home care than prior generations did.

Listening to patients



Itzik Lichtenfeld, PhD
First Life Research Ltd.
Co-founder and Chief of Innovation



Today, patients are participating in – literally – billions of health-related discussions online. Yet, so far, there has been no way to aggregate patient voices across multiple websites and understand the bigger picture. In September 2011, First Life Research launched its social media search platform, Treato, to fill this gap. Treato uses “big data” technology to collect enormous amounts of data from social media sites and, with advanced natural language processing, analyzes this information, connects the dots and creates the big picture of what patients are saying about their medications and conditions. For example, we can pinpoint the top patient concerns for virtually any FDA-approved drug, identify drug switching patterns and unearth often-surprising insights on side effects and off-label use.

Just two months after our launch, we had analyzed more than 1 billion posts. This is the first time that the social health web has been indexed on such a massive scale. The Treato site currently covers 13,000 conditions and 11,000 medications, with information aggregated and categorized in an easy-to-understand format.

We believe the site will revolutionize how stakeholders share information and make health care decisions. Treato’s insights stem from real-life patients and their real-time experiences. By providing access to our knowledge base, we are empowering stakeholders along the health care value chain – certainly patients, but also physicians, health maintenance organizations, life sciences companies and others – to better understand patients and their experiences.

A patient-centric business model

Currently, our business model is built on offering a completely free-of-charge, and free-of-ads, service. We will generate revenue by developing partnerships with entities along the health care value chain that have a constant need to understand patient motivations – for example, pharma companies, HMOs,

drug-related research groups, and insurance and financial companies. We will provide them with in-depth analytics and tracking capabilities to better leverage the power of this information.

Our value proposition is based on patient centricity. Ultimately, patients know best how they react to the medications they have been taking. With access to the experience of other patients, site users can better understand how to navigate their medical conditions and their medications. Also, if they are considering switching brands, they can easily compare competing medications. Access to this information empowers not only patients to manage more of their health care themselves but also physicians and drug companies to hone their focus on patient-centric care.

Listening to your customers

Treato offers the opportunity for life sciences companies to better understand the effectiveness, side effects and interactions of their products. Even though the industry has invested considerable time and effort in rigorous clinical trials, results are typically limited to a sample size of a few hundred or a thousand subjects at best. Consequently, when a product hits the market, many side effects are unknown. We are providing, in essence, the world’s largest focus group.

Today, strong currents are shifting the life sciences industry in new directions. Personalized medicine is tailoring medical treatment to the genetic profile of the individual patient. At the same time, technology platforms such as Treato are leveraging the “wisdom of crowds” to provide more meaningful real-time data on patient experiences with medical interventions. These trends will reinforce each other, accelerating the move to micro-targeted health care. This should increase the efficacy of products and reduce side effects – leading to better outcomes for patients and a more efficient health care system for all.

leveraging the “wisdom of crowds”



health care is fundamentally an information business

From insights to outcomes



Glen Tullman
Allscripts
CEO



Ernst & Young: How is Allscripts positioned as health care systems focus increasingly on health outcomes?

Tullman: Today, many industry observers have a negative assessment of health care delivery, believing that – with costs higher and quality lower – we are at the beginning of the end of health care as we know it. At Allscripts, we see things differently. To paraphrase Sir Winston Churchill, we believe we are at the “end of the beginning.” In our view, we’re in the first stages of enormous innovation and progress, similar to the days when the internet was just starting to take hold.

We are rapidly moving from not having enough information to having too much. For information to be useful, it will need to be radically simplified and presented in a way that health care providers can use to truly improve patient care, at the right point in the care process.

Allscripts is today one of the largest providers of electronic health records (EHRs) in the United States. The fact that we have solutions across the entire continuum of care – which means physician offices, hospitals and post-acute care – positions Allscripts to deliver the insights that will lead to better health outcomes. It’s a concept we call “insights to outcomes,” or i2O. We are focusing on i2O to promote adoption and meaningful use of EHRs, delivering real, actionable insights to physicians and caregivers at the point of patient care. It is these insights that will drive better clinical and financial outcomes – and ultimately usher in a new age for health care. We believe that health care is fundamentally an information business, which is different from many of our competitors who simply want to sell software.

Ernst & Young: How important is patient centricity in your company’s strategy and approach?

Tullman: Patients are indeed taking more control over their health, getting better information up front to stay healthy. The challenge is, how can they best interact with the health care system to make sure they are understood? At Allscripts, we have developed a series of patient-focused information tools and offerings. For example, we have partnered with Intuit to codevelop and distribute a patient health portal. On the financial side, patients can connect with their physicians and conduct almost all their business electronically, from registering for

appointments to paying bills. On the clinical side, they can receive follow-up information directly from their physicians (for example, lab results) without having to call. Also, our systems are being used more and more in environments that enable physicians to provide telehealth and telemedicine. These patient-centric technologies, in their ability to engage patients clinically and financially, and to create highly efficient processes, are key to our future strategy and to the future of health care delivery.

Ernst & Young: What is your prognosis for meaningful adoption of EHRs?

Tullman: We view the federal government’s stimulus plan for EHRs as an intelligently designed policy initiative. It offers incentives to providers not only to purchase the technology for EHRs but also to use the technology to produce quality data that demonstrates they are actually improving care. Adoption is increasing, physician behavior is changing, and we’re seeing the beginning of substantial improvements in quality and efficiency.

Within this decade, we expect the health care industry will be fully automated. The banking industry provides an interesting parallel. When ATMs were introduced, they were disconnected networks. We had to search for an ATM that would accept our cards. Now we can go virtually anywhere in the world, use almost any machine, and in a few seconds, withdraw cash in any currency we want. Eventually, we will be able to go anywhere in the world and access our health information. Just as we are unlikely to choose a bank that doesn’t have an ATM network, we will be unlikely to choose a physician who doesn’t use EHRs that are connected to the network.

Ernst & Young: What might health care look like 10 years from now?

Tullman: As the British futurist Arthur C. Clarke said, “any sufficiently advanced technology is indistinguishable from magic.” The disconnected health care system of the past will soon be a relic, and the new norm will be a highly accessible, interactive and bidirectional information system. We’ll see an explosion of innovation in health care apps, just as we saw when the internet finally connected us. Information technology is the singular tool that has enabled us to prosper in every other industry. Health care is our last frontier, and what will change over the next decade, in my view, is everything.



Changing incentives

Even as new technologies are rapidly emerging that could take health care into the third place, changing incentives are increasing the attractiveness of more dispersed and patient-centric approaches.

Systemic reforms

In response to the challenge of escalating costs, payers and policy makers globally are experimenting with different solutions to make health care more sustainable. Despite the diversity of approaches in key markets around the world, these reforms typically have some combination of a couple of key characteristics:

Holistic care. A key reason for cost inflation is that health care delivery is fragmented and inefficient. Providers often do not coordinate care well with each other, much less with other parts of the system. Care is fragmented across time as well – for example, when patients change jobs, carriers or doctors. To fix this, most solutions attempt to encourage a more coordinated approach across organizational silos and over time. And they frequently encourage a more central role for primary care physicians, since these doctors could play a critical role in coordinating care.

Payment reform and risk sharing. Payers are also gravitating to approaches that pay for quality and outcomes rather than quantity and procedures – value instead of volume. A common element in many of the pilots is the transfer of more financial risk to providers and/or patients. By doing this, payers are seeking to address a key structural problem driving cost inflation: the mismatch between incentives and influence. In most industries, the customer makes purchasing decisions, consumes the product or service purchased and pays for the purchase. In health care, however, these three functions are performed by different segments:

- ▶ Providers make purchasing decisions but have little incentive to influence cost in a fee-for-service environment.
- ▶ Patients, the ultimate consumers of health care, are theoretically in an ideal position to influence health care costs by adopting healthy behaviors and having a say in their treatment. However, in developed markets, they have had little incentive to behave differently, since they are often shielded from the financial impact of purchasing decisions by subsidized health insurance and relatively small co-payments. Compounding the challenge, they have historically not had access to transparent information on price and quality.
- ▶ Payers and/or employers, on the other hand, have every incentive to lower health care costs but historically haven't had a lot of influence over purchasing decisions and patient behaviors, since they are somewhat separated from the actual delivery of health care.

The bottom line is that the parties with influence over health decisions and behaviors have had little incentive to seek efficiency, while those with the incentive have had little influence. To fix this fundamental mismatch, payers are

experimenting with reforms that seek to share financial risk with providers. Under capitation approaches, for instance, payers pay providers a fixed sum to cover an individual for a specific period of time. Similarly, bundled payments (also known as episode-based payments) are approaches in which payers constrain payments based

The bottom line is that the parties with influence over health decisions and behaviors have had little incentive to seek efficiency, while those with the incentive have had little influence.

on expected costs for clinically defined episodes of care. There are also measures under way to shift more of the risk directly to patients, such as charging higher premiums to employees who smoke or engage in other unhealthy behaviors.

Multiple models

The drive to encourage more coordinated care and transfer financial risk is playing out with a new sense of urgency through visible reform models currently being rolled out. In the US, for instance, there is a focus on accountable care organizations (ACOs) – a model under which a group of coordinated providers is responsible and rewarded for holistically managing the quality, cost and care of a group of patients. Another model that has been getting attention is the patient-centered medical home (PCMH), an approach that emphasizes comprehensive care, including an ongoing relationship with a personal physician across all stages of a patient's life and coordination with various providers.

Already, there are numerous examples of entities experimenting with such models. Insurance giant UnitedHealthcare is piloting an episode-based payment model for cancer with five medical oncology groups across the US. The Merck Foundation and Camden Coalition of Healthcare Providers are converting 10 primary care practices into PCMHs in New Jersey. And Aetna has launched pilots in Connecticut and New York to pay physicians to make house calls.

Meanwhile, in the UK, reforms proposed by the current government would abolish “primary care trusts” (public sector entities that provide services on behalf of the National Health Service) and transfer their funding to groups run by primary care physicians. These clinical commissioning groups (CCGs) will give doctors more control over the budget and responsibility for arranging care for their patients.

All reforms lead to the third place

The reform measures described above increase the imperative to make health care delivery more ubiquitous and patient-centric. Models that call for more holistic health care delivery, for instance, will increase the impetus for remote care, preventive monitoring and more. Meanwhile, payment regimes that shift financial risk to providers will require them to efficiently improve patient outcomes to manage that risk – driving them to get closer to patients and understand how to change their behaviors.

The fact that payers are encouraging more patient-centric approaches will also have implications for the ways in which companies approach market access. (For more on this subject, see the article by Frank Kumli to the right.)

The political debate around health care reform can be volatile and unpredictable, but regardless of the vagaries of public opinion and policy making, the third place is increasingly inevitable, for the simple reason that it promises huge boosts in efficiency and sustainability.

a closer look



Frank Kumli, PhD
Ernst & Young Ltd.



Accessing the markets of the third place

As pricing pressures mount and payers look for ways to bring health care costs under control, life sciences companies' focus on market access – their strategy and approach for entering and maintaining a presence in the market – has become increasingly critical.

Health care's move to the third place raises a number of questions around market access. How does the increase in patient centricity affect the traditional relationship with payers? What does market access mean in a patient-centric world? And, more broadly, how does market access need to change as the focus moves from traditional products to health outcomes that are delivered with the involvement of multiple stakeholders?

Understanding and working closely with patients has always been critical to market access, and this will only become more important in the third place. For instance, the companies most likely to succeed in many risk-sharing agreements (e.g., approaches in which firms only get paid for patients responding to their treatments) are those armed with personalized medicine approaches to target the most responsive patients. This understanding of patients will need to extend beyond genomic factors to include behavioral and environmental determinants of health outcomes.

More broadly, a successful approach to market access requires understanding the factors that are most valued by the key stakeholders in each local market – payers, providers, patients, policy makers, etc. These “value dimensions” need to be integrated back throughout the value chain to shape decision-making, as early as in drug or business model development through to the launch and life cycle management phases. And they need to be further segmented to account for variance across geography, therapy areas and position in the product's life cycle – to allow companies to better understand and influence key stakeholders. In the third place, as patients become more empowered and involved in their own care, understanding their needs and values will become increasingly imperative. Understanding the local enabling infrastructure becomes critical when new business models rely on social media platforms, electronic health records, telecommunications networks or wireless networks. It is essential to understand the level of deployment of the infrastructure in place, how it will evolve, who the key stakeholders are and what the associated regulations are (e.g., on data privacy).

Based on this in-depth understanding, effective interaction strategies need to be developed with an overarching goal of building positive and sustainable relationships. Points of interaction must be considered along patient pathways beyond interacting directly with the health care patient, to areas such as building disease awareness and interacting closely with patient organizations or key opinion leaders.

A third-place approach to market access will also require a more comprehensive shift on the part of payers. Most payers are still focused on products rather than outcomes. While there are some pockets of change (e.g., accountable care organizations in the US), payers have not broadly adopted processes and metrics to measure and reward new models that improve health outcomes through a combination of products and services. Life sciences companies and their associations must engage critical stakeholders – from payers to policy makers, health care providers to patient organizations, technology players to retailers – in codeveloping relevant processes and metrics.

The ultimate goal is an agreement with payers on the listing, pricing and reimbursement of the product or product-service combination. As service components are added to the business model, complexity increases, but also new opportunities arise, expanding the range of possible agreements beyond pricing or risk-sharing schemes to health management and capitation.

Changing the game

Here are some ways in which health care's move to the third place could make the system radically more efficient, sustainable and valuable to all stakeholders:

- ▶ **Efficient resource usage.** By definition, boosting efficiency involves increasing output per unit of input. In other sectors of the economy, this has often been achieved through specialization (e.g., international trade and modern supply chains), which puts each resource to its highest and best use, as well as through technology, a force multiplier that allows each worker to produce more output.

Third-place technologies have tremendous potential to allow primary care physicians to take on an expanded role.

Third-place technologies and specialization have the potential to increase efficiency across the spectrum of health care delivery. As we move to an outcomes-focused system, one of the scarcest resources in health care will be the primary care physician. These doctors are already in short supply in many markets, and they will be even more critical in the future.

Third-place technologies have tremendous potential to allow primary care physicians to take on an expanded role. Instead of being limited by the number of in-person appointments a workday can accommodate, doctors will be able to use remote-care technologies to interact with larger numbers of patients as well as relegate routine monitoring to new generations of real-time sensors. As more coordinated care is encouraged by health care reform models, a wider spectrum of medical professionals – registered

nurses, medical assistants, pharmacists and others – can take over more of the lower-risk tasks currently performed by primary care physicians, freeing doctors for higher-value work. As an example of this, Walgreens' new strategy will enable pharmacists to spend more time working up to the level of their license. (See the article by Alexandra Jung on page 66 for details.)

- ▶ **Transparency.** Efficient and competitive markets thrive on transparent information. Platforms such as social networks, educational websites and smartphone apps are making all sorts of health information more accessible and transparent for patients. This trend, coupled with changing incentives that bring patients closer to the economic consequences of their actions, should drive health care's ultimate customers to make more optimal choices.
- ▶ **Coordination and prevention.** The move to the third place will bring different incentives and new technologies to enable more focus on prevention and coordinated models for care. Such holistic approaches promise to make health care much more sustainable and efficient, since prevention, real-time monitoring and timely intervention are typically many shades more cost-effective than treatment or hospitalization.
- ▶ **Increased access.** Policy makers in many key markets are attempting to expand access to more of their citizens even as they grapple with the need to bring costs under control. These two contradictory impulses can only be reconciled if health care becomes much more efficient. Third-place technologies and approaches will directly expand access for underserved patients (e.g., in rural areas and developing countries) through telehealth and mobile health offerings.

- ▶ **Personalization everywhere.** In recent years, we have seen more life sciences companies adopt personalized medicine approaches. It's easy to appreciate why – the widespread use of targeted therapeutics and companion diagnostics could completely revolutionize health care. Using biomarkers to identify subpopulations that are most likely to respond to targeted drugs has enabled significantly more efficacious treatment regimens for several types of cancer. Similarly, the early identification of biomarkers has the potential to make R&D considerably more focused and efficient.

Yet, these approaches only go so far. After all, genetic factors are not the only determinants of disease – behavioral and environmental factors play a significant role. The patient-centric approaches of the third place now have the potential to take personalized medicine beyond genetics and into the realm of behavior as well. And just as genetic personalized medicine promises to make the process of drug innovation more productive and efficient, behavioral personalized medicine has the potential to do the same for both product and business model innovation.

The patient-centric approaches of the third place now have the potential to take personalized medicine beyond genetics and into the realm of behavior.

At a time of patent expirations and mounting pricing pressures, finding growth opportunities has become increasingly challenging. The good news is that the third place will not be a shrinking market, but rather a growing one. The transition will not always be easy, but once companies are comfortable delivering in the third place and the health care system is more aligned around wellness and prevention, the market should expand dramatically.

3rd

Getting ready for the third place

In the final analysis, three facts stand out. First, health care as presently delivered is unsustainable. Second, we are witnessing an explosion of third-place technologies and platforms that could radically boost sustainability and outcomes. And third,

One way or the other, health care is moving to the third place. As a society, we cannot afford for it not to.

health care “superconsumers” will increasingly demand more personalized approaches. Against those three trends, much of the back-and-forth of health care reform – the details of individual models, the unpredictability of the political debate – is just so much background noise. One way or the other, health care is moving to the third place. As a society, we cannot afford for it not to.

This raises some key questions for life sciences companies. First, if companies’ success will increasingly hinge on their ability to influence patient behaviors, how can they succeed in this endeavor? After all, despite heartfelt motivation and ample information on healthy diet and exercise, patients are often simply unable to change their ways. The problem is that they have inherent decision-making biases that

often prevent them from changing their behaviors. To succeed in the third place, therefore, it will be critical for companies to understand how patients think and design offerings that account for human biases. These issues are explored in considerable depth in Chapter 2, where we draw on behavioral economics, a field that is rich in actionable insights.

But the third place is not just a new place – it’s an entirely new way of business. Companies that have always sold products or services will now find themselves in the business of changing behaviors and delivering outcomes. They will consequently need to shift from a product-centric, business-to-business focus to one that is customer-centric and business-to-consumer. The value of companies’ brands will be determined not just by product efficacy but, more importantly, by customer experience.

All of this raises a second critical question: how can companies change and extend their business models to enter entirely new lines of business and be at the front lines as new markets are created? How can leaders become change agents – marshaling resources and staying the new course to create the market of the future? It’s a challenging task – many great companies foundered because they saw the trends but were unable to change their business models in time. In Chapter 3, we draw insights from other industry sectors that have undergone similar shifts and offer a path forward.

Lastly, success will also involve coordinated change and collective intent with other constituents of the health care ecosystem. Successfully influencing patient behaviors will require bringing together drug and device companies, providers, patients and others. It will involve synchronization with

payers to develop meaningful incentives and payment mechanisms. It will even involve rethinking what is precompetitive. In Chapter 4, we discuss how companies develop a coordinated approach to change by using the mechanism of collective impact alliances.



Although the third place might seem futuristic and improbable to some today, it is instructive to see how the forces of technological, demographic, political and social change over the last half century have transformed what was essentially a chemical sector into the life sciences industry of today. At a DesignShop® that we hosted in September 2011 with industry executives to validate some of our ideas for this year’s report, we took a look at “the history of the future” – charting trends that got us to today’s health care system and identifying what might lie ahead. It’s been an incredible journey so far, and it’s starting to get even more interesting.

Welcome to the third place. ▶

from product-centric to customer-centric

The history of the future





Source: Graphic recording of DesignShop® session held on 27 September 2011, drawn by Drew Dervanich of Optum DesignShop.

chapter two

Patients: nudging patient behavior

Patients: nudging patient behavior

In brief

- ▶ Getting patients to adopt healthy behaviors represents a tremendous economic opportunity for life sciences companies and health care systems, but this has been extremely difficult despite patients' best intentions.
- ▶ Behavioral economics demonstrates that the reason people fail to make behavioral changes is that they have predictable biases that affect decision-making. Leveraging the science of behavioral economics to understand human biases allows companies to construct incentives and create products/services that are far more likely to succeed.
- ▶ To help patients adopt healthy lifestyles, companies can use behavioral economics levers through technologies, social networks, gamification and contracts. A number of pilots and start-ups have creatively combined multiple behavioral levers to achieve significant improvements in household savings, drug adherence, weight loss and exercise.
- ▶ To help patients process information in areas where there is considerable uncertainty and an overabundance of data, companies need to focus on communicating in clear and neutral ways. Individual preferences will need to be kept in mind, instead of aiming for a one-size-fits-all solution.
- ▶ We offer five guiding principles for companies in the behavioral change business:
 1. Communicate clearly
 2. Account for individuals' preferences
 3. Learn from behavioral economics
 4. Experiment and be flexible
 5. Extend your business model

In the US, as many as 50% of prescriptions are never filled, and only 25%-30% are taken properly. The Center for Health Transformation estimates that non-adherence leads to \$290 billion in direct and indirect health care costs annually – an astonishing 13% of total US health care expenditures. Unhealthy lifestyles cost health systems across the world billions more. In the US, obesity increases costs by \$215 billion annually. Smoking costs the UK health system £6.6 billion-£7.4 billion a year. Alcohol abuse costs the European Union €125 billion a year.

