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Healthcare

Healthcare 2015: Win-win or lose-lose?

A portrait and a path to successful transformation

IBM Institute for Business Value

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Executive Summary

Healthcare is in crisis. While this is not news for many countries, we believe what is now different is that the current paths of many healthcare systems around the world will become unsustainable by 2015.

This may seem a contrarian conclusion, given the efforts of competent and dedicated healthcare professionals and the promise of genomics, regenerative medicine, and information-based medicine. Yet, it is also true that costs are rising rapidly; quality is poor or inconsistent; and access or choice in many countries is inadequate.

These problems, combined with the emergence of a fundamentally new environment driven by the dictates of globalization, consumerism, demographic shifts, the increased burden of disease, and expensive new technologies and treatments are expected to force fundamental change on healthcare within the coming decade. Healthcare systems that fail to address this new environment will likely "hit the wall" and require immediate and major forced restructuring – a "lose-lose" scenario for all stakeholders.

The United States spends 22 percent more than second-ranked Luxembourg, 49 percent more than third-ranked Switzerland on healthcare per capita, and 2.4 times the average of the other OECD countries.[1] Yet, the World Health Organization ranks it 37th in overall health system performance.[2]

In Ontario, Canada's most populous province, healthcare will account for 50 percent of governmental spending by 2011, two-thirds by 2017, and 100 percent by 2026.[3]

In China, 39 percent of the rural population and 36 percent of urban population cannot afford professional medical treatment despite the success of the country's economic and social reforms over the past 25 years.[4]

Change must be made; the choices left to the stakeholders of today's healthcare systems are when and how. If they wait too long to act or do not act decisively enough, their systems could "hit the wall" – in other words, be unable to continue on the current path – and then, require immediate and major forced restructuring. This is a frightening, but very real prospect. Financial constraints, counterproductive societal expectations and norms, the lack of alignment in incentives, short-term thinking, and the inability to access and share critical information all inhibit the willingness and ability of healthcare systems to change. If the willingness and ability to change cannot be mustered, we believe the result will be lose-lose transformation, a scenario in which the situation for virtually all stakeholders in the healthcare system deteriorates.

Fortunately, there is a more positive scenario, but it is one that will require new levels of accountability, tough decisions, and collaborative hard work on the part of all stakeholders. Specifically, we strongly recommend:

Healthcare providers expand their current focus on episodic, acute care to encompass the enhanced management of chronic diseases and the life-long prediction and prevention of illness.

Consumers assume personal responsibility for their health and for maximizing the value they receive from a transformed healthcare system.

Payers and health plans help consumers remain healthy and get more value from the healthcare system and assist care delivery organizations and clinicians in delivering higher value healthcare.

Suppliers work collaboratively with care delivery organizations, clinicians, and patients to produce products that improve outcomes or provide equivalent outcomes at lower costs.

Societies make realistic, rational decisions regarding lifestyle expectations, acceptable behaviors, and how much healthcare will be a societal right versus a market service.

Governments address the unsustainability of the current system by providing the leadership and political will power needed to remove obstacles, encourage innovation, and guide their nations to sustainable solutions.

If stakeholders can act with accountability and demonstrate the willingness and ability to change, they can better harness the drivers of change and achieve a win-win transformation. These healthcare systems will become national assets rather than liabilities. They can help the citizens they serve lead healthier, more productive lives, and their countries and companies compete globally. They will also help these countries win a competitive advantage in the emerging global healthcare industry.

Transforming into the era of action and accountability

Action and accountability are the basic ingredients of change. To successfully transform their healthcare systems, we believe countries will undertake the following actions:

- **Focus on value –** Consumers, providers, and payers will agree upon the definition and measures of healthcare value and then, direct healthcare purchasing, the delivery of healthcare services, and reimbursement accordingly.
- **Develop better consumers –** Consumers will make sound lifestyle choices and become astute purchasers of healthcare services.
- **Create better options for promoting health and providing care –** Consumers, payers, and providers will seek out more convenient, effective, and efficient means, channels, and settings for health promotion and care delivery.

Source: IBM Institute for Business Value.

A clear accountability framework empowers these actions. Accountability must span the system with governments providing adequate healthcare financing and rational policy, healthcare professionals adhering to clinical standards and delivering quality care, payers incentivizing preventive and proactive chronic care, and citizens taking responsibility for their own health.

The value transformation

Value is in the eye of the purchaser, but today value in healthcare is difficult to see. Data regarding the healthcare prices is tightly held and difficult, if not impossible, to access or comprehend; quality data is scarcer still and mostly anecdotal or incomprehensible. To complicate matters, the purchasers and benefactors of healthcare – consumers, payers, and society – all have different opinions as to what constitutes good value. Balancing and resolving these conflicting perspectives is one of the major challenges in the successful transformation of healthcare systems.