In each of these cases, simple behavioral changes by individuals could save health care systems enormous sums of money. These changes will also be increasingly important for companies looking to play in the behavioral change business. Yet, these seemingly minor adjustments, while perfectly obvious, remain elusive, and these behavior-related problems have stubbornly resisted attempted fixes for decades. To understand why – and identify solutions that might finally tackle these persistent challenges – we turn to behavioral economics.





We're only human

Over the last decade or so, a remarkable revolution has swept the field of economics.

When Daniel Kahneman won the 2002 Nobel Prize in economics, many were surprised to learn that the laureate was not an economist but a professor of psychology, one who, by his own admission, had never taken an economics course.

A few years later, when several books on relatively obscure academic matters became worldwide bestsellers that were translated into scores of languages, it was noteworthy that the authors wrote about similar topics but came from very different disciplines. *Stumbling on Happiness*, for example, was written by Daniel Gilbert, a professor of psychology; *Predictably Irrational* was authored by psychologist/marketing scientist Dan Ariely; and *Nudge* was written by economist Richard Thaler and legal scholar Cass Sunstein. These bestsellers succeeded in capturing the public imagination because they led readers to question matters as fundamental as how well we know our own minds, how capable we are of making decisions that are in our best interests, and even how valid our often unblinking faith in free markets is. The questions these books explore – originally seeded by the work of Kahneman in the 1970s – are the realm of behavioral economics, which lies at the intersection of psychology and economics. Traditionally,

microeconomic theory has assumed that individuals are rational actors – i.e., they behave in ways that balance costs against benefits to maximize utility or personal advantage. In recent years, behavioral economists have shown repeatedly that this basic tenet – the foundation for decades of economic theory – is fundamentally flawed. We are irrational in multiple ways, because of inherent biases that prevent us from making utility-maximizing decisions.

We are irrational, but predictably so. And the predictability of our biases means that we can correct for them.

We have a status quo bias that leads us to passively accept the default option rather than actively seeking the option that would maximize our utility – and so participation rates for everything from retirement accounts to organ donations differ dramatically depending on whether the default option on enrollment forms is an “opt out” or an “opt in.” A bias for the present leads us to excessively discount large payoffs in the future (e.g., a secure retirement, a longer and healthier life), even relative to small sacrifices today (e.g., saving and exercising). We tend to exaggerate small probabilities, which is why lotteries are a booming business (and the joke about a lottery being a tax on people who are bad at math may have empirical validity). Meanwhile, the well-documented loss-aversion bias means that the displeasure from losing \$100 is much more than the pleasure experienced from gaining \$100 – something that is visible in everything from how investors respond to stock market losses to how players make bets on *Who Wants To Be A Millionaire?*

What makes behavioral economics a rich source of potential solutions, rather than a disheartening inventory of human shortcomings, is the fact that these biases are systematic and unidirectional. To paraphrase the title of Ariely's book, we are irrational, but predictably so. And the predictability of our biases means that we can correct for them. Indeed, our biases are already being exploited to work against us – for instance, in the ways companies advertise their products and price their wares, which are frequently designed to entice us to bad decisions. What if health care could turn that model on its head? What if key constituents – companies, policy makers, payers – could align their interests with patients and create mechanisms that use these biases not to exploit patients but to “nudge” them toward better behaviors and outcomes?

These are particularly relevant questions for today's rapidly changing health care ecosystem. As we pointed out in Chapter 1, many of the biggest health outcome improvements in the future will come from behavioral change. Incentives are already changing to better align institutional interests with those of patients. Stakeholders across the system – from payers and providers to employers and product companies – are developing programs and technologies that encourage and enable healthy behaviors. But they are not always successful. For instance, when a primary care trust in the UK offered cash payments to volunteers who signed up for a year-long “Pounds for Pounds” trial in 2009, only a quarter of participants finished the course, and two-thirds failed to reach their weight loss targets.

relevant and actionable information

Indeed, behavioral economics research is replete with examples of incentives that counterintuitively produced results dramatically different from what the framers had intended. For instance, while it may seem common sense that imposing a fine for undesirable behavior would serve as a deterrent, under certain circumstances, it can have the opposite effect. When day care centers in Haifa, Israel, decided to fine parents for late pickups, the number of incidents of tardiness actually doubled. The reason is that, in the absence of a fine, parents were deterred by “social norms” – appearing inconsiderate, inconveniencing teachers, etc. But once fines were instituted, they began to operate under “market norms” and viewed the fine as an inconvenience fee with which they could buy the option of being late.

As participants across the health care system work to align incentives, metrics and policies to incentivize healthy behaviors, it is critical that they learn from behavioral economics.

Similarly, while many companies are now experimenting with approaches where employees who engage in unhealthy behaviors (e.g., smoking) are charged higher health insurance premiums, behavioral economics suggests that these experiments may not always succeed. For instance, an article by four behavioral

economists (Kevin Volpp, David Asch, Robert Galvin and George Loewenstein) in the *New England Journal of Medicine* (4 August 2011) points out that, because people place excessive weight on the present relative to the future, annual premium adjustments may not be very effective because the consequences are delayed. Instead, “incentives should provide small but tangible and frequent positive feedback or rewards.” In addition, because of how people account for monetary receipts or payments, “the effect of rewards (or punishments) diminishes when they’re bundled into larger sums of money: a \$100 discount on premiums may go unnoticed, whereas a \$100 check in the mail registers as an unexpected windfall.” (For more on behavioral economics and its potential to influence patient behaviors, refer to the interview with George Loewenstein on page 37.)

As participants across the health care system work to align incentives, metrics and policies to incentivize healthy behaviors, it is critical that they learn from behavioral economics. This includes issues of incentive design (the size of monetary carrots and sticks, payment mechanisms, frequency of feedback, etc.) as well as choice architecture (default options, presentation, labels and wording, etc.). For incentives to work, they need to account for the often counterintuitive biases and preferences of real patients – who, after all, are only human.

Gaps in patient behaviors

Let’s start by identifying the ways in which patients behave suboptimally. We can group these behaviors into two significant areas:

(1) Processing information

Traditionally, one approach to shortcomings in patient behavior has been to view the problem as an information gap. The term “patient literacy,” for instance, implies that patients are simply uninformed. If this were the extent of the problem, it would be easy to fix. Indeed, the internet has already made transparent huge amounts of information that were once opaque, and has given patients ready access to the latest in medical thinking.

Of course, the problem is more complex. For one, the issue is not information per se but relevant and actionable information – a point eloquently argued by Thomas Goetz of *Wired* magazine in an excellent TED talk (January 2011) on the subject of medical information. Goetz identifies one area where patients have successfully been nudged to change their behaviors over time – dental hygiene – and points to research suggesting that success requires a feedback loop based on personalized data. The positive loop starts with giving patients information that is personalized to their circumstances and helping them understand how this information is relevant to them. It is then critical to show patients what choices they have based on this information and the corresponding trade-offs. If these elements are in place, patients feel empowered to take appropriate actions – resulting in behavioral change; the cycle then repeats leading to further changes in behavior, and so on.



Before and after: *Wired* magazine redesigns the lab report

The basic workup

The standard blood workup takes more than 30 measurements and can go on for more than four pages. All sorts of things can turn up in the report; the challenge for physician and patient alike is to find the signal within the noise.

Make it colorful

The ubiquity of color printers, email, and PDFs means there's no excuse not to use one of the most effective tools in information design. We adopt a familiar green-yellow-red palette to make it easier to identify what needs immediate attention.

Make it relevant

Information is useless without explanation and a call to action. So we augment this patient's results with the relevant health risks and offer guidance about what the patient might do to improve her health.

Test Name	In Range	Out of Range	Reference Range	Lab
CBC (INCLUDES DIFF/PLT)				
WHITE BLOOD CELL COUNT	6.1		3.8-10.8 Thousand/uL	SU
RED BLOOD CELL COUNT	3.98		3.80-5.10 Million/uL	SU
HEMOGLOBIN	12.8		11.7-15.5 g/dL	SU
HEMATOCRIT	37.3		35.0-45.0 %	SU
MCV	94		80.0-100.0 fL	SU
MCH	13.2		27.0-33.0 pg	SU
MCHC	14.4		32.0-36.0 g/dL	SU
RDW	14.0		11.0-15.0 %	SU
PLATELET COUNT	292		140-400 Thousand/uL	SU
MPV	7.9		7.5-11.5 fL	SU
ABSOLUTE NEUTROPHILS	2965		1500-7800 Cells/uL	SU
ABSOLUTE LYMPHOCYTES	1403		850-3900 Cells/uL	SU
ABSOLUTE MONOCYTES	366		200-950 Cells/uL	SU
ABSOLUTE EOSINOPHILS	305		15-500 Cells/uL	SU
ABSOLUTE BASOPHILS	61		0-200 Cells/uL	SU
NEUTROPHILS	65		%	SU
LYMPHOCYTES	23		%	SU
MONOCYTES	6		%	SU
EOSINOPHILS	5		%	SU
BASOPHILS	1		%	SU
LIPIDS				
LIPID PROFILE				
CHOLESTEROL	211		125-200 mg/dL	SU
TRIGLYCERIDES	160		<150 mg/dL	SU
LDL CHOLESTEROL (CALC)	165		<130 mg/dL	SU
RISK CATEGORY		LDL-CHOLESTEROL GOAL		
VERY HIGH (E.G., DIABETES + CVD)		<70 mg/dL		
HIGH (DIABETICS, CHD RISK EQUIVALENTS)		<100 mg/dL		
MODERATELY HIGH (MULTIPLE (2+) RISK FACTORS)		<130 mg/dL		
0 TO 1 RISK FACTORS		<160 mg/dL		

Make it clear

Doctors presumably know what high or low numbers might mean. But there's no reason not to augment the data with qualitative interpretations for all results above and below "normal." Are your numbers a little low or a lot low? We explain.

Make it easy

Listing various "reference ranges" on the right of the page, separate from the results, forces the eye to scan back and forth as you evaluate the numbers. We add charts that depict clearly and succinctly where you fit along the spectrum.

Make it simple

This printout is just the first of four dense pages. The original lists dozens of measurements, potentially too many for even a doctor to comprehend. We summarize the more esoteric tests, focus on the most relevant numbers, and add an overview at the top of the page.

Source: Reproduced with permission from "Blood Simple," *Wired*, December 2010.



Your Test Results

PATIENT: [REDACTED]

GENDER: [REDACTED]

AGE: [REDACTED]

DOB: [REDACTED]

ORDERED BY: Dr. Pico Duval

COLLECTED: November 13, 2010, 8:40 a.m.

RECEIVED: November 13, 2010, 8:12 p.m.

Your results at a glance:

- YOUR GLUCOSE LEVELS ARE TOO HIGH, WHICH INDICATES PREDIABETES.**
- YOUR VITAMIN D LEVEL IS TOO LOW.**
- YOUR CHOLESTEROL LEVELS ARE BORDERLINE HIGH.**
- YOUR KIDNEY, LIVER, AND THYROID FUNCTION ARE ALL NORMAL.**

Questions?

Contact the physician who ordered this test for further interpretation of the results:

DR. PICO DUVAL
(212) 555-5253

RESULTS:

Comprehensive Metabolic Panel

Glucose (fasting): 125 mg/dL



Vitamin D

Total vitamin D: 22 ng/mL



Complete Blood Cell Count (CBC) Normal for all 20 values, including white blood cell count (a high count can indicate infection).

Urinalysis

Normal for all 20 values, including color, appearance, and protein.

Endocrinology Normal for TSH, which is an indicator of thyroid function, and for microalbumin and creatinine, measures of kidney function.

Chemistry Normal for iron, transferrin saturation, and ferritin. (Abnormal levels could indicate anemia, hepatitis, or other problems.)

Lipid Profile

Total cholesterol: 211 mg/dL



HDL ("good" cholesterol): 46 mg/dL



LDL ("bad" cholesterol): 165 mg/dL



Triglycerides: 160 mg/dL



WHAT DO YOUR RESULTS MEAN?

- ELEVATED GLUCOSE:** The relatively high amount of sugar in your blood is typical of a patient with prediabetes, which can double your risk for heart disease, depending on other risk factors. See diabetes.org for more information.
- ELEVATED CHOLESTEROL:** Your relatively high cholesterol (a waxy substance produced in the liver) may also increase your risk of heart disease, depending on other risk factors. See heart.org for more information.
- LOWER LEVELS OF VITAMIN D:** Your results suggest insufficient vitamin D, which promotes bone density and immune-system function. Women who fit your profile can become deficient within five months if no action is taken. Vitamin D deficiency may increase your risk for osteoporosis, high blood pressure, and certain cancers.

WHAT CAN YOU DO?

- CONSIDER YOUR LIFESTYLE.** If you are inactive, overweight, and/or a smoker, your risk for diabetes and heart disease rises. Exercising regularly (30 minutes/day) and reducing your weight by 5 to 10 percent lowers your risk of diabetes by 58 percent.
- ADDRESS OTHER RISK FACTORS FOR DIABETES AND HEART DISEASE.** Dietary changes, like reducing alcohol consumption and increasing fruit and vegetable intake, can decrease your cholesterol and triglyceride levels.
- ASK YOUR DOCTOR ABOUT REDUCING YOUR HEART DISEASE RISK.** Medications like statins can lower cholesterol and delay the onset of heart disease. Calculate your risk at hp2010.nhlbi.nih.net/atpiii/calculator.asp.
- CONSIDER LIFESTYLE CHANGES TO CORRECT VITAMIN D INSUFFICIENCY.** These include diet, vitamin D supplements, and more exposure to sunlight.

A companion article in *Wired* (December 2010) provides a compelling example of how information could be redesigned in one area of the health care system – diagnostic laboratory results – to communicate information in a more clear and personalized way to patients. With a little effort, the authors transform a fairly incomprehensible jumble of acronyms and numbers into an elegant and concise presentation using color, charts and graphics to quickly provide context, and add additional personalized information on how to interpret the results and what actions the patient can take. The difference between the “before” and “after” could not be more stark. (See pages 34 and 35.)

Many payers could learn a thing or two from these examples as well. Many US patients, for instance, are completely bewildered by the perplexing arrays of numbers and jargon on the ironically named “explanation of benefits” reports they receive following a medical treatment. If they are truly interested in encouraging patients to make better medical choices, insurance companies will need to make this information more transparent and comprehensible – borrowing a page from the likes of the banking industry, which has made huge leaps in presenting personal financial information in simple and engaging ways.

We are likely to see similar pressures on drug company communications. For instance, Goetz presents a direct-to-consumer magazine advertisement and then singles out for criticism the dense information that is typically packed on the reverse page. “This is one of the most cynical exercises in medicine,” he says. “Who among us would say that people

The information challenge is compounded in issue areas where there is considerable uncertainty.

actually read this? And who among us would say that people who do try to read it actually get anything out of it?” Once again, he presents an alternative: the “drug facts box” developed by Dartmouth Medical School physician-researchers Lisa Schwartz, Steven Woloshin and H. Gilbert Welch, that takes inspiration from the nutritional information box that the FDA requires on food packaging.

The information challenge is compounded in issue areas where there is considerable uncertainty. Consider the distinction between puzzles and mysteries, as highlighted in an article in *The New Yorker*

by Malcolm Gladwell (8 January 2007). Unlike puzzles, which have a single, straightforward solution that can be arrived at once we have enough information, mysteries “require judgments and the *assessment of uncertainty*, and the hard part is not that we have too little information but that we have *too much*” [emphasis added].

In many ways, this is exactly what is happening in some areas where modern medicine has become a delicate act of weighing probabilities amid tremendous uncertainty. For instance, screening for some types of cancer (e.g., prostate and breast cancer) remains controversial and divisive because it is not clear how to interpret the costs and benefits of early testing. A recent book by Jerome Groopman and Pamela Hartzband, *Your Medical Mind*, walks through such dilemmas from the perspective of individual patients. The authors – doctors at Beth Israel Deaconess Medical Center who also teach at Harvard Medical School – present a decidedly patient-centric perspective that sometimes challenges notions of rationality in health decisions. They point out that seemingly irrational decisions often stem from reasonable patient preferences. Deciding on an “optimal” intervention implicitly or explicitly involves taking into account the utility or disutility a patient would experience from different outcomes – and these calculations differ across individual patients (and indeed across individual physicians). For an individual patient, the disutility from a drug’s seemingly minor side effect may be more significant than a promised small reduction in the risk of an adverse event.



Nudging the invisible hand

George Loewenstein, PhD

Center for Health Incentives and Behavioral Economics at the Leonard Davis Institute
Director, Behavioral Economics



Ernst & Young: What does the Center for Health Incentives and Behavioral Economics (CHIBE) do?

Loewenstein: CHIBE is uniquely positioned to conduct field investigations applying behavioral economics to health. We bring together a rare combination of individuals from diverse fields – economics, psychology, medicine, statistics – to test new approaches for improving patient/physician behaviors and health policy.

Ernst & Young: Could you share some findings from your current research?

Loewenstein: We recently published a study in the *American Journal of Health Promotion* on a program to increase health risk assessments (HRAs) by employees of a mid-size corporation. The company had been offering employees \$25 for completing an HRA and was willing to increase the amount to \$50. We tested the \$25 and \$50 incentives against a program that combined numerous behavioral economics incentives – lottery prizes, social pressure and regret. Doubling the reward had no appreciable impact on HRA completion rates. But, while the lottery incentive was designed to cost approximately the same per compliant employee as the \$50 payment, it was vastly more successful. This is very timely, because the US health care reform legislation will have the effect of increasing the degree to which premiums are contingent on healthy behaviors such as HRA completion. Since lower-income individuals tend to have less beneficial health behaviors, this could make health premiums regressive. Our study suggests that whether these incentives yield compensating improvements in health outcomes will depend critically on how they are implemented.

In another study (forthcoming in *Annals of Internal Medicine*), we compared monetary incentives and peer mentoring for improving glucose control. Peer mentors – patients with similar demographic characteristics who had successfully controlled their glucose – simply provided advice and talked with participants at least once a week. Peer mentorship had a larger and more significant impact than financial incentives. Peer mentoring is particularly appealing because it is virtually cost-free and raises no concerns about rewarding people for doing what they should be doing anyway.

Ernst & Young: How can games and technologies improve patient behaviors?

Loewenstein: Research on incentives in education conducted by Roland Fryer, a Harvard University economist, shows that rewarding behaviors has a greater impact on students than rewarding outcomes. This is difficult to apply to health care, since outcomes (e.g., weight loss) are easier to measure than behaviors (whether patients exercise or stick to their diets). However, new technologies – from wireless-connected electronic pill bottles and pedometers to smartphone apps – are making it easier to measure behaviors and could make incentive programs that reward behaviors more feasible. At CHIBE, we are doing exploratory research to harness the remarkable motivational power of electronic games to improve health behaviors. We hope that, like peer mentoring, the symbolic rewards, escalating challenges and immediate feedback of games can complement or even substitute for monetary rewards.

Ernst & Young: What could life sciences companies learn from behavioral economics?

Loewenstein: A key insight for medical device companies is: keep it simple! Consumers spend an average of only 20 minutes trying to operate new electronics items before giving up. Companies can underestimate the difficulty that patients and/or physicians have mastering their devices due to something my colleagues and I dubbed the “curse of knowledge” – the tendency of experts (e.g., device companies) to underestimate the knowledge gap between themselves and others. Life sciences companies should think more deeply about how their products interact with the foibles of human behavior. How could drug companies design drugs to increase adherence when only about 50% of patients continue blood pressure medications one year after a heart attack? I see my elderly parents and their peers fashioning crude, makeshift systems in vain attempts to follow complicated medication regimens despite their reduced cognitive capabilities. It is remarkable that a consortium of drug companies has not yet developed customized once-a-day poly-pills.

Ernst & Young: Can incentives create lasting change?

Loewenstein: Much of our research shows that people almost instantly resume unhealthy behaviors when incentives are removed. Rather than viewing this as necessitating the long-term continuation of incentives, however, we are researching how to implement incentives in ways that inculcate persistent habits.

To account for the diversity in individual preferences, the authors categorize individual patients (and providers) into several mind-set types: maximalists and minimalists; technology adopters and naturalists; believers and doubters. Given the wide range of mind-sets, Groopman and

Hartzband argue that information should be presented in ways that help patients make better decisions based on their preferences. They point to the importance of neutrally framing numbers. A statin may reduce the probability of a heart attack by 33%, but a patient's risk of having a heart attack may

have only been 1% to begin with. Under such circumstances, they argue that a more meaningful statistic is the "number needed to treat" – the number of patients that need to be treated in order for one patient to benefit. One could imagine decision-support technologies taking this to the next level.

Minding patients' preferences



Jerome Groopman, MD
Harvard Medical School and Beth Israel
Deaconess Medical Center



Pamela Hartzband, MD
Harvard Medical School and Beth Israel
Deaconess Medical Center



Ernst & Young: Could you summarize some key findings from your recent book, *Your Medical Mind*?

Groopman: A central point is that relying on classical decision analysis paradigms to determine what's best for a patient doesn't work. The approach is popular among health policy planners in the UK, and it's being considered in the US. But the numerical value given to the expected utility of a treatment is basically meaningless. We argue that the approach fails largely because there are different categories of patient mind-set, with very different preferences.

Hartzband: We interviewed scores of US patients, with different backgrounds, states of health and socioeconomic circumstances, and found several categories of mind-set. Some patients are maximalists and want to do everything possible, while others are minimalists and believe less is more. There are patients who want the most cutting-edge technology and those who prefer the most natural treatments – herbal medications, acupuncture, massage. Finally, there are believers and doubters. Believers are convinced there's a good treatment for them and they just have to find it, while doubters are always worried about side effects or unintended consequences. We profile patients of these types in our book.

These categories help explain a puzzle. As patients with the same treatment options become more informed, as you explain and make things clearer to them, you'd expect them to converge in their opinions about what treatment is best, but in fact they diverge. The explanation may be that underlying people's thinking are these different mind-sets.

Ernst & Young: Your book highlights many gray areas where there's uncertainty and it's not clear what option is best. But aren't there also medical issues that are more black-and-white – behaviors (e.g., poor diet, lack of exercise) that are clearly irrational?

Groopman: If you are hemorrhaging from a ruptured aortic aneurysm and you refuse to have it sewn up, or if you have overwhelming bacterial pneumonia and you refuse antibiotics, then yes, that's irrational. But a lot of medicine is gray, including diet and exercise. If you're starving or massively obese, you should certainly change your ways, but for the large middle range, the probability of adverse health impacts from weight gain is small, and recent data indicates there's little impact on mortality rates.

Ernst & Young: Your book encourages patients to become informed and take control of their treatment decisions. Is this realistic in complex cases, and how can we help patients better prepare for these decisions?

Groopman: People greatly underestimate the intelligence or capacity of patients. One of my mentors in medical school said there's nothing in medicine that is so complicated it can't be explained to almost everyone. Is it realistic to expect patients to process all this information? Not without help. One thing the book does is highlight a series of questions to help people figure out what information applies to them as individuals and what doesn't, the risks to *them*, how their personal characteristics may or may not correspond to guidelines.

Hartzband: If doctors spend the time, patients can understand enough to make just as good a decision as the doctors. It may not be the same decision, but that's not because patients are irrational or stupid. The difference is partly due to the fact that doctors, too, have the sorts of mind-sets we mentioned earlier, which may not match the patients'.



Computerized tools could allow a patient to identify how significant different outcomes and side effects would be for him or her, after which the calculator could use data on probabilities (ideally, personalized based on age, genetic profile, medical history, etc.) to suggest an intervention for that patient.

Patient centricity may require that we keep individual patients' preferences and health profiles in mind rather than try to achieve a one-size-fits-all solution.

The authors' approach also highlights a key distinction – outcomes for patients vs. outcomes for the system. This is all the more important in areas where there is uncertainty and no clear answer. We often think in terms of cost and efficiency across the system, but we shouldn't forget that at the end of the day, health care is delivered one patient at a time and a system is nothing but a collection of individuals. Much of the trend toward outcomes focuses on measurement across systems, and evidence-based approaches often tend to be one-size-fits-all. But, particularly in areas where there is more gray than black and white, patient centricity may require that we keep individual patients' preferences and health profiles in mind rather than try to achieve a one-size-fits-all solution.

(2) Changing lifestyles

As discussed in Chapter 1, some of the biggest opportunities for improving health outcomes lie in better prevention and management of chronic diseases. In these disease areas, the most significant issue is not that patients lack information or have trouble processing complex and uncertain data. Instead, the biggest challenge is that they often have trouble making the relatively simple and well-known behavioral changes – eating a healthier diet, reducing body weight, exercising regularly, drinking in moderation and giving up smoking – that could drastically reduce the incidence of chronic diseases.

Why does this happen? Why do people who are genuinely interested in living healthier lifestyles frequently have trouble following through on their intentions? To explain this apparent paradox, behavioral economists use the concept of hot and cold states. Through numerous experiments, they have shown that people often make promises

Why do people who are genuinely interested in living healthier lifestyles frequently have trouble following through on their intentions?

related to such behaviors in rational and logical “cold” states, but they function completely differently when they are in “hot” states – under the emotional sway of a tempting cheesecake or cigarette. What is truly noteworthy, though, is the extent to which people fail to appreciate how different their behaviors and preferences will be in hot states, and significantly overestimate their ability to resist temptation.

Consequently, good intentions don't count for much – what matters is not our cold-state intentions but our hot-state disregard for those intentions. Because we are often two completely different people in hot and cold states, our preferences are

time-inconsistent. To address the problem, therefore, requires that we take actions while in cold states to help guide our behaviors when we are in hot states. This could be done through technologies, social networks, games and contracts.

Good intentions don't count for much – what matters is not our cold-state intentions but our hot-state disregard for those intentions.

► **Technologies:** Ariely examines the behavior of teenage drivers using the hot state/cold state framework. Indeed, data from several studies indicates that the high accident rate among teenagers is not just because of their inexperience behind the wheel, but also because they are highly susceptible to emotional hot states. For instance, the accident rate for teen drivers has been shown to double when there is a second teenager in the car, and double again when a third teen is added to the mix.

When he wrote *Predictably Irrational* in 2008, Ariely imagined a technology-driven solution to the problem: “Why not build into cars precautionary devices to foil teenagers' behavior? Such cars might be equipped with a modified OnStar system that the teenager and the parents configure in a cold state. ... If the car exceeds the speed limit or begins to make erratic turns, the radio might switch from 2Pac to Schumann's Second Symphony ... or automatically call Mom (a real downer when the drivers' friends are present).”

A couple of years later, Ford Motor Company launched something remarkably similar – its MyKey technology to encourage safe teen driving. The key can be programmed by parents to limit the car's top speed, constrain audio volume to 44% of total volume, enforce seat belt use and more.



Coincidence? Perhaps. Or maybe someone at Ford was paying attention to behavioral economics and recognized its potential for encouraging positive behaviors while building brand and market share.

The same principle could be applied to health care. In recent years, we've seen companies develop scores of innovations – from microchip-embedded pills to smart pill bottle caps – aimed at helping patients take their medications on time. It's easy to imagine new technologies that could help people manage their behaviors in other hot states. Smart dinner plates? Sensor-embedded clothes that know how many calories you burned today? As the Ford MyKey demonstrates, what sounds futuristic today could well become reality a few years down the road.

- **Social networks:** Chronic diseases are often referred to as “non-communicable diseases.” Well, we may soon need a new name, because recent research by Nicholas Christakis and James Fowler suggests that many health behaviors and outcomes – obesity, smoking and others – can actually “spread” across social networks. Using data from the Framingham Heart Study that tracked

Research by Nicholas Christakis and James Fowler suggests that many health behaviors and outcomes – obesity, smoking and others – can actually “spread” across social networks.

a large sample of individuals over a number of decades, they found that someone's probability of becoming obese increased by 57% if a friend became obese in the same time interval. Amazingly, the effect is even measurable across

multiple degrees of separation: having a friend's friend who was obese increased someone's chance of being obese by 20%, and the probability went up by 10% for a friend's friend's friend who was obese. Similar effects have been observed in smoking cessation and other lifestyle-related behaviors and outcomes. These findings, first published in the *New England Journal of Medicine*, soon caught the attention of the mass media, culminating in a cover story in *The New York Times Magazine* titled “Are your friends making you fat?”

Provocative headlines aside, it makes intuitive sense that one's social network would affect one's behavior. Human beings are social animals, and our friends can play an important role in influencing our susceptibility to hot states. Working out with a friend can help one stick to an exercise regimen – on days when you're feeling lazy, your friend can provide the impetus and encouragement to get you to the gym. Much of the behavioral economics research on health – from the study cited by Goetz to several behavioral incentive programs discussed in the next section – finds that frequent feedback increases the odds of success. It is not surprising, then, that a growing number of diet and fitness programs, from the ever-popular Weight Watchers to a slew of new websites – FriendFit, PEERtrainer, Traineo and many more – explicitly use social media for online feedback and reinforcement.

- **Gamification:** Video games have long been viewed as antithetical to healthy behavior, which is not surprising given the common stereotypes of gamers obsessively glued to their TV screens or computer monitors. Yet this image could not be further from the truth. In recent years, games have proliferated over a wide swath of platforms, from social media to smartphones – the word “video” has long ceased to be an accurate description. As game platforms have incorporated accelerometers and other sensors, many games can give

players a serious workout. Examples range from the breakout success *Dance Dance Revolution* to offerings on Nintendo's Wii platform and *Monumental*, a bestselling iPhone game in which players climb (real) stairs to win (virtual) views from atop famous monuments.

We enjoy playing games – they motivate us and give us feelings of accomplishment, purpose and social connectivity.

More importantly, games have tremendous potential to influence human behaviors. We enjoy playing games – they motivate us and give us feelings of accomplishment, purpose and social connectivity. Many in the health care and games industries are actively exploring this potential. Health Games Research, a program backed by the Robert Wood Johnson Foundation, is advancing research on how to use games to promote health. Games don't have to be high-tech to work – employers have been successfully using team competitions based on the hit TV show *The Biggest Loser* to motivate their workers to lose weight. Nor is the potential to improve behavior limited to patients. At its Garfield Health Care Innovation Center in San Leandro, Kaiser Permanente is actively experimenting with games such as *Dr. Hero* (loosely patterned on *Guitar Hero*), which helps doctors and other medical personnel improve their skills and reduce errors. There are games to help heart patients deal with stress, dieters manage their diet, Parkinson's syndrome patients improve their coordination – and much more to follow. (For a fuller exploration of games and their potential to improve behaviors and health outcomes, refer to the article by Leighton Read on page 41.)

Behavioral game changers



J. Leighton Read, MD
Alloy Ventures
Venture Partner



It's been almost 30 years since my first experience in game design. In 1984, I led a team of experts from Harvard Medical School in designing *The Original Boston Computer Diet*. Players of this computer game could choose the personality of their simulated nutrition coach, who led them in a daily cycle of planning and reporting food choices and exercise. Feedback – delivered via text, graphs, animation and sound – emphasized persistence and planning over poundage. The game was fairly successful, with some patients reporting sustained weight loss. Repeated interactions over several weeks with an obviously computer-generated counselor were evidently more effective than reading a diet book.

Much has changed since then – that initial game was deployed using floppy disks on computers such as the Apple II and Commodore 64 – but the potential for games to motivate healthy behaviors remains every bit as significant. In the past year alone, start-up companies and academic groups have initiated dozens of projects to realize this promise. Many of these are capitalizing on the rapid growth of games delivered on mobile devices and social media platforms. Today, institutional sponsors of such programs will be looking for a strong evidence base before widespread deployment.

The case for using games to improve outcomes is compelling. Health interventions – particularly for managing chronic diseases – must reach people where they spend time. Games can enable this, since they have already claimed significant mind-share from television, books and cinema and reach deeply into almost every demographic category. Consequently, games can channel these hours of engagement to address persistent behavioral challenges such as diet, exercise and adherence to therapy. Games can enhance the effectiveness of health messaging, allow individuals to practice useful thought patterns and behaviors and encourage them to explore and learn from failure in safe virtual environments. Design elements – e.g., narrative setting, feedback, points, levels, competition, teamwork, trading and even self-representation using avatars – can play a key role in increasing patients' motivation.

Games can be explicitly designed to attract players for either short- or long-play sessions (minutes versus hours) and over short or long durations (playing off-and-on for days versus months). In health care, decision-support games – guiding patients, providers and caregivers through complex health

decisions involving large amounts of data – might be designed for sessions that are a few hours long over a duration of a few days. On the other hand, games to promote lifestyle changes will likely be designed for sessions that are shorter (a few minutes at a time) and more frequent, but over longer durations (many months or years). Patients could be engaged over such long durations through social networking platforms infused with game elements. In such settings, peer expectations and encouragement can augment traditional levers such as points and levels to motivate behavioral change.

In recent years, behavioral economists have focused increasingly on the challenge of influencing health behaviors. This includes issues of choice architecture – wording, default options, prompts, reminders, background information, etc. – that can significantly influence decisions and behaviors. This is an area where games could provide valuable insights, since game designers are masters at nudging players in a particular direction. To quote a blog post by the celebrated game designer Raph Koster: “We have carefully designed the games to always be prompting players to do something. We use eyelines to tell players to go someplace, we push quests on them with glaring icons and pop-ups, we put constant reminders up ... games have developed incentives to get you to go do stuff. ... You throw [players] into situations where they have to take action.”

We are still in the early days of gamifying health care. As we move forward, games will need to deliver health benefits and integrate into care settings without disrupting trusted relationships with clinicians. Games will learn from real-time data and evolve through rapid, small experiments – more like software-as-a-service or cloud computing than the classic model of design, deploy and assess.

Games are powerful motivators of human behavior, and game designers have a deep understanding of persuasive design. At a time when health care is focused on outcomes and seeking sustainability, the case for gamification has never been stronger.

In 2004, Leighton Read and Professor Byron Reeves of Stanford University co-founded Seriosity, a start-up focused on studying elite players and using insights from games to make workplaces more satisfying and productive. The two are also co-authors of Total Engagement: Using Games and Virtual Worlds to Change the Way People Work and Businesses Compete (Harvard Business Press, 2009).

► **Contracts:** Lastly, contracts can be used to lock in behaviors. This would appear to be an obvious and simple solution. If we behave completely differently in hot and cold states, why not strike up contractual obligations while we are in cold states that would oblige us to behave in certain ways when we are in hot states?

Gyms typically make money by having 10 times as many members as their facilities can accommodate – implying that their business model is predicated on the assumption that most members don't show up.

Unfortunately, the answer is not that simple. Consider exercise, where many of us use a contractual obligation – the gym membership – to try to incentivize healthy behaviors. The thinking is that the pain of paying a monthly gym fee will compel us to exercise. Of course,

it frequently doesn't work that way. Since the membership fee is often automatically charged to a debit or credit card, the financial loss becomes invisible. And since the benefits of exercise are long-term and uncertain (longer life, better cardiovascular health, etc.), we aren't terribly motivated by them. Indeed, analysts have pointed out that the gyms typically make money by having 10 times as many members as their facilities can accommodate – implying that their business model is predicated on the assumption that most members don't show up.

To make contracts work – indeed, to take technologies, gamification and social networks to the next level as well – they need to be incorporated into more holistic approaches that use several incentives to address specific behavioral biases. We call such approaches “behavioral incentive programs,” and we'll see four examples in the next section, including one (GymPact) that has created a much more effective gym membership contract.



holistic approaches that use several incentives

Behavioral incentive programs: examples

Behavioral economists have identified several levers (including better communication, constant feedback, frequent rewards, new technologies, social networks and contracts) for changing

The most compelling use of behavioral levers is when they are combined in creative ways to address the multiple biases behind our behaviors.

behaviors. But the most compelling use of behavioral levers is when they are combined in creative ways to address the multiple biases behind our behaviors. In this section, we consider four examples of such behavioral incentive programs:

(1) Savings: the Save More Tomorrow program

The first example is not in the area of health care but in another area where our biases frequently lead us to poor behaviors – personal savings. But it is relevant, since many of the same biases that lead to low savings also lead to health-related behavioral gaps. The solution – elegantly combining levers to combat several behavioral biases – could be adapted for use in health care.

It is well documented that many people fail to save sufficiently for the future, a problem that is particularly acute in the US, where the household savings rate was negative for many years and still remains well below savings rates in many other countries.

The Save More Tomorrow (SMarT) program was first promulgated by Thaler and Shlomo Benartzi of UCLA in a February 2004 article in the *Journal of Political Economy* (the program is also prominently featured in *Nudge*). With an ingeniously structured combination of incentives, the SMarT program positively deploys the same behavioral biases that typically prevent people from saving. Employees voluntarily sign up for a program that is aimed at increasing the rate of contribution to their retirement savings plans. To combat loss-aversion bias, the timing of these increases in contributions is tied to pay increases – agreeing to divert part of your pay raise to a savings account is more palatable than giving up part of your existing paycheck (a loss in income). Because of our tendency to overweight current sacrifices relative to future ones (known as “hyperbolic time discounting”), participants agree to increase their savings only in the future, when they get a pay raise (hence the name “Save More Tomorrow”). To provide employees with freedom of choice and flexibility, participants can opt out of the plan at any time. Intuitively, one might expect this to happen when “tomorrow” arrives, and the commitment to save more starts getting implemented. However, the same status quo bias and tendency toward procrastination that usually prevent people from saving start to work in their favor. It would take effort to change the default setting that has already been set in motion, and most people simply stick with the savings program. Indeed, the program is structured to fully exploit the status quo bias for positive ends – everything proceeds automatically after the initial commitment, and the contribution rate keeps increasing with each subsequent pay raise until a preset maximum has been reached.

The SMarT program was tried by a number of employers, with impressive results: 80% of participants remained in the program through the fourth pay raise, and average savings rates increased from 3.5% to 13.6% over the 40-month trial period. This could easily be applied to health savings accounts, premiums, deductibles and more.

(2) Drug adherence: warfarin study

For drug companies, the most immediate application of behavioral economics is likely in the area of adherence. Tackling this issue could significantly improve outcomes by lowering the probability of adverse events and side effects, preventing reinfections, lowering relapse rates, hindering the emergence of treatment-resistant pathogens, and more.

A pilot study by several researchers at the University of Pennsylvania and Carnegie Mellon University (Kevin Volpp, George Loewenstein, Andrea Troxel, Jalpa Doshi, Maureen Price, Mitchell Laskin and Stephen Kimmel) devised a very effective program that leverages incentives and technologies to boost the adherence rate for patients taking warfarin, an anticoagulant typically used to thin the blood of stroke victims. The medication has real benefits (reducing the probability of a second stroke dramatically), yet a significant percentage of stroke and clot patients fail to adhere to the treatment regimen. One problem is that the benefit of taking the medicine (lower probability of a future stroke) is intangible, uncertain and obtained at some point in the hazy and distant future. Behavioral economics, on the other hand, tells us that people are motivated by payoffs that are current and tangible.





To address this issue, the researchers devised a behavioral incentive program that uses multiple levers to tackle these patient biases. To replace the intangible future benefit of adherence with more immediate payoffs, the program provides daily feedback and rewards to patients. But the program also incorporates a creative twist: lottery-based incentives. This takes advantage of another bias – our tendency to overestimate small probabilities. In effect, this means that people may be less motivated by the certainty of a \$2 payment than they are by a 1% possibility of winning \$100 (even though the expected value of the latter is only \$1). Lastly, to maximize the bang for the incentive buck, the designers also incorporated incentives that play on loss-aversion bias by stirring feelings of regret in patients who do not take their medication.

The program worked as follows. Each participating patient was given a Med-eMonitor system (designed by Maryland-based Informedix). This medical device has a display screen and a series of pill organizer compartments and is connected to the internet. The device allows a remote provider to track when pill compartments have been opened (to determine whether the patient has taken their daily medicine) and the display screen can be used to communicate with the patient. For the lottery feature, each patient was given a random two-digit number, which could generate a \$10 payout (if either digit matched up with the number drawn on any given day – a 20% or 40% probability) or a \$100 payout (if both digits matched up – a 1% probability). However, patients only got the payout if they had taken their warfarin that day. If they didn't take their medicine, they instead received a message telling them how much they *would have* won if they had taken their medicine – triggering the strong pull of loss-aversion and regret. The results were striking. The proportion of incorrect doses declined from 22% before the trial to only 2.3% during the trial. Meanwhile, the number of patients not adhering to the regimen decreased from 36% to 3%-4% during the trial.

(3) Weight loss: lottery/deposit contract pilot

The researchers behind the warfarin adherence study took a similar approach to another area where patients' behaviors confound their attempts to achieve healthy outcomes: weight loss. The study worked with veterans who were obese and set a goal of one pound of weight loss per week over 16 weeks.

In this case, the pilot used two sets of incentives. One set of participants received lottery-based incentives, while a second set had deposit contracts that were designed to play on loss-aversion bias. A control group was not given any financial incentives but was instead provided with information and advice on how to lose weight.

Participants in the two incentive groups were asked to monitor their weight every day and phone in their weight to a program administrator. They were also provided with pagers for communication with administrators. The lottery incentive group was eligible for financial incentives based on a daily drawing, but participants only got paid if they had phoned in their weight that day and were on track for the one-pound-per-week weight loss goal. The pagers were used to let participants know if they had won (or would have won) the drawing.

At the beginning of each month, participants in the deposit contract group could "bet" anywhere from \$0.01 to \$3.00 per day toward their weight loss goal. The amount they put down was matched one-to-one by the program administrators. For every day that the participants were at or below their target weight, they won their contribution plus the matching funds – essentially doubling their money. Conversely, whenever they were above target weight, they lost the money they had put down.

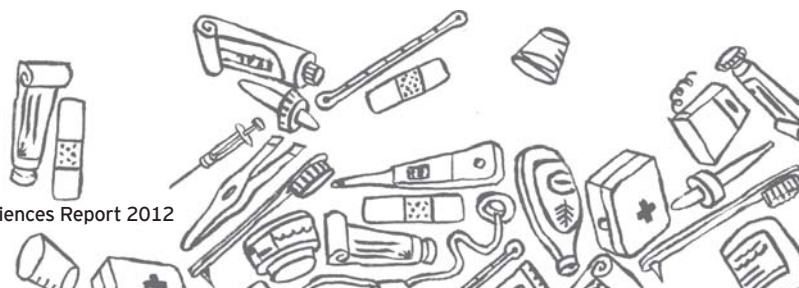
Over the four months of the study, participants in the control group lost only about one pound per month, while those in the lottery incentive group lost about 4.5 pounds and patients in the deposit contract group lost about 6 pounds. Only 7% of participants in the control group achieved their weight loss goals, while 71% of those in the lottery incentive group and a very impressive 100% of those in the deposit contract group achieved their weight loss goals.

(4) Exercise: GymPact

From Microsoft to Facebook, Harvard dorm rooms have an impressive track record of spawning innovative start-ups. Building on this tradition, a pair of Harvard students, Geoff Oberhofer and Yifan Zhang, launched GymPact in January 2011. Their idea, which they describe as being conceived when "a behavioral economics class met our love of fitness," was to design a behavioral incentive program to help people stick to their workout regimens.

Like the first three approaches describe above, GymPact uses several levers to address well-documented behavioral biases. To transform the intangible future benefits of exercise into tangible and immediate payoffs, the company uses weekly financial rewards. The monetary incentive incorporates the possibility of forfeiting money to leverage the power of loss-aversion bias.

Members who sign up on the GymPact website set their commitment, stating how many days per week they want to exercise (the minimum being one day per week) and setting the monetary stakes they will pay if they don't work out (the minimum is \$5 per day missed). The commitments are flexible – members have until midnight on Sunday to change their commitments for the upcoming week. Using a smartphone app, members can then check in when they



go to their gyms, and GymPact uses GPS technology and its database of 40,000 US gym locations to verify members' locations. Members who don't meet their weekly pacts forfeit their monetary stakes, which are used to reward those who met their weekly pacts. The company's formula increases the payout for people who commit to (and adhere to) more days per week. GymPact says its program has been extremely successful, and users make it on average to 90% of the days to which they commit. In October 2011, the company launched its pact-based approach in a second country, Chile.

GymPact is a pioneer, but it's by no means the only company building a business model to improve outcomes using behavioral economics. Connecticut-based **HealthPrize Technologies**, for instance, is harnessing the power of behavioral economics to boost medication adherence. The company's solution uses multiple behavioral levers. It awards loyalty points – essentially a means of making intangible future benefits more tangible and immediate. Like the adherence pilot discussed earlier, HealthPrize uses the power of lotteries through a weekly sweepstakes. It has introduced a gaming aspect in the form of a monthly prize for the highest point earner. Weekly quizzes and daily “fortune cookies” provide users nuggets of information to keep them educated and motivated. And to make it all work, the company uses technology – text messages, smartphone apps and online portals – for gathering daily compliance data, verifying prescription refills and rewarding users for adherence. Behavioral economics may have started in the halls of academia, but it is quickly being adopted by creative and innovative companies.



Guiding principles for the behavioral change business

The insights gained from behavioral economics could not be more relevant for the patient-centric, outcomes-focused future toward which health care is rapidly heading. If, as we argue in Chapter 1, companies will increasingly find themselves in the behavioral change business, then it becomes all the more imperative that

Unlike much that has emanated from the study of economics, behavioral economics is based not on abstract mathematical theories but on real-world experiments that are disarmingly simple, relatively inexpensive to conduct and demonstrably effective.

they genuinely understand what motivates patient behavior and how patients can be nudged toward better health outcomes – for themselves and the system at large. Unlike much that has emanated from the study of economics, behavioral economics is based not on abstract mathematical theories but on real-world experiments that are disarmingly simple, relatively inexpensive to conduct and demonstrably effective. And these real-world experiments will be as important as (and much less expensive than) traditional clinical trials going forward. Life sciences companies and others are already experimenting with incentives, technologies and social media, but much of the experimentation appears to be ad hoc and intuitive rather than cohesively guided by the science of behavioral economics.

Here are five principles we believe can guide life sciences companies as they try to realize the promise of behavioral economics:

(1) Communicate clearly

In last year's *Progressions*, we discussed health care's entry into the era of “big data” and explored the ramifications for life sciences companies. Yet patients face some of the same challenges. Even as we celebrate the information-empowered superconsumer, the truth is that information will not empower patients until it is manageable and comprehensible.

More than ever, life sciences companies need to focus not just on what they say (which is often guided by regulatory compliance) but rather on what patients understand. Direct-to-consumer advertising and education – which may often have used human biases to drive drug demand – can be substantially improved. How can those levers be used in a more neutral way, to help patients make decisions that are in their best interests and based on an informed understanding of complex risks and benefits?

Life sciences companies and others are already experimenting with incentives, technologies and social media, but much of the experimentation appears to be ad hoc and intuitive rather than cohesively guided by the science of behavioral economics.

As Groopman and Hartzband point out in *Your Medical Mind*, identifying metrics that present information in a neutral manner will be critical. Meanwhile, Goetz and his colleagues from *Wired* demonstrate the importance of presenting information clearly and comprehensibly while adding context to help patients understand



implications, options and trade-offs. Lastly, we would argue that technology can play a vital role in bringing all these elements together. Decision-support tools could elicit patients' preferences and give them options based on underlying risks and probabilities – freeing the average individual from having to navigate the daunting math involved.

Decision-support tools could elicit patients' preferences and give them options based on underlying risks and probabilities – freeing the average individual from having to navigate the daunting math involved.

(2) Account for preferences

Given the wide range of individual preferences, it will be increasingly important for companies to adopt approaches that account for these differences. This could include customer segmentation (e.g., using the mind-sets identified by Gropman and Hartzband, which offer a good starting point) and the development of different products/services for different segments. Mass customization – an approach that has been used successfully in other industries – could be very applicable in health care's third place. The definition of personalized medicine – which has so far focused on customizing drugs based on genetic variation – may need to be expanded to also account for the tremendous variation in individual preferences and behaviors.

(3) Learn from behavioral economics

Behavioral economics has already provided us with many insights into what motivates human behavior. We know that certain things work. Clear communication. Frequent feedback. Tangible, immediate incentives. Fear of incurring losses. Lottery-based rewards. Companies should make sure that their new outcomes-focused offerings incorporate these insights and the many others that behavioral economists have already identified.

This is an area where life sciences companies should want a decidedly outside-in approach to innovation. They will succeed by learning from external experts – not just reviewing their published research but actively gaining insights into new market offerings as they are being designed. And just as the field of behavioral economics has flourished by attracting creative, interdisciplinary thinking, life sciences companies will gain from approaches that can harness creativity from cross-

The definition of personalized medicine – which has so far focused on customizing drugs based on genetic variation – may need to be expanded to also account for the tremendous variation in individual preferences and behaviors.

industry participants and partners (e.g., DesignShops®). In the next chapter, we will look at several other industries that have embedded behavioral change levers in their understanding of and approach to the customer.

(4) Experiment and be flexible

Behavioral economics has been around for decades, but it has been injected with newfound enthusiasm and energy in recent years. As a result, while the field is very promising, there is much uncharted territory to cover. Are elderly and young patients motivated differently by social media and technology? Do low-income patients respond more to certain types of financial incentives? Can we create behavioral changes that are sustained in the long run, even after financial incentives are removed? We don't necessarily know, and there's a lot to learn.

Academic researchers have already made groundbreaking discoveries with relatively modest investments. But companies have access to the greatest laboratory of all – their customers.

Academic researchers have already made groundbreaking discoveries with relatively modest investments. But companies have access to the greatest laboratory of all – their customers. As life sciences companies develop more patient-centric approaches and build lifelong relationships with patients, they will have opportunities to truly understand how their customers think.

Given that the field of behavioral economics is actively evolving – and given its relative newness for life sciences companies – firms will be well served by flexible approaches. In recent years, there has been much discussion of adaptive clinical trials – using Bayesian approaches, for instance, to constantly alter dosing during a trial and identify the optimal dose. Companies may similarly want to think about adaptive commercial trials, where incentives programs are repeatedly tweaked to identify the optimal combination of carrots and sticks.

Guiding principles for the behavioral change business

Communicate clearly

Big data is for patients, too. It's not what you say – it's what your customers hear.

What are you doing to empower patients with relevant and focused information?

Account for preferences

In the third place, one size does not fit all.

How are you customizing your offer for different customer segments?

Learn from behavioral economics

Behavioral economics has actionable insights for life sciences companies.

Are you using "conventional wisdom" – or the science of behavioral economics?

Experiment and be flexible

There's a lot to learn about patient behavior. Companies have access to a trove of information in their customers.

How are you continuously learning about your customers, from your customers?

Extend your business model

The behavioral change business needs entirely different business models, based on enduring relationships, the customer experience and more.

How are you extending your business model for a patient-centric future?

Source: Ernst & Young.

(5) Extend your business model

Experiments and behavioral incentive programs can identify optimal combinations of carrots and sticks and demonstrate proof of concept. But taking these insights to market – scaling them up, delivering them in sustainable ways, succeeding in the brand new business of behavioral change – requires much more.

Even as companies gain new insights into patients and the levers that can influence their behavior, they will need to revamp their business models to make them truly patient-centric. Their interaction with customers will need to change from one-off transactions with undifferentiated populations to enduring, lifelong relationships with individual customers. If their brands were once driven by the efficacy of their products and the power of their marketing teams, they will now increasingly depend on the experiences of their patients. In the world of the third place, health care everywhere, the clinical and commercial models of life sciences companies are going to connect in a virtuous circle to the health care delivery models of providers, pharmacies and consumer product/services companies, with the well-informed patient in the middle, actively engaged in self management.

To understand these shifts, we move next from the behavior of patients to the behavior of companies, and explore how companies will need to change their business models to succeed in the third place. We use a comprehensive framework for understanding and analyzing business model transformation. We examine other industries whose business models have been reinvented by many of the customer-empowering trends that are now sweeping through health care. And we draw implications for life sciences companies and outline what tomorrow's patient-centric business models might look like. For all that, and more, let's turn to Chapter 3. ▶

Chapter three

Business models: creative disruption

Business models: creative disruption

In brief

- ▶ The third place will make life sciences companies' existing business models (the ways in which firms create, deliver and extract value) increasingly defensive, and experimenting around the fringes with new business models is no longer sufficient.
- ▶ Companies need to significantly extend their business models for the third place, to be data-centric, behaviorally savvy, experience-focused, holistic and revenue-flexible.
- ▶ Life sciences companies can learn from other sectors whose business models have been disrupted by similar forces: newspapers, electronic gaming, retail trade/market exchanges and commercial banking. Customers in these industries have been empowered with information and control, spurring companies to revamp their value propositions, change the relationship with the customer and expand their sources of revenue.
- ▶ Although the trends are clear, it is very difficult for large, mature incumbents to disrupt their own business models. In light of this challenge, we offer four guiding principles for initiating and sustaining creative disruption:
 1. **Move quickly** (to out-innovate the competition)
 2. **"Think different"** (find untapped surpluses in other sectors)
 3. **Follow the value – not the money** (start by changing the value proposition, not by focusing solely on the bottom line)
 4. **Moon shots matter** (a clear call to action can set strategic direction, engage talent and align resources and activities)

In the outcomes-focused, patient-centric future toward which the health ecosystem is rapidly heading, the long-standing business models of life sciences companies (and, for that matter, those of payers and providers) will be increasingly insufficient. In prior issues of *Progressions*, we have pointed out that companies would benefit from an innovation process for business model development based on commercial trials – roughly modeled on the ways in which drug and device companies engage in clinical trials for new product development. Firms would use commercial trials to experiment with multiple business models and innovative partnerships and develop relevant “outcomes-based” offerings for an expanding range of customers, channels and technologies.

There has indeed been considerable experimentation – companies have developed innovative pilots, often in collaboration with a range of non-traditional players. From a few cautious experiments, the pace of change has accelerated over

time. Although these are encouraging developments, we now have a greater sense of urgency that experimentation around the margins will not be sufficient. Companies need to build business models for the third place – which do not replace the focus on drugs and devices but rather expand existing business models in new

We now have a greater sense of urgency that experimentation around the margins will not be sufficient. Companies need to build business models for the third place.

directions and enable lifelong relationships with patients in the shared quest for improved outcomes. This is not easy – we have observed how challenging it is for even transformative leaders who “get it” to marshal the right resources and stay the course of business model innovation in light of all of the “must execute” imperatives of the existing product-based model. In this chapter, we discuss some ways in which courageous leaders can extend and enhance their existing models to meet the needs of a changing market, and we attempt to draw lessons and parallels with other industry sectors that have been transformed by similar trends.

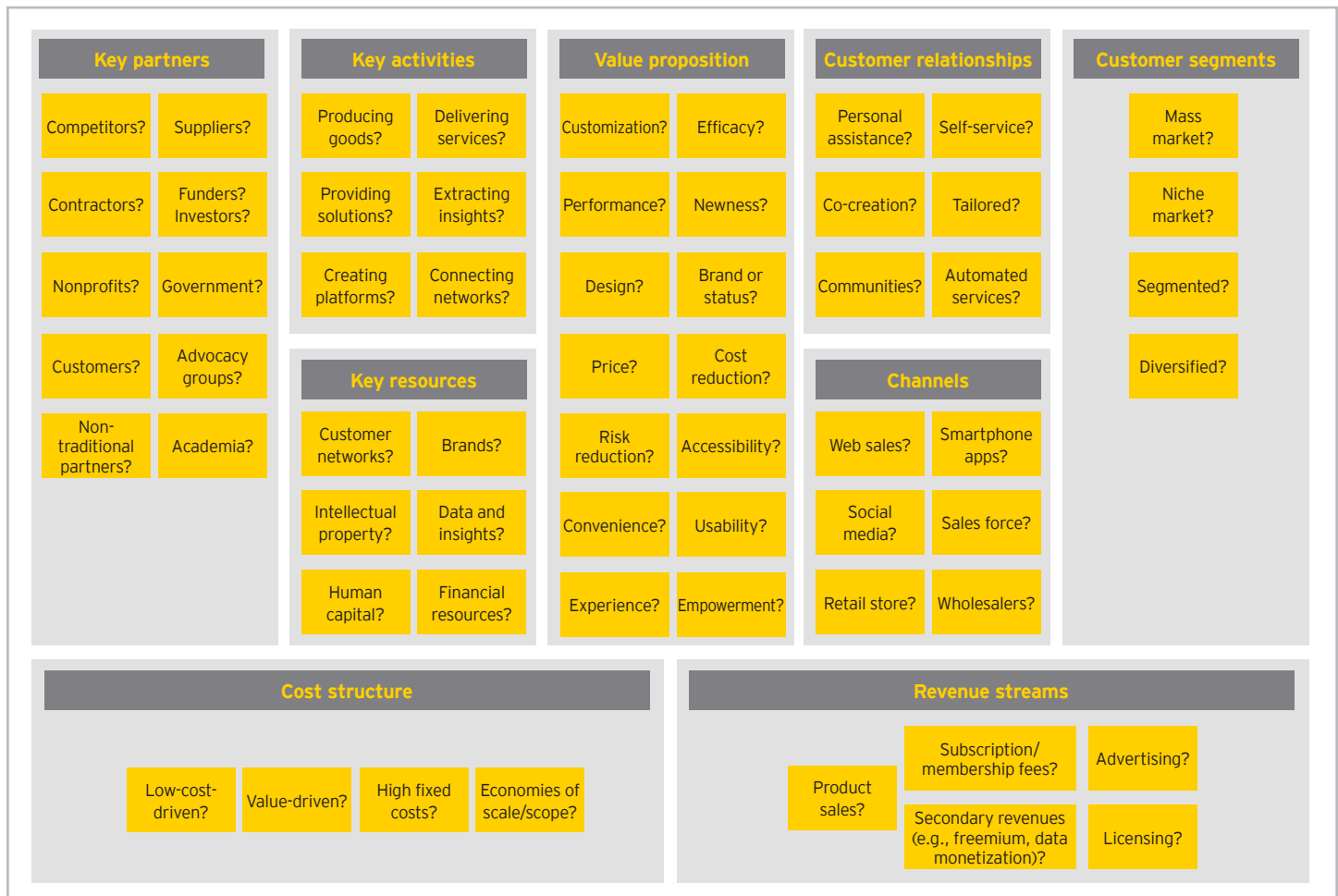
Canvassing for insights

A major focus of our September 2011 DesignShop® was exploring how business models have shifted in other sectors, in order to draw relevant insights for life sciences companies. For the process to be

meaningful, of course, we needed a clear and comprehensive definition of “business model.” While the term is defined differently by different academics and analysts, a common thread through most of these definitions is that a company’s business model is essentially the way in which it does three things: **creates value, delivers value and captures value.**

A company’s business model is essentially the way in which it does three things: creates value, delivers value and captures value.

Business model canvas



Source: Alexander Osterwalder and Yves Pigneur, Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers (OSF, 2009).



To facilitate the brainstorming session, we used the business model canvas developed by Alexander Osterwalder and Yves Pigneur in the bestselling book *Business Model Generation*. The canvas, as shown in the accompanying chart, uses a longer list of nine “basic building blocks.” However, these are basically deeper enumerations of the three key activities listed above:

- ▶ **Creating value.** On the top left of the canvas are four building blocks that deal with how the model will create value. This starts with the element at the center of the canvas – and indeed at the center of any business model – its **value proposition**. To succeed, a business needs to identify the value it expects to provide – a new solution, a better way of delivering an existing solution, etc. To create the value identified in the value proposition, a business model should also identify the **key activities** it will engage in, the **key resources** required and the **key partners** with which it will collaborate.
- ▶ **Delivering value.** The three elements to the right deal with how a business model delivers value. This includes the **customer segments** to which it will deliver value, the **channels** it will use to reach them, and the nature of its **customer relationships**.
- ▶ **Capturing value.** Lastly, along the bottom, the canvas has two elements dealing with the ways in which it will make money, or extract value – its *raison d'être*. These are its **cost structure** and **revenue streams**.

The appeal of the business model canvas is that it is precisely that – a blank canvas. It visually displays an array of elements that can be explored and filled in. As such, it was ideal for our brainstorming session, and should also be useful for life sciences leaders as they flesh out new business models.

Learning from others

The innovative core of life sciences companies will remain their bedrock. However, as the health care sector shifts more toward the third place, life sciences companies will need to adapt their own models as well as know how to fit into the business models of other companies that are closer to the patient. The third place requires life sciences companies to move beyond the product and into the relatively unfamiliar

Although this is relatively new to life sciences companies, it isn't new to many other sectors.

realm of interactive relationships, customer segmentation, information services and solutions. There will be exponentially more real-time data outside of companies' walls, and patients will be empowered with new technologies that give them more control over their health decisions.

Although this is relatively new to life sciences companies, it isn't new to many other sectors. Many of the trends that are now driving change in life sciences business models – new technologies, the democratizing power of the internet, social media, non-traditional entrants and more – have disrupted business models in scores of other sectors. The experience of these other sectors provides relevant insights about how successful companies adapt and extend their business models to remain relevant. We looked at several such sectors as part of our DesignShop.

Newspapers and magazines

The **newspaper** sector has been disrupted in a big way by the internet. Traditionally, its business model was similar in many ways to that of life sciences. In both sectors, for instance, the ultimate users of products (readers/subscribers for newspapers, patients for life sciences) have not historically provided the main revenue streams, which have instead come from different customer segments (advertisers and payers, respectively). This model has come under attack in recent years as classified advertising revenue dwindled thanks to Craigslist and free online news content triggered the flight of readers and advertisers. Meanwhile, news consumers have been empowered with more information and choices (news websites, blogs, social media, video and more) and have come to expect instant access.

Newspapers are radically revamping their business models to remain relevant. While the value proposition of newspapers has historically been that they were the authoritative source of information, today's value proposition reflects other attributes – instant access, tailored content and responsiveness to readers' perceived “right” to information. The relationship with customers has been transformed, as they have morphed from passive recipients of news to co-creators with blogs, video journals and more. Conversely, the role of newspapers has changed – whereas their key activity in the past was to generate news, they now frequently function more as aggregators that can give readers context and help them navigate an overwhelming abundance of information. Some of the biggest changes have been in companies' revenue models, which are being reinvented to get readers to pay for content in an era when many consumers regard themselves as entitled to free access. Some papers, for instance, have erected paywalls – either requiring payment for any access or adopting a “freemium” approach which gives readers a certain number of articles for free but requires payment for additional access. (A deeper discussion of freemium and other revenue stream structures is provided later in this chapter.)



Overall, newspapers have been slow to respond, and these pressures have already proved fatal for many long-standing incumbents. One problem is that mature companies are encumbered by existing cost structures. Their significant sunk investments in printing presses, offices, distribution infrastructure, etc. restrict their ability to respond nimbly to disruptive innovators such as bloggers, who have none of these high fixed costs.

All of this is extremely relevant for health care today. Payments from payers are being squeezed, much like the decline in advertising revenue. The ultimate consumers – whether readers or patients – are increasingly empowered with new technologies and ready access to information. Lastly, providers and companies may need to change their role from authoritative gatekeepers to coaches who can help consumers navigate a confusing web of information.

As in the newspaper business, different revenue streams for new offerings could provide a key part of the answer. But like newspapers, they have high fixed costs (e.g., R&D infrastructure, field forces), which could constrain their ability to justify new models that don't cover the existing model's fixed costs.

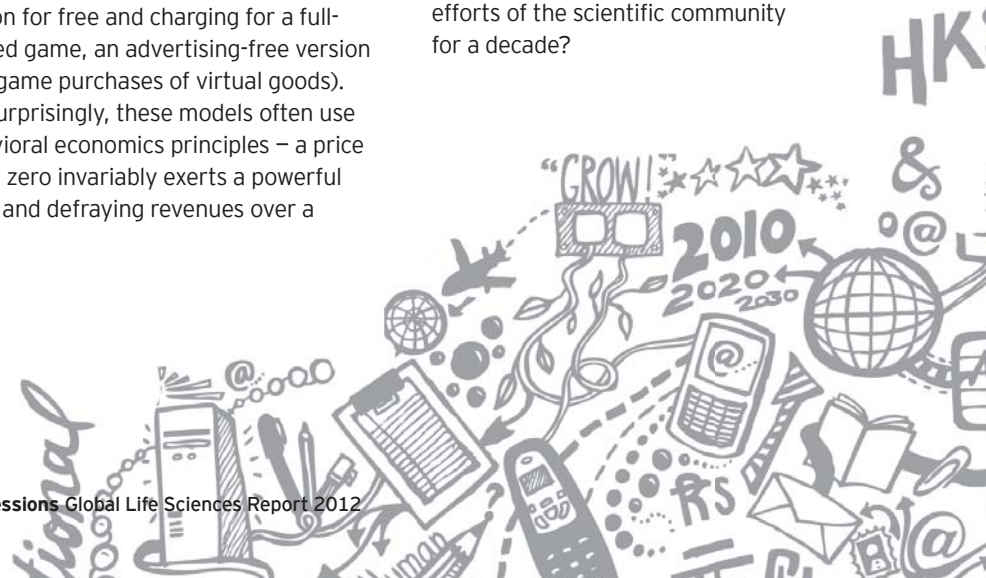
Electronic gaming

The **electronic gaming** sector's business model has also changed dramatically in recent years in response to the disruptive forces of the internet and social media, which have allowed companies to both enhance the customer experience and harness the tremendous power that games have over individual behaviors. Whereas companies once competed almost exclusively on fast microprocessors, cutting-edge graphics and video consoles, today's value proposition is based more on customizability, the social experience and the value of information. By taking games online and onto social media, a new generation of games companies is allowing customers to play with friends in far-flung locations. Instead of making large investments in building their own console-based platforms, these companies are thriving by piggy-backing on the platforms of others, such as Facebook – giving these entrants very different cost structures from companies wedded to the traditional model.

As in the newspaper sector, embracing online, data-driven, customer-centric business models has enabled electronic gaming companies to explore different revenue streams. While game publishers traditionally sought to recoup their significant R&D and manufacturing costs through relatively high-priced game consoles and cartridges, today's revenue models leverage income sources such as advertising and use freemium structures (e.g., giving away a basic version for free and charging for a full-fledged game, an advertising-free version or in-game purchases of virtual goods). Not surprisingly, these models often use behavioral economics principles – a price tag of zero invariably exerts a powerful draw, and defraying revenues over a

number of relatively inexpensive in-game purchases allows companies to tap the spontaneous nature of many purchasing decisions. Lastly, game companies are extracting more value from the information they have on their customers' behavior. Zynga, for instance, mines data on which virtual goods are most popular and then uses similar features when designing future in-game offerings. The US sales of such virtual goods are expected to increase by 50% in 2011, to \$2.2 billion. As Zynga's Ken Rudin put it in a September 2011 article in *The Wall Street Journal*, "we're an analytics company masquerading as a games company." Zynga already boasts 60 million active daily users.

Once again, these shifts parallel changes that are now under way in health care. Non-traditional entrants are moving into the health outcomes business by leveraging platforms created by others (e.g., Apple's operating system and app store) to provide solutions based on different models and/or with starkly lower fixed-cost structures. How will life sciences companies borrow a page from games companies to unlock more value from customer information and community building? Will they incorporate behavioral economics principles, not just in the pricing of their wares, but also – as discussed in Chapter 2 – to educate, change behaviors, build loyalty, recruit patients for clinical trials and more? Can they use gaming to co-create and crowdsource – as the online game Foldit successfully did when gamers unlocked the structure of an AIDS-related enzyme that had eluded the best efforts of the scientific community for a decade?





Retail trade and market exchanges

Similar shifts are visible in **retail trade**, another sector that has been disrupted by the internet and big data. In February 2011, the US bookstore chain Borders filed for bankruptcy, the latest casualty of e-commerce giants such as Amazon that give customers ubiquitous access through multiple channels instead of confining them to traditional brick-and-mortar locations. The sector's value proposition has changed. Against the onslaught of online competition, companies are no longer competing just on price and selection – they are also trying to differentiate themselves by focusing more on the customer experience and on building broad, lasting relationships with shoppers. Meanwhile, as the amount of information explodes thanks to e-commerce and loyalty programs, retailers are focusing much more on unleashing the value latent in this data. They are increasingly exploring ways of using this information not just to drive sales but also to enhance the customer experience and build brand loyalty (e.g., by customizing offers and making predictions based on customers' circumstances and preferences).

The game-changing nature of e-commerce stems, in large part, from its ability to make markets more efficient and convenient. This market exchange function has been taken to the next level by intermediary companies such as Groupon, Priceline, eBay, Gilt and others, which have taken off because of their ability to help buyers and sellers find each other as well as reduce uncertainty and increase transparency and trust for these parties.

Once again, there are evident parallels with health care. Like retail trade, health care is heading toward a future in which consumers will have ubiquitous access through multiple distribution channels instead of being confined to traditional brick-and-mortar locations (hospitals and physician offices).

There should also be opportunities to make health care markets more efficient, as market exchanges have done in the retail sector. This is something that the often fragmented and inefficient health care market sorely needs. We are already seeing companies emerge to fill this role. San Francisco-based Castlight Health is making cost and quality information transparent to consumers, employers and health plans – empowering patients, for instance, with data on out-of-pocket costs and quality measures of labs and clinics to help them make better decisions. Meanwhile, LowestMed makes information on prescription drug pricing transparent to help patients manage their health care expenses.

The challenge for life sciences companies is that customers will most likely not access individual markets or channels based on each symptom or pill. Only a few players will create the connectivity with the health care consumer to aggregate their diagnostic and fulfillment needs. Therefore, it is critical that life sciences companies build processes and plug-and-play platforms that allow for their medical information assets to be accessible and trusted.



Commercial banking

Lastly, we looked at an industry sector that realized 30 years ago that it was in the information business and has continuously expanded its business model in customer-centric ways: **commercial banking**. Long before the internet revolution, banks realized they were sitting on a trove of data, and that data about money could be every bit as valuable as money itself. So they focused on understanding customers better: tracking their behavior and mining their data to tailor services, detect fraud and more. Banks also realized that maintaining customer trust was essential – and so they built data transmission networks well before the internet took off, and placed a high premium on customer security and privacy.

This is relevant for health care not just because of the obvious parallels (focusing on customer centricity, privacy and security will be every bit as critical in health care as in banking) but also because there may be opportunities for life sciences companies to team with banks and leverage their strengths. Indeed, a number of financial institutions are actively eyeing the health care arena. (For instance, see the article by June Felix on page 54 for the opportunities that Citigroup sees in health care.) While any individual retailer has information about customer behavior and preferences with respect to a particular category of purchases (e.g., groceries, electronics, shoes) banks have a much fuller picture, since they have information about the entire spectrum of their customers' purchases. In many ways, banks were early innovators, incorporating behavioral levers when they codeveloped the first loyalty programs with airlines. And their experience in payments systems and money management could be very helpful in the new patient-centric offerings that are now being developed, where patients will look for simplicity, analytics and "one-stop-shop" solutions.



from one-off transactions to continuous relationships

Bringing convenience and efficiency to health care

June Felix
Citigroup

Managing Director, Global Enterprise Payments



Historically, life sciences companies, payers and providers have done business mostly with each other rather than directly with the ultimate consumers – patients. This relative lack of consumer experience makes it more challenging to develop a patient-centric businesses model. Here is where financial services organizations have a lot to offer – we have a long history of serving individuals, and we have developed sophisticated expertise in understanding consumer behavior and addressing consumers' primary concerns.

One of patients' top concerns is expense. Clearly, the better they can handle their expenses, the more empowered and responsible they can be about their health. Right now, consumers need simplification, clear and relevant information and convenience in payment. At the same time, businesses are wasting a huge amount on invoicing, payment processing and debt collection: in the US, patients are paying \$350 billion for health care, and payers and providers are spending \$300 billion to get that money and process it. That's tremendously inefficient. Financial services organizations are very experienced in consumer billing and payment and offer improved processes that are already bringing clarity and efficiency to health care. For example, Citi's Global Enterprise Payments service is designed to streamline billing information and explanations of benefits for the patient, and it provides useful summaries for the individual or family. By making expense and benefit information clearer and more relevant to the individual, we're enhancing patient control, decision-making, planning and responsibility.

Banks are innovating in other ways to make people's lives easier and empower them to be healthy. For example, Citi recently launched the Flu Care card to facilitate flu shots. Rather than sponsoring a flu clinic, companies can issue Flu Care cards that allow employees to go to their pharmacy of choice and get their shots without any paperwork or exchange of money – they just show their card and an ID. It's much cheaper for companies and payers, too, than flu clinics in the office or trips to the doctor.

For both patient and employer, the card brings simplicity, convenience, choice and cost reduction to the whole flu shot experience. And these drive adoption.

Driving patient behavior

The financial services industry has been analyzing consumer behavior for a long time (Citi has a 300-person decision management and analytics team). We've found that you can double adoption rates merely by providing relevant information in a highly clear, convenient way and making it very easy to act on. This correlation shows just how important this kind of information is to people in their decision-making, as well as the potential importance of it at every point in a business model where you want patients to make good decisions.

Incentives make it easier for us to do things we may not be very motivated to do. And they can be used to encourage people to make healthy choices. Our card services can help health plans and employers drive healthy behavior in individuals through a combined analysis of purchasing, website behavior, responses to incentives (a points program) and personal profiles. Citi has an online catalog of 3 million items, including 30,000 wellness items, and we can analyze activity to determine the best way to stimulate certain purchases or other health activity, such as a health risk self-assessment. We now offer a rewards platform, based on our point system, that health plans and employers can use to encourage employees to make healthy choices and take more responsibility for their wellness.

We've learned that incentive programs are powerful not only because they sway choices, but also because they keep people engaged, keep them coming back, keep them thinking. This is a high priority as patients and organizations work together on prevention and patient compliance. If your incentives can engage your patients with information that's clear, relevant and easy to act on, you'll find you have some very empowered patients.



It is striking how much commonality there is across these industry sectors and how applicable their disruptions are to today's health care system. Since many of them have been disrupted by the democratizing force of the internet, it is not surprising that customers have consistently been empowered with greater access to data, more control over decisions and ubiquitous

It is striking how much commonality there is across these industry sectors and how applicable their disruptions are to today's health care system.

access to products and services. From websites to social media and more, there has been a proliferation in the number of channels through which customers interact with companies, and those interactions have themselves been transformed from one-off transactions to continuous relationships. Meanwhile, to develop these deeper and longer-lasting relationships with their customers, companies are exploring different ways of understanding customers and extracting value from the data they collect. Empowered customers, ubiquitous access, continuous interaction, co-creation – add it all up, and it sounds remarkably similar to the vision for health care's "third place" that we described in Chapter 1. In other words, the transition to a more customer-centric, patient-empowered world is not just being driven by factors unique to health care. Many of the trends that have moved other sectors in this direction are now at work in health care – and since consumers in those other sectors are already familiar with these shifts, change could come more quickly to health care.

The shape of the future

Let's now apply these compelling shifts across the breadth of Osterwalder's business model canvas to see how the new business models will be constructed. The value proposition will expand to include elements such as ubiquitous access, transparent information, the customer experience, time/money saved and more. The key activities of companies will extend beyond developing and selling drugs and devices, into areas such as outcomes and behavioral change. To succeed in these areas, firms will tap a larger pool of key partners and resources. Customer relationships will be transformed from onetime transactions to ongoing relationships that involve co-creation and shared value. Companies will engage with patients using multiple channels, including mobile networks, social media and other communities. Lastly, many of the new patient-centric models will have very different cost structures (e.g., online services with little overhead) as well as opportunities for realizing revenues from a wider range of sources (e.g., mining patient data, advertising).

Successful patient-centric business models will, to varying degrees, be data-centric, behaviorally savvy, experience-focused, holistic and revenue-flexible.

This listing is just a small subset of the wide range of changes that companies could make as they adopt patient-centric models for the third place. While it's hard to predict exactly what these models will look like – each company's answers will depend largely on its circumstances and strategic direction – it is likely that these models will

have some common features. Specifically, we expect that successful patient-centric business models will, to varying degrees, be data-centric, behaviorally savvy, experience-focused, holistic and revenue-flexible.

1. Data-centric. The ability to harness and monetize insights from data – obtained from sensors, devices, social media threads and more – will become critical, and new business models will recognize the primacy of data in some way. This may take the form of partnering with companies that have deep pools of patient data to identify new ways of improving patient outcomes (e.g., Pfizer's alliance with Humana). In other cases, health ecosystem companies are collaborating with non-health companies that bring expertise in analyzing data (e.g., Wellpoint's agreement with IBM that seeks to leverage the artificial intelligence capabilities of big blue's Watson supercomputer technology). We expect to see more examples where companies provide a heavily discounted or free product or service to patients while extracting value from the data that results from these interactions (e.g., the consumer genomics company 23andMe). The details of each business model will differ, but a common thread through many of them will be that they are looking to create, deliver and extract value from data.

2. Behaviorally savvy. As companies are more on the hook for improving health outcomes and competing on the promise of personalized medicine, they will need better insights about incentives that truly work. The science of **behavioral economics** will combine with the science of drug discovery to offer potent solutions. We are already seeing start-ups that are building creative and credible models that marry behavioral economics insights with new technologies and social networks. Expect to see more. It is almost inevitable that big life sciences companies will see the promise of adherence finally in their grasp and create behaviorally savvy business models of their own.

3. Experience-focused. In a customer-centric world, brand is built by enhancing the customer experience. Historically, life sciences companies' customers have been doctors, and the customer relationship has primarily been in the form of sales representatives pitching products. As they move ahead, firms will instead need to understand the attributes that matter most to patients – and deliver on them. For doctors, this will include practice management insights and analytics, while patients will value interactive relationships and products or services that are segmented according to patients' preferences, rather than disease categories.

Personalization and mass customization will become key means of enhancing the experience of each individual. A century ago, Henry Ford famously stated that “any customer can have a car painted any color that he wants so long as it is black.” A lot has changed since then. Today, you can choose a Ford (or any other car) in the color of your liking, and can customize scores of other options while you're at it – all from your living room. Nike runs a profitable mass-customization business on its Nike iD website, where individuals can custom design every aspect of their shoes. Health care now needs to learn from these and scores of other products – from credit cards to M&Ms candies – that allow users to customize their products. A world in which patients get products or services more precisely tuned to their needs is a world in which life sciences companies will have a better shot at engaging patients, influencing their behaviors and improving their outcomes.

a closer look



Mark Yeomans
Ernst & Young LLP



Supply chains for a patient-centric world

So far, life sciences companies essentially have had business-to-business (B2B) models, a reflection that their primary customers have been health care providers and pharmacies supplied by wholesalers and agents. But as health care moves toward a more patient-centric, health care-everywhere future, companies will need to move not just to business-to-consumer (B2C) models, but in some sense to more complex “B2ManyCs” versions as well. They will need agile, distributed and consumer-centric models to meet the expectations of empowered patients seeking health care that is convenient and matched to their individual lifestyles.

How will life sciences supply chains be disrupted as patients drive this shift from product-centric to patient-centric models? And how will value be measured by patients, payers and businesses themselves? Four imperatives are in play:

- ▶ **A different portfolio of products and services.** The product is no longer an undifferentiated molecule that works for every patient – instead, products will be differentiated by technology and the services that are bundled around them. Dosage, frequency, test results and cost/credit will all allow life sciences companies to work with several differentiated supply chains to deliver health care anywhere, anytime.
- ▶ **New delivery models.** Borrowing a page from the consumer products sector, life sciences companies will be faced with the challenge of packing products and their component parts and delivering them to wherever customers are. Customers will be at the center of the value chain.
- ▶ **Tiered services.** Supply chains will deliver products in ways that make execution more complex and time-sensitive. Depending on patient needs and the perceived value of the product, different delivery methods will be offered. For example, companies may differentiate between high-volume/low-cost and highly tailored/low-volume products with different delivery methods and levels of service. Batches of products could be uniquely identified and shipped, whether weekly or daily, based on the tier of service matched to clinical need and the economics of the channel.
- ▶ **Focused business models.** As incentives change, some life sciences companies could become niche players, choosing to execute on strategies that match their products, company values and strengths. For instance, some firms may focus on large teaching hospitals, where increasingly urbanized patients have access to the most leading-edge therapies. Other companies may outsource functions to create new exchanges where multiple product owners can scale delivery to targeted customers.

Patients remain at the center of this transformation, driving change throughout the health ecosystem as they seek information online, increase self-awareness about their own health and form communities through social media. As they make more empowered decisions, creating or maintaining health will be seen as a valued commodity, as opposed to simply treating illnesses.

In recent years, food manufactures have shifted from wholesale to direct retail distribution, and retailers have begun offering real-time delivery of digital books to customers anywhere, anytime. By the same token, life sciences companies will find themselves valued on how well they can adapt their supply chains to meet the preferences and needs of individual patients.

real opportunity for innovation and new revenue streams

As devices and diagnostics move increasingly into the hands of their ultimate users, manufacturers will need an exceptional focus on **industrial design**. It will no longer be simply about whether a product works, but about how well it interfaces with patients and reflects their needs and preferences. Is your offering user-friendly and intuitive? Does it allow patients to access and manage their own data? Does it integrate seamlessly with smartphones and social media? In last year's *Progressions*, Don Jones of Qualcomm talked about pill bottles that can seamlessly order refills because they are smart and wirelessly connected. A medical product that is designed to make the user experience convenient and even enable a personalized supply chain? That's a very powerful proposition, and quite different from the way devices are often designed today. In his recent eponymous biography, *Steve Jobs*, Walter Isaacson describes how dissatisfied Apple's late CEO was with the design of the medical devices being used in his cancer treatment. Perhaps it isn't surprising that the business leader most identified with bringing elegant design to millions of consumers refused to wear a medical mask because he couldn't stand its design. After all, most medtech devices have so far been designed for providers rather than patients. But that is already changing, and devices designed for the patient will change business models dramatically.

4. Holistic. In the outcomes business, it will become increasingly important to approach issues in a holistic and comprehensive manner. We are already seeing life sciences companies expanding their strategies to focus on certain diseases in a comprehensive manner – playing in prevention, diagnosis, monitoring and more.

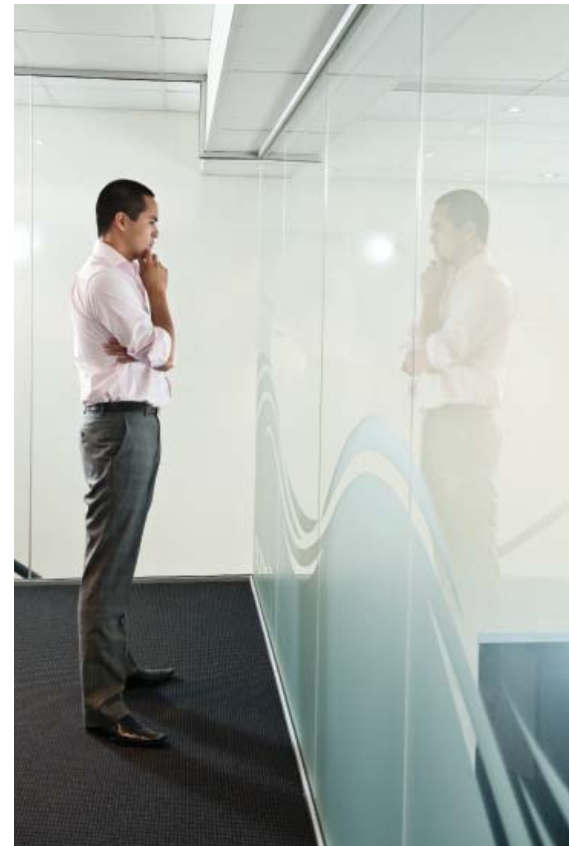
Such models represent a significant shift – companies are expanding to participate in the entire cycle of care, from prevention and detection through treatment and cure. But we expect to see more. Companies will increasingly develop models that encompass not just the cycle of care but

It will no longer be simply about whether a product works, but about how well it interfaces with patients and reflects their needs and preferences.

the life cycle of the patient (from cradle to grave). A lifelong relationship with patients will allow companies to understand the patient experience and preferences at a more profound level. Even more critically, it will allow them to capture longitudinal data that provides a fuller picture and deeper insights into patient behaviors, genetics, environments and outcomes.

5. Revenue-flexible. So far, life sciences companies have bundled everything they know and all the value they create into the price of the product. But that revenue model is under duress. Companies are putting more and more investment into making their products and approaches “smarter” in an effort to hold the line on last year's prices. But the real opportunity for innovation and new revenue streams is in relationships that generate information and insights.

Consequently, we expect revenue streams to diversify in the patient-centric business models of the third place, much as they have in many of the industry sectors discussed above. Whereas electronic game publishers once sought to capture all of the value they produced in high-priced consoles and cartridges, firms such as Zynga and others are extracting value from customer data and are earning revenues from in-game purchases, premium game versions and more.



The accompanying table summarizes a few revenue/pricing structures that sectors other than life sciences have used, and which may be applicable for new life sciences business models. We expect to see **data monetization** models that follow the lead of Zynga's games, retailers' loyalty cards and Facebook's platform – heavily discounting the main customer offering while instead capturing value from customer data. In health care, this model could be very applicable in spaces such as social media and smartphone apps. It could also be a key component in the creation of disease networks – companies might choose to provide free or heavily discounted care for patients while capturing value from patient data. (For more on disease networks, see the article by Sanjeev Wadhwa on page 72.)



Disrupt thyself?

The discussion so far has some clear implications for where the life sciences sector is headed, as well as for the sorts of changes that will keep companies' business models relevant. But unfortunately, making these changes will not be easy. While other sectors may provide some insights about business model disruption, the fact is that many of those disruptions were instigated by start-ups and non-traditional entrants rather than by incumbent companies. Indeed, many incumbents – from hundreds of small-town newspapers to retailing giants such as Circuit City and Borders – have struggled to survive. The bottom line is that it is often extraordinarily difficult for mature companies to disrupt their own business models, because of their existing structures and incentives. This plays out in at least three ways:

Novelties and niches. It is typically difficult to understand the potential of disruptive innovations, since they are initially embraced by a small core of early adopters and are put to uses that peg them as novelties rather than mainstream products. When the microblogging site Twitter first emerged on the scene a few years ago, many dismissed it as a novelty that enabled the self-obsessed to broadcast every detail of their lives to their hapless “followers.” At the time, it was hard to appreciate

the platform's mainstream commercial potential – much less imagine the central role it would play in fueling protests from Cairo's Tahrir Square to New York's Zuccotti Park.

Customer centrality. Most of the discussion in this chapter points to the need for increasingly patient-centric business models. Yet, there are situations in which certain kinds of customer centrality can actually hamper a company's ability to embrace disruptive innovations. This is something that Clayton Christensen – who coined the term “disruptive innovation” and has produced decades of seminal research on the topic – has documented in scores of industries. The problem, as he points out, is

The bottom line is that it is often extraordinarily difficult for mature companies to disrupt their own business models, because of their existing structures and incentives.

that companies are focused on their existing customers, who are often unimpressed by new innovations. Since these disruptive offerings do not meet the needs of existing customers, incumbent companies dismiss them. However, the disruptive innovations typically improve quickly and are soon able to meet the needs of existing customers while also offering other advantages. At this point, they gain mass-market acceptance – but it is often too late for the incumbent companies that dismissed them to catch up.

Insignificant revenues and profits.

Because of the reasons identified above, disruptive innovations often have insignificant revenue streams at the outset. Of course, this situation changes over time, given their ability to rapidly improve, gain market share and redefine the market. But because their initial revenues are miniscule compared to the revenue streams that mature companies' existing products have (so far) delivered, they have a hard time attracting capital.

Life sciences companies have been here before. Many big pharma companies, for instance, dismissed specialty and orphan drugs for years because of the blockbuster effect – such products were insignificant to them, given their existing revenue streams and cost structures. In recent years, of course, we have seen an about face as these companies have rapidly expanded their business models to embrace such products. Now, the challenge for life sciences companies will be making sure that they aren't similarly dismissing the innovative patient-centric, outcomes-focused business models and offerings that will be increasingly important in the future.

disruptive innovation

Guiding principles for business model disruption

Here are four guiding principles for life sciences leaders as they address the challenge of disrupting their own business models:

(1) Move quickly

The life sciences sector sometimes views itself as different from other sectors. In some ways, this is valid. Admittedly, for all the similarities with the industries we analyzed earlier, the analogies aren't perfect. Life sciences companies are regulated to a degree unheard of in many other sectors, which places some real restrictions on what they can say and do. And economic incentives for most drug and device companies are not determined by an unrestricted free market, but by payers – who have historically not focused sufficiently on measuring and rewarding improvements in patient outcomes and making costs transparent for end users.

Still, life sciences companies are not immune from the sorts of disruptions that have swept other sectors, and if they use regulatory uncertainty as a reason for inaction, they may do so at their own peril. Payers are already moving to realign incentives. Patients are actively embracing

new platforms and channels for managing their health care. And many non-traditional entrants are not constrained by regulatory uncertainty. A lot of this experimentation – whether by patients adopting new technologies or payers creating incentives for accountable care organizations – may seem like niches today. But as discussed above, disruptive innovations can rapidly grow as new offerings learn, improve and gain market traction.

This is particularly salient for big pharma. While medtech companies are used to rapid innovation cycles, drug companies have traditionally played by a different set of rules. While the regulatory regime for drug approvals is unlikely to change any time soon, more and more value will instead be generated by the ability to capture and use data to improve outcomes for patients. The time horizons will resemble the frenetic, Moore's Law-governed world of tech rather than the patent-secured domain of pharma. When the world is changing faster on the outside than the inside, companies need not just to innovate, but to out-innovate the competition.

Time is not on your side. Don't underestimate the pace of change.

(2) "Think different"

In the fall of 2009, when we organized a DesignShop for the 2010 issue of *Progressions*, many of the simulation exercises used Flip video cameras. At the time, these pocket-sized camcorders – which were inexpensive, generated HD video and had integrated USB ports for easy video transfer – were a red-hot item. Indeed, only two months after our session, technology giant Cisco acquired the company that made the Flip for an impressive \$590 million.

The real potential, though, may lie in thinking about markets more broadly. What need is your product fulfilling? What need could it fulfill?

A couple of years later, the landscape changed dramatically. Our 2011 DesignShop used a new darling of consumer electronics, one which didn't even exist in 2009 – the iPad. Meanwhile, the Flip camera underwent a dramatically different trajectory, culminating in Cisco's decision to shutter the unit in April 2011.

These developments are not unrelated. Apple's innovations – the iPhone and the iPad – essentially disrupted the market that the Flip camera had created. And this is no isolated example. The iPhone didn't merely remake the market it ostensibly entered – mobile phones. It is also disrupting many other markets, and analysts predict that numerous other product categories will be eliminated because of the iPhone or iPad, including point-and-shoot cameras, stand-alone GPS devices, netbooks, dedicated e-readers, portable DVD players and more.





This is an essential truth of disruptive innovation today. We are witnessing greater convergence across industries (as non-traditional players enter new markets, looking for revenue opportunities) and across technologies (as new platforms with embedded sensors and greater connectivity enable broader uses). This presents both a threat and an opportunity for life sciences companies. The threat is that disruptive entrants will dominate the new revenue stream opportunities in health care, relegating incumbents to lower-margin activities. But there is also an opportunity for companies that recognize that markets for their new offerings are not limited by old boundaries.

In his 2010 bestseller, *Cognitive Surplus*, Clay Shirky argues that modernity has given people a “surfeit of intellect, energy and time” – a concept he terms a cognitive surplus. In the post-war era, most of that surplus has been absorbed by television, which helped people feel connected in an age of increasing isolation. Shirky explains the rise of social media through this lens, arguing that social networks have reclaimed much of the cognitive surplus from TV by offering people more productive and interactive ways of connecting with each other. Shirky estimates that Americans watch 200 billion hours of TV annually – enough to create two thousand new Wikipedias every year. Web 2.0 has taken off because it didn’t merely redirect the time that people were spending on Web 1.0 activities – it also appropriated much of the time and resources they were devoting to TV.

But the convergence of the two sectors also created opportunities for TV to embrace the disruptive innovation of social media – and, to their credit, at least a few companies

in television recognized the potential and acted on it. While other media segments were often caught flat-footed, Fox and NBCUniversal collaborated to create Hulu, the industry’s answer to YouTube. Hulu succeeded because it recognized that the value proposition had fundamentally changed from the executive-programmed, carefully orchestrated world of broadcast television to the customer-centric attributes that online viewers value – user control, flexibility, simplicity and social-media compatibility. Instead of requiring users to download a proprietary player (something that had caused earlier efforts to founder), Hulu worked in any web browser. It even allowed users to embed videos on blogs or other third-party sites. The joint venture insisted on getting access to the vast majority of Fox and NBCUniversal’s programming – and even added a search function that took users to programming on competitors’ websites. Hulu became a runaway success within months of its 2007 launch. Over time, the venture has attracted more media networks and has added new revenue streams when it created Hulu Plus – a premium service that charges a monthly subscription fee.

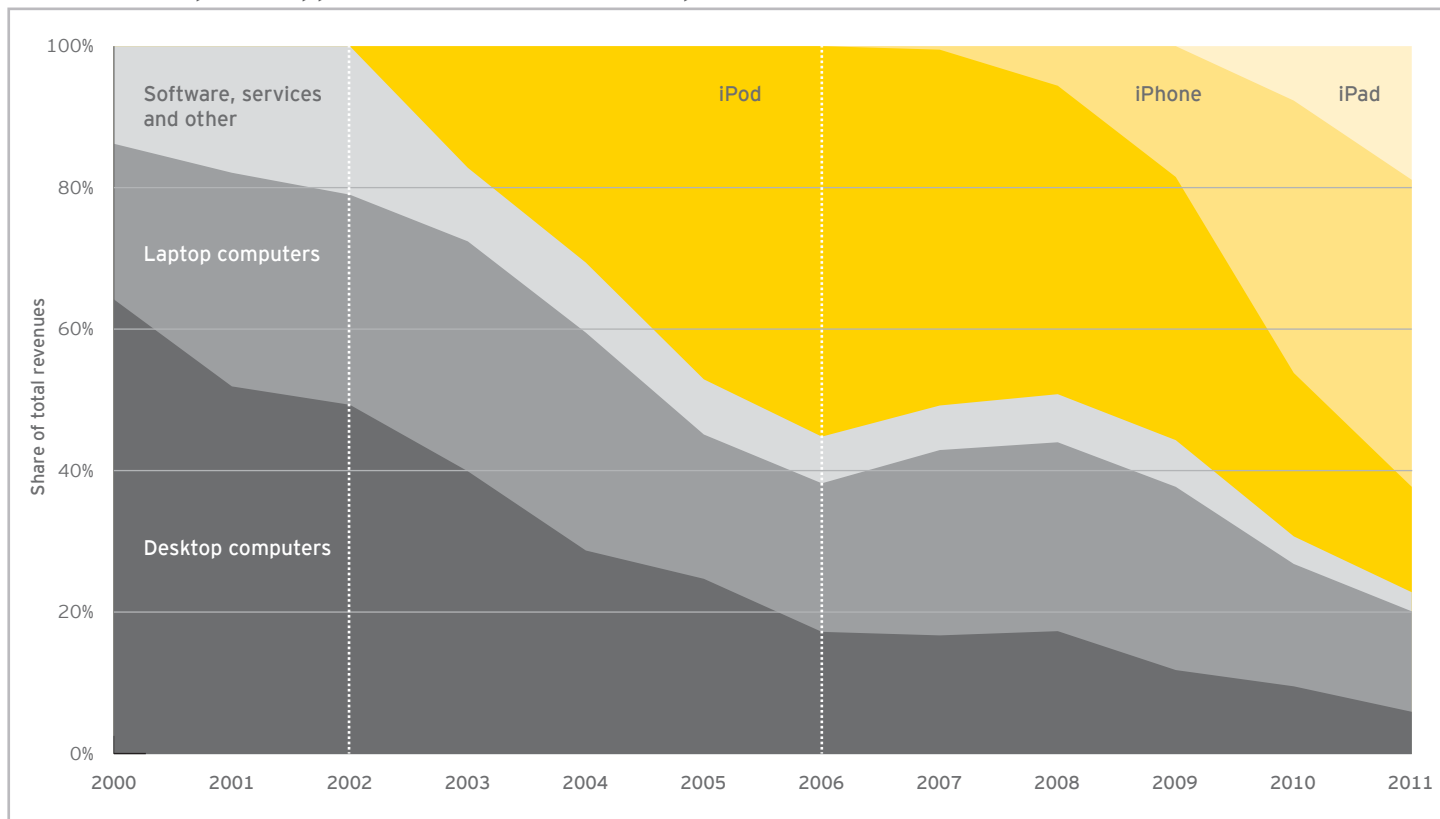
The same principles could apply in health care. Many of the new pilots and offerings that life sciences companies are experimenting with may seem miniscule, particularly when compared to blockbuster drugs and devices. Until payers embrace these new offerings more broadly, executives wonder how much patients will ultimately be willing to pay out of their own pockets. The real potential, though, may lie in thinking about markets more broadly. What need is your product fulfilling? What need *could* it fulfill? Americans spend about \$34 billion annually on complementary and alternative medicine – everything from herbal supplements to massage therapy and acupuncture. Why are the needs of these individuals not being met by mainstream drugs and devices? How much of this spending could life sciences companies capture if they truly understood the needs and motivations of these patients?

To take another compelling example, consider the untapped surplus in electronic gaming. People spend 3 billion hours a week playing games, largely because (as discussed in Chapter 2) games give them feelings of accomplishment, motivation and more – even when much of the experience involves repeatedly “failing.” What if life sciences companies were able to develop new game-oriented business models that incorporated some of these value propositions? If people get a sense of accomplishment by succeeding in virtual worlds, how much more satisfied might they feel with games that enabled *real-world* results such as weight loss or improved health? If life sciences companies could appropriate even a small fraction of the time and money that individuals spend on games, it could be, well, a game-changer.

New sources of revenue from the untapped surpluses of far-removed industries and activities have the potential to transform a shrinking pie into a growing one. Instead of pitting health care’s existing stakeholders against each other, this allows for better alignment of interests.

One reason why health care reforms are so divisive is that they are often viewed as a zero-sum game. In a world where costs are under increasing pressure, it is perhaps inevitable to assume that gains by some constituents – e.g., providers, payers, drug or device companies – imply corresponding reductions for other constituents. But as they expand into the patient-centric business models of the third place, life sciences companies can also take inspiration

Creative disruption: Apple's business model has expanded over time



Source: Financial statements, Ernst & Young.

Note: data for iPod, iPhone and iPad include related products and services.

from Apple's well-known advertising slogan and "think different." New sources of revenue from the untapped surpluses of far-removed industries and activities have the potential to transform a shrinking pie into a growing one. Instead of pitting health care's existing stakeholders against each other, this allows for better alignment of interests.

It turns out that Apple is relevant here for more than its slogan. The company from Cupertino has expanded into new revenue sources over the last decade or so in ways that provide useful context for life sciences companies looking to disrupt their own business models. As shown in the chart above, Apple was exclusively in the computer hardware and software business until 2002, when it launched the iPod. Within just four years, the iPod had become its largest revenue-generating product, accounting for 55% of revenues in 2006. Of course, the story doesn't end

there. The process repeated itself with the next two generations of product categories, the iPhone and iPad, which rapidly overshadowed the iPod. In 2011, these two products collectively accounted for 62% of Apple's revenues, while the iPod fell to 15% and the computer business – Apple's *only* business just a decade earlier – contributed 23%.

Most readers will not be overly surprised by these changes – the story of Apple's runaway success has been widely covered in the media. But it is worth remembering that when the iPhone and iPad were first launched, few could have predicted the impact that they – along with related sales of apps – would ultimately have. The same sort of business-model extension analysis could be done for IBM (which extended its business model to go from computers to services), Amazon (which disrupted not just retail trade but also cloud computing

services and more) and scores of others. In industry after industry, we see the same pattern: businesses that are peripheral quickly move to the core, while those that were core become commoditized.

Today, big pharma is on the cusp of such a transition. Leaders at life sciences companies may find it hard to appreciate how big these revenue streams could become – just as it was difficult to anticipate how big Apple's move into music and apps would ultimately be. But if the history of other sectors is any guide, the potential could be every bit as significant as the threat to those who don't embrace disruption and significantly extend their business models to learn and act on what their customers want.

*You can disrupt or be disrupted.
Would you rather have made the iPhone
or the Flip camera?*

(3) Follow the value – not the money

As they consider investments in disruptive business models, companies often start by asking the same questions they do when they evaluate investments in sustaining their traditional business models. Yet, as Clayton Christensen and others have pointed out, the financial metrics used to evaluate most business investments – discounted cash flow, net present value, earnings per share – can be “innovation killers” for disruptive-innovation experiments. Quite simply, the starting point should not be: “How much money will we make?” Instead, the first question to focus on is: “How can we change the value proposition for the customer?”

In scores of other sectors, successful disruptions have come from radically new offerings and value propositions – and revenues and profits have followed in due course. Google’s initial focus, for instance, was on giving customers more value – the company’s crowdsourcing-based algorithm created a niche by delivering search results that were shades more relevant and accurate. It was only over time that Google figured out how to monetize its innovation.

The accompanying chart provides a road map for companies as they invest in new business models. As shown, the starting point is figuring out where to play – essentially, areas that align with a company’s strategy and where it can create new value propositions for customers. Next, companies focus on questions related to the “creating value” and “delivering value” segments of the business model canvas – identifying partners, competencies, channels, etc. Questions related to how the business model will “capture value” are secondary at this point.

a closer look



Jeffrey Greene
Ernst & Young LLP

Ben Perkins
Ernst & Young LLP

Strategic finance drives shareholder value

In the 2010 and 2011 issues of *Progressions*, we described the “capital agenda” – a framework for raising, optimizing, preserving and investing capital amid the unprecedented uncertainty and opportunity of the post-crisis economy and the health outcomes ecosystem. Companies now need to focus on “strategic finance” – synthesizing the capital agenda with the new rules of corporate finance required for success in the health care-everywhere future. These new rules include:

- ▶ **Capital allocation.** The scarcity of internally generated capital parallels the external scarcity many life sciences companies face in the capital markets. There are simply not enough funds available to continue investing in R&D, business development and shareholder payouts at historical levels – and investors have ratcheted up their scrutiny. To support sufficient investment in third-place initiatives, CFOs must continue to revamp their tools, metrics and processes for allocating capital. Our research shows billions of dollars in excess working capital across the industry. Investment appraisal models need to incorporate the value of the optionality provided by commercial trials – and not just “haircut” the valuation for uncertainty. In essence, the mind-set and tools (and risk tolerance) used to allocate R&D resources need to be adapted for business model innovation.
- ▶ **Portfolio management.** Rationalizing business portfolios continues to free up resources for third-place initiatives. Leaders are reassessing the benefits of diversification as they confront the costs of complexity and size. Increasingly, forward-thinking CEOs focus on “owning” a disease – participating more fully in the value pathway across patented and generic drugs, diagnostics and related services. Emblematic of this trend, Endo Pharmaceuticals recently changed its name to Endo Health Solutions and now focuses on “end-to-end health care solutions in pain management and urology ... for the benefit of physicians, payers and patients.”
- ▶ **Transaction strategy.** On top of executing these portfolio management and third-place-driven deals, CFOs also have to solve the puzzle of transacting in emerging markets. Very few western companies have achieved their stated goals for revenue growth in the BRIC countries and beyond. Equally important, emerging markets have become a source of innovative business models for health care delivery that could provide competitive advantage in developed-market third places.
- ▶ **Financing and capital structure.** The creative financing structures and sources seen in life sciences joint ventures and M&A deals are now being used to address resource constraints and drive emerging markets progress. Traditional players have begun to consider unlocking value in their unexploited pipeline assets and underdeveloped marketed products by sharing the investment risk and upside with third parties. This also helps meet earnings commitments at a crucial time of patent expirations. In emerging markets, western companies are learning to appreciate that great value can be generated through minority positions.

Adopting a strategic finance mind-set will help management win in the health care-everywhere future by informing strategic and operating decisions with capital-market and evolved corporate finance insights. Success requires a holistic decision-making approach that embraces global opportunities with a new attitude toward commercial risks.

How can we change the value proposition for the customer?

This is not to say that these business model investments do not have the potential to generate significant revenues and profits – just that those opportunities will only become clearer over time. Indeed, the creative ways in which other sectors have tapped new revenue streams could be very applicable in life sciences. For life sciences

The starting point should not be: “How much money will we make?” Instead, the first question to focus on is: “How can we change the value proposition for the customer?”

companies, the value of everything they know and everything they produce has historically been embedded in the price of their products. In the last couple of issues of *Progressions*, however, we observed that as companies expand into new offerings, they have an opportunity to decouple value from drugs and devices.

Focus on the right question. How are you creating value for patients?

(4) Moon shots matter

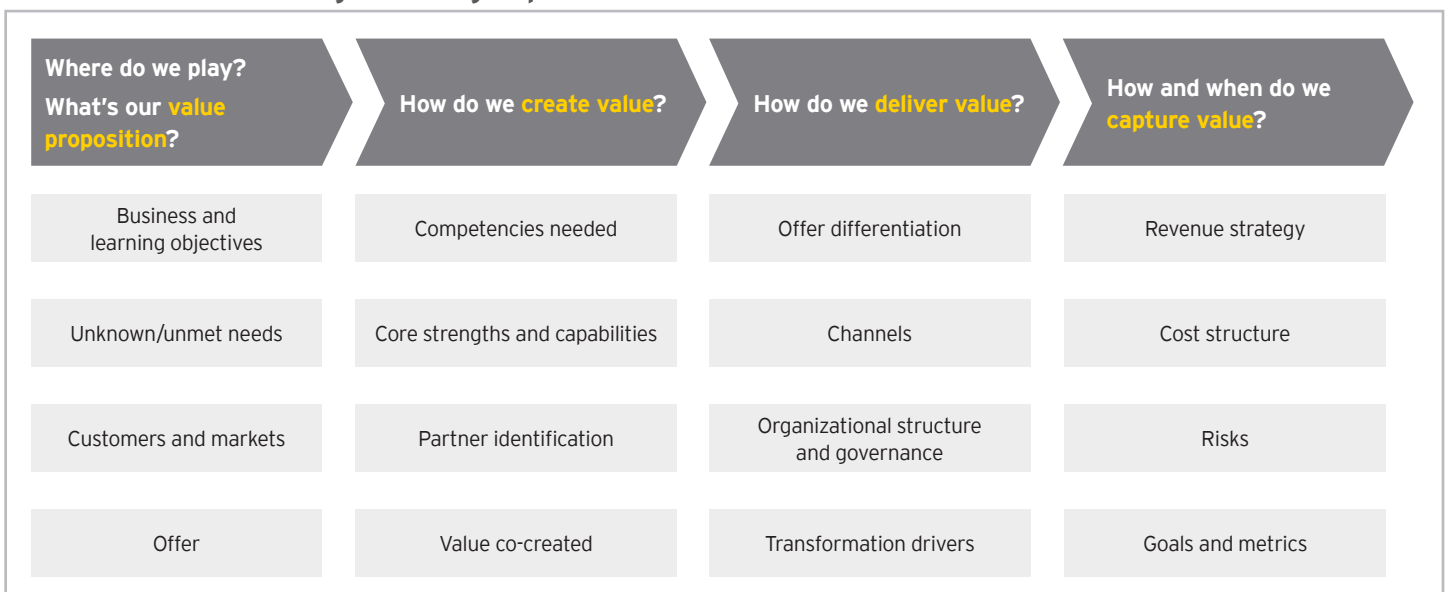
In May 1961, President Kennedy’s famous “moon shot” speech set forth a bold strategic vision: the US would send a man to the moon and return him safely to earth before the end of the 1960s. The accomplishments that followed remain embedded in the American ethos a half century later. Within a little over eight years after the speech, NASA’s Apollo 11 mission landed the first humans on the moon. The scientific advancements that enabled the moon mission established the US as the world’s leading superpower and paid dividends in private sector R&D as well.

Today, as life sciences companies stand before an uncertain future in which the very essence of their business is being radically disrupted, they could use a similar call to action. Walgreens, for instance, is in the midst of a comprehensive revamping of its strategy that was ignited with its own moon shot: the company is attempting to expand from a traditional pharmacy into a comprehensive health outcomes business. It is turning the traditional footprint ratio of its stores on its head, by devoting much more space to health services than retail. (For more on Walgreens’ strategy, see the article by Alexandra Jung on page 66.)

Life sciences companies have launched some significant strategic initiatives for the third place – most notably, as discussed earlier, in seeking to “own” certain diseases. But there is a striking absence of a bold and comprehensive call to action.

This is particularly critical because, as we pointed out earlier, it is very difficult for large, mature incumbents to disrupt their own business models. Committing to a moon shot liberates the innovative and creative juices of an organization’s talent – the ultimate source of innovation – and articulates strategic direction. When Xerox started disrupting its business model – a journey that transformed the company from a manufacturer of copying equipment to a document management enterprise – its CEO at the time, Anne Mulcahy, went so far as to write a fictional *Wall Street Journal* article articulating the company’s post-transformation performance. This implicitly gave the company’s employees permission to make many small bets, all pursuing the same ultimate goal. Today, life sciences companies have a huge risk tolerance for R&D experiments – the vast majority of which fail – but very little tolerance for risk and failure in commercial model innovation.

Follow the value: focusing on the right questions



Source: Ernst & Young.

a closer look



Dan Shoenholz
Ernst & Young LLP



Michael Botos
Ernst & Young LLP



Mapping strategic transformation

In the evolving health care environment, existing business models are no longer sufficient to deliver the pace of growth and innovation required to compete. Companies are making bold moves to significantly expand their solution offerings, enhance their value propositions and extend their care delivery ecosystems in an effort to improve patient outcomes and lower the cost of care. “Patient-centered” is no longer just a buzzword – it is becoming a way of life for industry stakeholders.

Successfully navigating the changing dynamics of health care requires a focused strategy that defines a clear path forward. However, the dynamic nature of change in the health care landscape will also require an iterative, adaptive approach to strategy development. As always, the strategy must be supported by a clearly defined road map to the future.

But getting from strategy to results is especially challenging in an environment where there are so many unknowns. Still, enough is known today for leaders to design a clear and actionable strategy based on their capabilities and operating environment, outline their future operating model and create a plan for rapid and effective execution. This road map for strategic transformation has four key elements:

- ▶ **Anchored.** The road map should be grounded in a well-defined, focused strategy, incorporating an objective assessment of the organization’s strategy and capabilities and emerging threats in the external environment. A well-defined strategy requires a clear understanding of the current situation, including market size, growth forecasts, key competitors, emerging technologies and other drivers of change.
- ▶ **Dynamic.** The road map must be sufficiently flexible to support the portfolio of business model and non-traditional partnerships that will be required to achieve a successful transformation. As business model experiments achieve success, the road map should support a development process that ensures rapid scalability. Similarly, it must allow for rigorous prioritization of opportunities and support “letting go” of unsuccessful experiments after minimal investment of time and effort.
- ▶ **Holistic.** The road map should be comprehensive. It should include an assessment of requirements and capabilities (process, technology, sales/service and organization/human capital) and cover key business model elements (partners, economics, value proposition, etc.) that are critical for execution.
- ▶ **Measurable.** Lastly, the road map must include clear goals, timelines and metrics for success. These measures must drive accountability for progress toward longer-term goals while focusing on the need to deliver short-term results. Measures that are too short-term or not appropriate to the maturity of a particular initiative, or that do not take a holistic approach to the initiative’s value, could be “innovation killers.” An integrated dashboard that includes dependencies and key metrics is also a valuable tool for aligning interests and communicating with stakeholders across the organization.

A strong, actionable road map is vital for getting from strategy to successful execution. With it, a company can prioritize initiatives, align interests, identify gaps and dependencies and measure progress toward the longer-term goal of realigning the organization’s strategy for health care’s third place.

To protect these moon shot efforts from the innovation-killing pressures and metrics of the rest of the business, it is often smart to set up an independent business unit or venture, and to use appropriate long-term metrics. For instance, when Johnson & Johnson set up Janssen Healthcare Innovation (JHI) in 2010 to build disruptive business models, JHI got an independent budget and long-term growth objectives – but no overt pressure for generating revenues in the near term. (An article by Diego Miralles, JHI’s head, can be found on page 17.) Similarly, as IBM disrupted its PC-manufacturing business model, it created incentives to promote and reward executives who were embracing the new culture.

Committing to a moon shot liberates the innovative and creative juices of an organization’s talent – the ultimate source of innovation – and articulates strategic direction.

There’s a lot more that companies will consider as they think about change management. How do you sustain a sense of urgency over time? How do you appropriately measure interim progress toward long-term goals? How do you create a learning organization that remains nimble in a rapidly changing health care environment? Exploring these issues fully would require its own chapter. For now, what’s important is that companies communicate the importance and urgency of business model disruption and provide an environment that will encourage and sustain innovation by bold leaders.

Behavioral economics is not just for patients. The right call to action, structures, incentives and metrics will drive behavior and success. What’s your moon shot?

Walgreens' strategic transformation



Alexandra Jung
Walgreens Health Services
(Former) Senior Vice President



Several years ago, Walgreens was faced with a strategic decision around whether to go to market as a pharmacy benefits manager (PBM) or to divest this portion of its business. The goal was to go to market as a health care provider.

Instead of going the PBM route, Walgreens chose a bolder, patient-centric, outcomes-focused strategy. The nation's largest drugstore chain decided to extend its business model deeply into the provider space, fundamentally reinventing itself by focusing on establishing partnerships to improve health care delivery and patient outcomes.

A bold new model

To transform Walgreens' business model, the leadership team devised a three-part strategy, beginning with several targeted pilots and eventually scaled the strategy across entire markets. This plan included:

1. Transforming the community pharmacy. The footprint of Walgreens' traditional stores was split between retail and pharmacy/health care services. In the new store model, the company devoted more space to health care. An all-new health and wellness wing was introduced. This includes a remodeled pharmacy and integrates several innovative features: Walgreens Take Care Clinics, where customers can walk in and receive professional health care; a multipurpose room, where patients can receive health screenings and immunizations in a private area; and a room for community-based health events, from wellness events to biometric health fairs.

2. Upgrading information technology (IT). To enable this transformation, Walgreens made a differential investment in IT. The company launched a multi-year IT upgrade that provides a seamless view of patients, wherever they are being serviced in the Walgreens network. New patient-facing portals empower customers to schedule appointments, access information about health conditions and share health contacts. Wireless technology opened the door for employing Health Guides and equipping them to communicate with customers wherever they are in the store.

3. Putting pharmacists to their best use. To reposition itself as a health care company, Walgreens focused on fully leveraging the clinical and intellectual capital of pharmacists, bringing them

out from behind the counter to have more conversations with patients – not only about prescriptions, but about health care overall. Additional development was provided by credentialing pharmacists in disease management and providing them with additional skills in patient consultation.

Building community connections

A key aspect of this strategy is building relationships with community health care providers. Walgreens partnered with Northwestern Memorial Hospital in Chicago to collaborate in the care of a pilot group of patients. Patients agreed to select a primary care physician that would navigate care and to comply with their medication therapy by participating in monthly counseling sessions with a Walgreens pharmacist. Through the use of technology, physicians have real-time access to medication adherence, and pharmacists have information about physician encounters. When patients come to the store to pick up their prescriptions, pharmacists can advise them on behalf of physicians. The goal is not to compete with traditional health care providers but to be an extension of their services. Both organizations have reported an increase in medication adherence since the program began. Physicians are also leveraging nurse practitioners in Walgreens' Take Care Clinics for after-hours and weekend support, a measure designed to reduce patient visits to the emergency room.

Responding to change

Walgreens' attempts to disrupt its own business model recognize how health care is changing. The company is putting its assets to their best use, by unleashing the value in the clinical intellectual capital of pharmacists. At a time when health care is focused on health outcomes and value, Walgreens is moving up the value chain and partnering with others to move more deeply into improving patient outcomes and the health care delivery experience.

When we interviewed Alexandra Jung for this piece, she was Senior Vice President at Walgreens Health Services. She has since joined Ernst & Young LLP as a Principal.

Guiding principles for business model disruption

Move quickly

Time is not on your side. Don't underestimate the pace of change.

Are you moving quickly enough to out-innovate the competition?

"Think different"

You can disrupt or be disrupted.

Would you rather have made the iPhone or the Flip camera?

Follow the value – not the money

Focus on the right question.

How are you creating value for patients?

Moon shots matter

Behavioral economics is not just for patients. The right call to action, structures, incentives and metrics will drive behavior and success.

What's your moon shot?

Source: Ernst & Young.

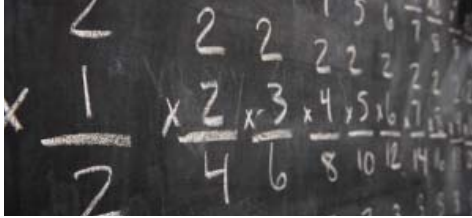
Moving ahead

In our discussion so far, we've explored how life sciences companies can influence patient behavior as well as how companies can disrupt their own business models.

But success will also require a third component – coordinated change with other constituents of the ecosystem. Life sciences companies do not operate in a vacuum – they are part of a complex and interdependent ecosystem. As such, their best efforts will amount to little without complementary shifts from other actors – payers changing incentives, providers embracing new operational models and more. For instance, while our earlier disrupt-or-be-disrupted discussion focused on non-traditional disrupters such as electronic gaming, life sciences companies will need to be very careful about the unintended consequences of patient-empowered disruption on other key components of the ecosystem, such as physicians. In Chapter 4, we discuss how companies can address these concerns and develop a coordinated approach to change by using the mechanism of collective impact alliances. ▶

chapter four

The ecosystem: aligning for impact



That sounds remarkably similar to the challenge before health care today. Discrete changes in isolated parts of the health system will have little impact unless they are accompanied by complementary changes throughout the ecosystem. Health care needs to achieve coordinated improvements at every stage in the cycle of care and life of the patient, from cradle to grave.

Collective impact alliances often involve larger societal goals with respect to system transformation.

Strive was able to coordinate interests and deliver significant improvements in educational outcomes within a focused population: the greater Cincinnati and northern Kentucky region. How did Strive pull this off? What lessons are there for organizations looking to boost health outcomes through collective action? The authors identify five conditions for collective success:

(1) Common agenda

The first condition for a successful collective action approach is for all actors to have a common agenda. Even organizations that are ostensibly working toward a similar objective (e.g., improving the quality of education, boosting health outcomes) can have different definitions of the problem and the ultimate goal. In the case of health care, the issue is often more pronounced, since different organizations can sometimes have conflicting interests and agendas (e.g., drug and device manufacturers may seek to improve outcomes by increasing sales of their products, while payers may have a financial interest in curtailing the use of these offerings). It is therefore critical to get everyone on the same page, around a shared definition of the problem and the ultimate goal, one collaboration at a time.

(2) Shared measurement systems

An integral component of developing a common agenda is having shared measurement systems, which can make a goal tangible and quantify progress toward it. This is particularly relevant in health care, where the constituents must go beyond agreeing to common metrics and address a more fundamental challenge: developing entirely new metrics that are truly aligned with health outcomes and patient centrality and bringing transparency to information that has often been opaque.

(3) Mutually reinforcing activities

By their very nature, collective impact initiatives bring together a diverse set of participants who can contribute different skills and perform different activities. However, it is important that these dissimilar activities and contributions be aligned and work toward the common agenda of the initiative. The HIV/AIDS epidemic motivated unprecedented coordination between the scientific establishment, regulators, patient advocacy groups, families, community organizations, providers, payers, NGOs and pharmaceutical companies. This sort of mutually reinforcing activity now needs to be applied to other diseases that will become increasingly critical, such as Alzheimer's.

(4) Continuous communication

To keep the various parties aligned, build trust and maintain flexibility in rapidly changing environments, continuous communication is essential. Much of the potential of the third place will be realized through iterative "experiments" and the shared insights that come from "big data" and real-time feedback loops. These are vital to bringing the full promise of personalized medicine, accountable care and self-management into being.

(5) Backbone support organization

Making all of this happen – pulling together a large number of disparate entities, developing a common agenda and shared metrics, getting them to coordinate their activities and communicate regularly – is not a part-time job. To do it well requires an effort with dedicated resources – what the authors refer to as a "backbone organization."

The complex, multifaceted challenges of social issues such as health care and education have inspired creative partnering in many forms. While collective impact alliances often share features with some of these other structures and mechanisms, they are a unique animal. For instance, while **funding mechanisms** have long brought together players from the academic, nonprofit and private sectors to solve public health and other social challenges, collective impact alliances are neither vehicles for charity nor pure funding structures. Unlike charities, collective impact participants are looking for a return, and unlike funders, the return they seek is not just financial. Instead, participants are looking to share resources and risk to tackle a common challenge – and expect to gain based on their ability to solve this issue. Like **public-private partnerships**, collective impact alliances bring together governmental and for-profit entities, but they also go a lot further, by assembling a broader spectrum of constituents to address social challenges more holistically and cover the entire value chain. And while we have seen an uptick in "**radical collaboration**" in recent years as life sciences companies and non-traditional entrants from a range of other industries combine strengths to develop outcomes-focused solutions and new business models, these collaborations are not looking to drive system-wide change. Collective impact alliances often involve larger societal goals with respect to system transformation.

Potential in health care

Collective impact approaches have tremendous applicability for health care and the move to third-place industry models, for two key reasons:

(1) Creating economic incentives

Life sciences companies experimenting with patient-centric, outcomes-focused business models often grapple with the question of how they can make money in these new spaces. For instance, a number of pharma companies are adopting approaches where they are looking to “own” a chronic disease by providing a comprehensive suite of products and solutions to address every aspect of the malady – monitoring, prevention, management, treatment and cure. However, no one company can “own” a disease, and constituents risk wasting resources and losing time by not reinforcing collaboration for critical moon shots.

Collective impact alliances can provide a pathway to increase an individual organization’s return on investment by aligning incentives and resources to solve the underlying ecosystem problems, one microcosm at a time. Rather than attempt to realign the entire US educational system, Strive aimed for collective impact in a circumscribed geographic location: greater Cincinnati and northern Kentucky. In much the same way, collective impact approaches in health care could work within microcosms where all the key players are present. These microcosms could be geographic or disease-based, and we will discuss examples of each later in this section.

It is not hard to imagine – especially given all of the current system’s misalignments – the huge cost and the wasteful duplication that results from each of the stakeholders trying to solve health care’s problems alone.

(2) Tackling “precompetitive” challenges

In recent years, as resource-constrained drug companies and investors have sought to make the process of drug research and development more efficient, we have seen increased interest in “precompetitive” collaboration. The logic behind these ventures is that companies can conserve precious resources by collaborating on solving a common early-stage challenge, such as developing a technology platform. Once the common challenge has been addressed, the partners are free to leverage it in developing their individual products.

Collective impact approaches in health care could work within microcosms where all the key players are present. These microcosms could be geographic or disease-based.

The analogy between product innovation and business model innovation is applicable here, too. As they look to extend their business models to take advantage of the third place, companies will frequently find themselves entering uncharted territory, where unanswered questions and important issues need to be addressed. These include defining “health outcomes,” setting common standards for new technologies, developing regulatory guidelines for new communication channels and determining payment systems for different business models. Since these matters are in precompetitive spaces, it makes sense for companies to pool their resources and tackle them together. In addition, they often involve collaboration not just with direct competitors but also with a broader range of ecosystem participants – technology companies, regulators, payers and others – and collective impact alliances, with their ability to bring together a wide range of partners, might be ideally suited to tackle them.

collective
impact
participants
are looking
for a return,
and unlike
funders,
the return
they seek
is not just
financial

a closer look



Sanjeev Wadhwa
Ernst & Young LLP



Patients for life

As they experiment with new business models and patient-centric approaches for health care's third place, pharma companies are often attracted by the potential for increased adherence – getting patients to comply with their medication regimes represents a multibillion-dollar opportunity for drug companies and the health care system alike.

But, just as building third-place business models requires new, customer-centric value propositions, companies' model for adherence will need to be patient-centric. A patient-centric model for adherence can transform how companies develop and market products and how health care is delivered. This differs from the traditional approach in several ways:

- ▶ **Beyond drugs.** So far, drug adherence has been precisely that – getting patients to adhere to your pharmaceutical product. In the third place, as the focus shifts from products to outcomes and behaviors, adherence will no longer be confined to the drug. Instead, it will be about influencing behaviors and getting each patient to the best possible outcome for that individual – which could include not just medicinal treatment, but also prevention, monitoring and more.
- ▶ **Multiple conversations.** The third-place ecosystem is one in which companies can no longer just pitch their wares to customers; instead, success is about engaging patients in a meaningful multi-way exchange. Consequently, adherence is no longer a one-way proposition but rather a multisided interaction, where companies, patients, families and communities adhere to each other based on a mutual exchange of value.
- ▶ **Holistic and enduring.** Companies are starting to approach adherence in more holistic ways. Whereas the traditional focus on drugs meant that companies only interacted with patients after they fell sick, in the third place they will be involved throughout the cycle of care – in many cases, forming lifelong relationships with patients.

By embracing this mind shift, companies could open up worlds of opportunities. For instance, we are in the early days of a move toward “disease networks” – collective impact alliances in which providers, academic medical centers, CROs, payers and life sciences companies form enduring relationships with patients to seek cures within certain disease spaces. As they track and analyze these “patients for life,” companies gain access to rich genomic data and clinical samples, which also helps with clinical research and development. In return, patients get better care through personalized treatment plans and holistic care.

Some in the pharma industry might be worried that moving into areas such as prevention could hurt revenues by cannibalizing their drug business. In fact, the opposite is true, because the pie becomes bigger. For one, deep and enduring relationships with patients provide a trove of data – and information is where the value will truly lie in the evidence-based future of medicine. In addition, companies can create additional revenue opportunities, e.g., services around disease, solutions focusing on behavioral and lifestyle aspects, palliative care and education.

Through such approaches, companies are completely revamping their interactions with patients – from a product-oriented transaction to a value-oriented, outcomes-based relationship. In this approach, adherence is no longer about the drug or prescription regimen. It is about the relationship. And in the third place, those relationships will be most meaningful when they are for life.

Given the increased emphasis on improving health outcomes and the continuing pressure on resources, it is not surprising that we are seeing compelling examples of collective impact approaches that tackle different ecosystem speed bumps. Two recent examples are One Mind for Research and The Self-Care Management Alliance.

One Mind for Research was launched in May 2011, on the 50th anniversary of the “moon shot” speech in which President Kennedy articulated the vision of landing a man on the moon before the end of the 1960s. Seeking to replicate the power of this moment in US history, Representative Patrick Kennedy – the former president's nephew – and serial entrepreneur and patient advocate Garen Staglin, launched One Mind for Research with a different moon-shot challenge: finding cures for all neurological diseases and lowering the cost burden of health care by 2020, with an emphasis on science and clinical development. To achieve this common goal, the organization coordinates activities related to public policy, advocacy and science. It brings together a wide range of partners from the private sector, government, patient/disease organizations, several university/research hospitals and others. Depending on their respective strengths, these partners contribute different assets – intellectual property, data, time, money, talent – and expect to gain based on their relative contributions and the success of the overall initiative. A major emphasis of the organization is to get different actors to align their activities in pursuit of a common agenda. It is also supporting pre-competitive work in areas such as developing standards that would facilitate the sharing of imaging and other data.



Also in 2011, the National Council on Aging (NCOA) – a Washington, DC-based nonprofit service and advocacy group organization for elderly Americans and the community organizations that serve them – launched the Self-Care Management Alliance. The initiative brings together leaders from a wide range of entities –

federal agencies, private foundations, health plans, pharmaceutical companies – to pursue the goal of promoting the use of self-care management among the elderly with multiple chronic conditions, with an emphasis on health care delivery. This common agenda – based on a key goal of the HHS Strategic Framework

on Multiple Chronic Conditions – will be supported through initiatives related to information sharing, research and pilots, communications and public policy. The initiative's approach is directly modeled on the five collective-impact pillars (for more, see the article by James Firman of the NCOA, below).

Self-care through collective impact



James Firman

National Council on Aging
President and CEO



The mission of the National Council on Aging (NCOA) is to improve the lives of millions of older adults, with a special focus on the problem of chronic illness. The increasing burden of chronic illness is exacerbated by the fact that patients often have not one but multiple chronic conditions – increasing the risk of comorbidities and the complexity of managing these conditions.

In such circumstances, it is critical to engage and empower patients to take charge of their health. We have therefore created the Self-Management Alliance (SMA) to advance the second goal of the Health & Human Services (HHS) Strategic Framework for Multiple Chronic Conditions: maximizing the use of proven self-management and other services by individuals with multiple chronic conditions. The SMA is a trisector collaborative that brings together several key players from the government, business and nonprofit sectors to change the health ecosystem and achieve our shared goals.

We have built the SMA using the collective impact framework, focusing specifically on its five key elements:

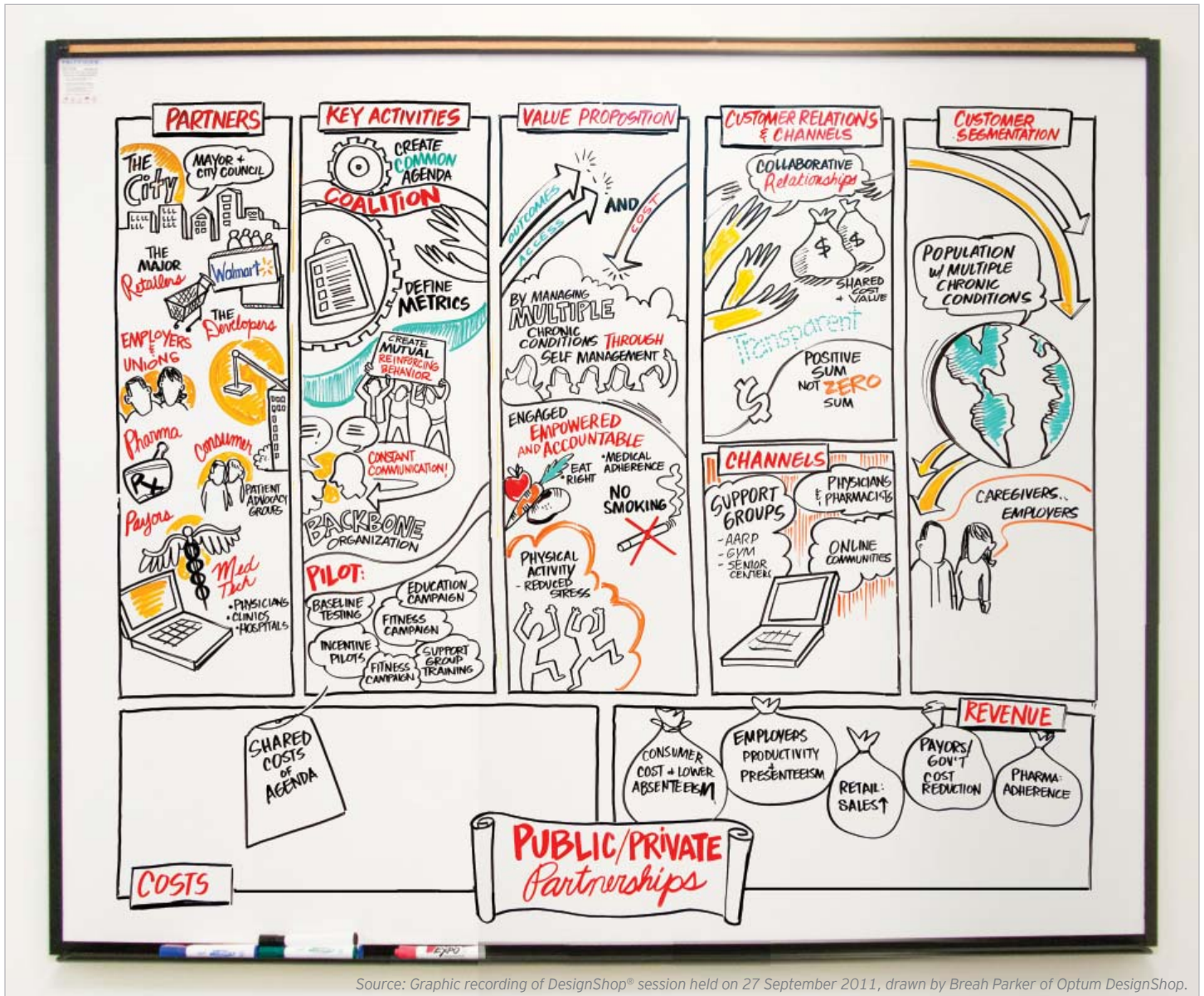
- ▶ **Common agenda.** Our goal is to make self-management an integral part of health in the US by 2020. As part of this objective, we want to make sure that at least 4 million older adults participate in evidence-based self-management programs during this time frame.
- ▶ **Shared measurement systems.** The SMA will have at least two categories of shared measurement systems. First, we will work with HHS to develop and/or select specific individual and population-level metrics to gauge national progress toward achieving our shared goals. Second, we will facilitate dialog among participants to work toward common metrics that can be used to evaluate the outcomes of R&D initiatives

undertaken by federal agencies, private foundations, health plans and pharmaceutical companies.

- ▶ **Mutually reinforcing activities.** Members will engage in a number of mutually reinforcing activities, including: strategic planning and sharing knowledge about evidence for various interventions; identifying and overcoming barriers to implementation and national scaling; and identifying outcome measures. In addition, collaborative-wide initiatives may be initiated in specific areas, such as consumer research, R&D, public policy and education.
- ▶ **Continuous communication.** To encourage continuous communication among all our members, the SMA will rely on regular meetings, skilled facilitation and sophisticated electronic platforms.
- ▶ **Backbone support organization.** Lastly, to make all of this happen, the SMA will have a small, highly skilled team focused solely on ensuring the success of the alliance by fostering strategic collaboration among all of its members.

Given that the number of people with multiple chronic conditions is expected to increase dramatically in the years ahead, initiatives that encourage self-management are sorely needed. The collective impact approach is particularly suited to this challenge, given the complexity and the number of stakeholders involved. But, this is by no means the only issue area where the collective impact approach could be applied. Indeed, at a time of limited resources and increasingly unsustainable health care costs, there are many areas where health care could be made more effective and efficient through collective impact alliances.

A collective impact approach for managing multiple chronic diseases



Source: Graphic recording of DesignShop® session held on 27 September 2011, drawn by Breah Parker of Optum DesignShop.

In many of the conversations we have had with parties interested in meta-collaborations, it has become clear that a specific patient population must be targeted to make progress. We simulated the potential of a city-based approach during our September 2011 DesignShop®, where one of the exercises involved developing a disruptive business model using a public-private partnership. The business model that the team came up with (see illustration above) took a collective impact approach

around managing multiple chronic diseases through a dramatic increase in self-management – very similar to the charter of the Self-Care Management Alliance. The team decided to simulate working with a city such as New York City, where a mayor and city council that are very focused on public health issues could play a critical role in aligning incentives and participants. (New York City has the highest life expectancy in the US, and the city government has instituted anti-smoking and anti-obesity

campaigns, high taxes on cigarettes and calorie-count requirements for restaurant chains.) Reflecting this city-based approach, the team included a wider range of partners – not just life sciences companies, providers, patients and payers, but also employers, unions, retailers and developers that could be major influencers at the city level.



Moving ahead

It's not surprising that these examples are in areas (neurological diseases and multiple chronic diseases) that will become increasingly important as payers and policy makers look for ways to contain health care costs and improve the quality of life at the same time. It's encouraging that life sciences companies are active participants in these and other such initiatives. The imperative to invest in business model innovation is becoming more urgent, but leaders still face significant unanswered questions regarding regulatory guidance, technological standards and more. Getting various stakeholders aligned can accelerate answering these questions while also providing a solution to an equally important challenge – the issue of how companies create, deliver and capture value from new business models and approaches.

The shift to health care's third place creates opportunities for key stakeholders – life sciences companies, payers, providers and health systems – to collaborate on boosting outcomes and improving access. While the core activity of life sciences companies will always be the innovation of new medicines and devices, approaches such as collective impact alliances allow companies to rethink how they develop products, how they bring them to market and how health care is delivered to patients. The accompanying chart illustrates this three-part transformation:

A new approach to health care delivery will create more connectivity between patients and physicians and allow for the generation of real-time patient data.

- ▶ This, in turn, will reinvent the commercial model (the ways in which companies go to market) in fundamentally patient-centric ways, as companies build lifelong

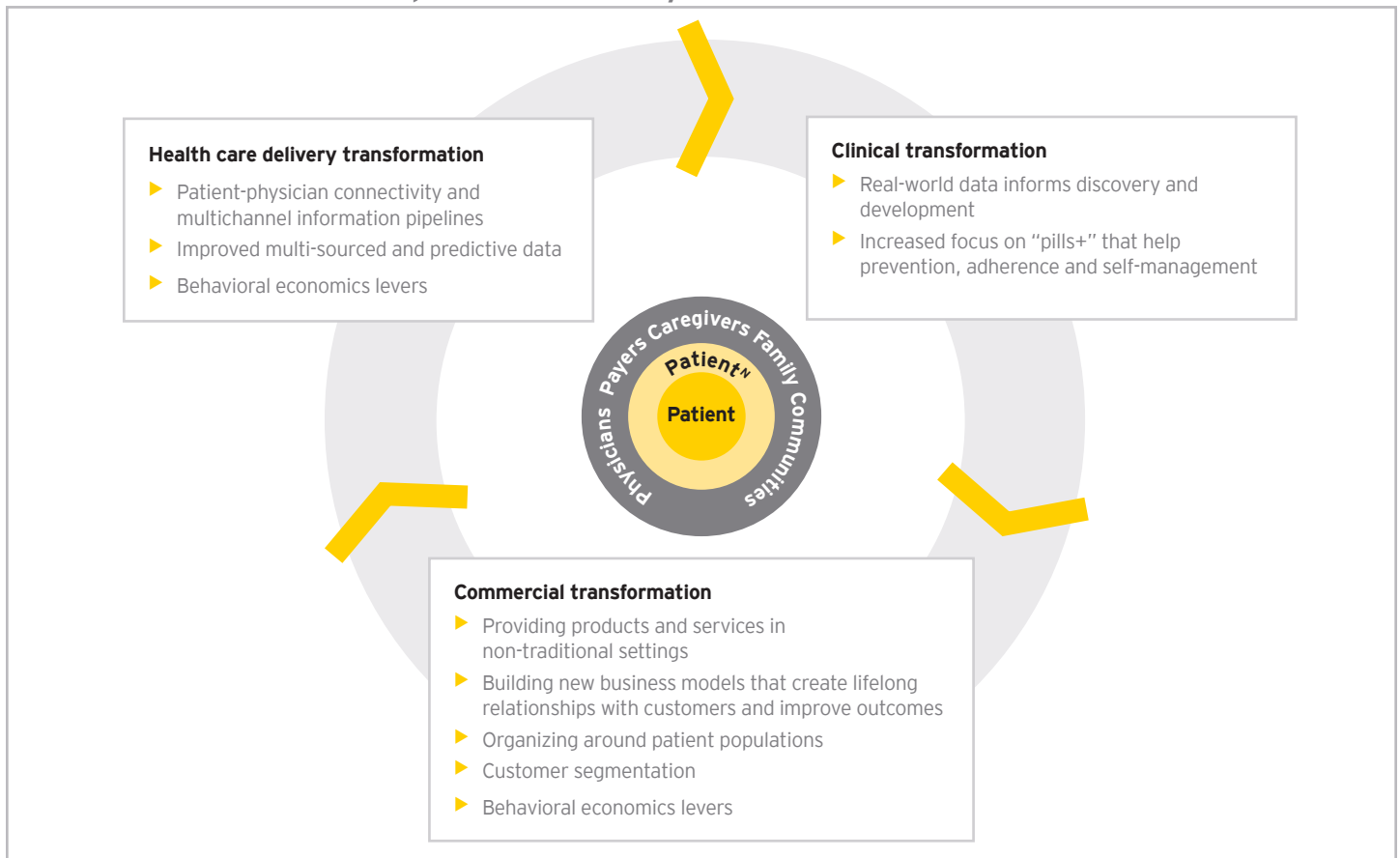
relationships with customers and organize themselves differently around patient populations.

- ▶ This patient-centric approach will transform clinical development, as deep insights allow for more efficient product development and a better understanding of patients' needs.

An approach such as this puts the patient firmly at the center and is based on a deep and ongoing relationship with the customer. The virtuous cycle it creates – essentially reinventing everything from the ways in which companies develop products to how they interface with customers – has the potential to make R&D more productive, influence behaviors and radically improve outcomes.

At the end of the day, that is the promise of the third place. ▶

Innovation for life sciences companies: a virtuous cycle



Source: Ernst & Young.

Acknowledgments

Project leadership

Carolyn Buck Luce and **Glen Giovannetti** – Ernst & Young’s Global Pharmaceutical Leader and Global Life Sciences Leader, respectively – provided the overall sponsorship, strategic vision and guidance for this project. They guided the development of key themes and provided valuable input on drafts. Special thanks also to **Patrick Flochel**, who played a key role in the development of this publication by providing invaluable strategic insights.

Gautam Jaggi, Managing Editor and lead author of the publication, developed many of the key themes and points of view. Gautam gave the publication its overall shape, wrote and/or edited all of the articles and was ultimately responsible for its content and quality.

Frank Kumli developed some of the key themes and led the process of interviewing internal and external contributors, particularly for the “A closer look” articles. Frank also provided valuable feedback on chapter drafts.

Alison DeCourcey, who served as Project Manager, was responsible for keeping the project running smoothly by allocating resources, identifying and addressing bottlenecks and managing the project timeline. **Kim Medland** and **Rebekah Craig** helped with various logistical aspects of the project.

Research and data

Shraddha Arora, Namrita Negi, Amit Malik and **Tanushree Jain** conducted research to support the report. **Jason Hillenbach, Himanshu Birla, Tanushree Jain, Samir Goncalves** and **Kim Medland** conducted fact checking and quality review.

Writing and editing assistance

The four main chapters were written by **Gautam Jaggi**, with input and assistance from **Carolyn Buck Luce, Glen Giovannetti** and **Frank Kumli**.

Gautam Jaggi, Russ Colton, Sue Lavin Jones and **Sue Carrington** served as ghostwriters for many of the guest contributions in this year’s report.

Russ Colton was the copy editor for this project. He also proofread the document.

Design and layout

Oliver Voigt was the lead designer for this project. **Robert Thomas** provided additional photography services.

Marketing and support

Public relations efforts related to the book and its launch were led by **Sue Lavin Jones, Cecile Guiot** and **Daniel Cusworth**, with the help of our external PR firm, Feinstein Kean Healthcare.



Global life sciences contacts

Global Life Sciences Leader	Glen Giovannetti	glen.giovannetti@ey.com	+1 617 585 1998
Global Pharmaceutical Leader	Carolyn Buck Luce	carolyn.buck-luce@ey.com	+1 212 773 6450
Global Life Sciences Tax Leader	Neil Byrne	neil.byrne@ie.ey.com	+353 1 221 2370
Global Life Sciences Transaction Advisory Services Leader	Jeffrey Greene	jeffrey.greene@ey.com	+1 212 773 6500
Global Life Sciences Advisory Leader	Thomas Sileghem	thomas.sileghem@be.ey.com	+32 2774 9536
Australia	Winna Brown	winna.brown@au.ey.com	+61 7 3011 3343
Austria	Isabella Schwartz-Gallee	isabella.schwartz-gallee@at.ey.com	+43 1 21170 1072
Belgium	Thomas Sileghem	thomas.sileghem@be.ey.com	+32 2774 9536
Brazil	Frank de Meijer	frank.de-meijer@br.ey.com	+55 11 2573 3413
Canada	Paul Karamanoukian	paul.karamanoukian@ca.ey.com	+1 514 874 4307
China/Asia-Pacific	Stanley Chang	stan.chang@cn.ey.com	+86 10 5815 3628
Commonwealth of Independent States (CIS)	Dmitry Khalilov	dmitry.khalilov@ru.ey.com	+7 495 755 9757
Czech Republic	Magdalena Soucek	magdalena.soucek@cz.ey.com	+420 225 335 600
Denmark	Benny Lyng Sørensen	benny-lyng.soerensen@dk.ey.com	+45 35 87 25 25
Finland	Timo Virkilä	timo.virkila@fi.ey.com	+358 207 280 190
France	Virginie Lefebvre-Dutilleul	virginie.lefebvre-dutilleul@ey-avocats.com	+33 1 55 61 10 62
Germany	Elia Napolitano	elia.napolitano@de.ey.com	+49 89 14331 13106
	Siegfried Bialojan	siegfried.bialojan@de.ey.com	+49 621 4208 11405
India	Hitesh Sharma	hitesh.sharma@in.ey.com	+91 22 6665 5000
Ireland	Nick Redmond	nick.redmond@ie.ey.com	+353 1 221 2322
Israel	Yoram Wilamowski	yoram.wilamowski@il.ey.com	+972 3 623 2519
Italy	Lapo Ercoli	lapo.ercoli@it.ey.com	+39 02 7221 2546
Japan	Hironao Yazaki	yazaki-hrn@shinnihon.or.jp	+81 3 3503 2165
Korea	Jeung Wook Lee	jeung-wook.lee@kr.ey.com	+82 2 3787 4301
Mexico	Federico Aguilar	federico.aguilar@mx.ey.com	+52 555 283 1447
Netherlands	Thomas Sileghem	thomas.sileghem@be.ey.com	+32 2774 9536
New Zealand	Jon Hooper	jon.hooper@nz.ey.com	+64 9 375 2670
Norway	Willy Eidissen	willy.eidissen@no.ey.com	+47 73 54 68 80
Poland	Mariusz Witalis	mariusz.witalis@pl.ey.com	+48 225 577950
Singapore	Swee Ho Tan	swee.ho.tan@sg.ey.com	+65 6309 8238
Southeast Europe	Themis Lianopoulos	themis.lianopoulos@gr.ey.com	+30 210 288 6417
Spain	Silvia Ondategui Parra	silvia.ondategui-parra@es.ey.com	+34 933 663 740
Sweden	Björn Ohlsson	bjorn.ohlsson.uppsala@se.ey.com	+46 18 19 42 22
Switzerland	Patrick Flochel	patrick.flochel@ch.ey.com	+41 58 286 4148
	Jürg Zürcher	juerg.zuercher@ch.ey.com	+41 58 286 84 03
Turkey	Erdal Calikoglu	erdal.calikoglu@tr.ey.com	+90 212 368 5375
United Kingdom	Pamela Spence	pspence2@uk.ey.com	+44 20 7951 3523
United States	Howard Brooks	howard.brooks@ey.com	+1 215 448 5115
	Dave DeMarco	dave.demarco@ey.com	+1 732 516 4602
	Chris Nolet	chris.nolet@ey.com	+1 650 802 4504
	David Womelsdorf	david.womelsdorf@ey.com	+1 732 516 4292



About Ernst & Young

Ernst & Young is a global leader in assurance, tax, transaction and advisory services. Worldwide, our 152,000 people are united by our shared values and an unwavering commitment to quality. We make a difference by helping our people, our clients and our wider communities achieve their potential.

Ernst & Young refers to the global organization of member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit www.ey.com.

About Ernst & Young's Global Life Sciences Center

Life sciences companies are facing challenging but promising times, as business models evolve, stakeholder expectations increase, new markets emerge, demographics shift, new technologies flourish, populations age and health care expenditures rise. Ernst & Young's Global Life Sciences Center brings together a worldwide team of professionals to help you achieve your potential – a team with deep technical experience in providing assurance, tax, transaction and advisory services. The Center works to anticipate market trends, identify the implications and develop points of view on relevant industry issues. The Center is there to help you meet your goals and execute for success. It's how Ernst & Young makes a difference. For more information, please visit www.ey.com/lifesciences or email global.lifesciences@ey.com.

© 2012 EYGM Limited.
All Rights Reserved.

EYG no. FN0009
1112-1315935_SF



Ernst & Young is committed to reducing its impact on the environment. This document has been printed using recycled paper and vegetable-based ink.

This publication contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Neither EYGM Limited nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. On any specific matter, reference should be made to the appropriate advisor.

www.ey.com/progressions



Mixed Sources
Product group from well-managed
forests and other controlled sources
www.fsc.org Cert no. SCS-COC-00867
© 1996 Forest Stewardship Council