Today, consumers often have little direct responsibility for bearing the costs of healthcare and their ability to predict healthcare quality is equivalent to a roll of the dice. Payers – public or private health plans, employers, and governments – shoulder the burden of healthcare costs, but often incentivize poor quality care in pursuit of reduced episodic costs. Societies tend to pay little attention to healthcare costs or quality until service levels for healthcare or other societal 'rights' are threatened.

By 2015, in the win-win scenario we envision, consumers will assume much greater financial oversight and responsibility for their healthcare, which, in turn, will drive the demand for value data that is readily accessible, reliable, and understandable. Payers will take a more holistic view of value – looking not simply at the episodic costs of procedures but at how investments in high quality preventive care and proactive health status management can improve quality and help minimize the long-term cost structure of care. Societies will understand that healthcare funds are not limitless and will demand that payment for and quality of healthcare services be aligned to the value those services return both to the individual and to the country or region as a whole.

The consumer transformation

The second key element in the win-win transformation of healthcare systems is increased consumer responsibility for personal health management and maximizing the value received from the healthcare system. As countries are pressed ever closer to the wall of healthcare crisis, the pressure is building for consumers to change counterproductive health behaviors and actively participate in their healthcare decisions.

> Approximately 80 percent of coronary heart disease,[5] up to 90 percent of type 2 diabetes,[6] and more than half of cancers[7-10] could be prevented through lifestyle changes, such as proper diet and exercise.

Today, consumers will not or cannot define value in healthcare. Some do not care what healthcare costs because they see it as free or prepaid. Some do care, but find it prohibitively difficult to access meaningful information they need to make sound choices. And still others do not have the literacy skills required to navigate these choices. Compounding the problem is the fact that there is a relatively widespread disregard for healthy lifestyle choices among consumers. The rising rates of obesity and chronic disease and the continuing scourge of HIV/AIDS are all direct indicators of unhealthy choices.

By 2015, in the win-win scenario, we believe consumers will comparison shop for healthcare in the same manner that they shop for other goods and services. *Health infomediaries*, who will help patients identify the information required to make sound choices, interpret medical information, choose between care alternatives and channels, and interact with the providers they choose, will become fixtures in the healthcare landscape for both the well and the chronically ill, and for a much broader socioeconomic segment of the population. And, lifestyle choices will be more explicit, with poor choices being accompanied by short-term consequences.

The care delivery transformation

The third key element in the win-win transformation of healthcare is a fundamental shift in the nature, mode, and means of care delivery. Healthcare delivery is overly focused on episodic acute care; it must shift and expand to include and embrace prevention and chronic condition management in order to respond to the emerging environment.

Today, preventive care, which focuses on keeping people well through disease prevention, early detection, and health promotion, is a concept without a champion. Generally speaking, consumers ignore it, payers do not incentivize it, and providers do not profit from it. By 2015, we expect that the notion of preventive healthcare itself will expand, combining Eastern and Western approaches and the best of the old and the new. Consumers will seek this care in new settings, such as retail stores, their workplaces, and their homes, that offer lower prices, enhanced convenience, and more effective delivery channels than traditional healthcare venues. Preventive care will likely be delivered by midlevel providers – including physician assistants, nurse practitioners, nutritionists, genetic counselors, and exercise experts – in close coordination with doctors.

Today, as the incidence of chronic illness explodes, chronic care management remains expensive, labor intensive, and plagued by wide variations in the effectiveness of care. By 2015, we believe chronic patients will be empowered to take control of their diseases through IT-enabled disease management programs that improve outcomes and lower costs. Their treatment will center on their location, thanks to connected home monitoring devices, which will automatically evaluate data and when needed, generate alerts and action recommendations to patients and providers. Patients and their families, assisted by a health infomediaries, will replace doctors as the leaders in chronic care management, a shift that will eliminate a major contributor to its cost and because of doctor time constraints, its brevity.

Preventable medical errors kill the equivalent of more than a jumbo jet full of people every day in the US[11] and about 25 people per day in Australia.[12]

Today, acute care is the foundation of the healthcare economy and its effectiveness depends heavily on the expertise of the individual doctor. By 2015, we anticipate that standardized approaches to acute care, developed through the careful analysis of clinical data and the unrelenting documentation of patient variation, will be a widespread starting point in care delivery. The availability of high quality care information will enable the treatment of non-urgent acute conditions, such as strep throat and sinusitis, at the patient's home via the use of telemedicine or at retail settings that provide low cost, good quality, and convenience. This will free doctor time and encourage the transformation of today's massive, general purpose hospitals into "centers of excellence" devoted to specific conditions and combination triage centers, which determine the specialized facility patients should go to, and post treatment recovery centers, in which patients are monitored before returning home.

A prescription for accountability and win-win transformation

The transformational challenge facing many healthcare systems globally is daunting. They must expand their primary focus on often poorly coordinated episodic care to encompass the life-long and coordinated management of preventive, acute, and proactive chronic care. This expansion must be achieved with limited incremental funding in an increasingly competitive global economy and healthcare environment. This task will further require the establishment of a clear, consistent accountability framework supported by aligned incentives and reconciled value perspectives across key stakeholders. But, the rewards of successful transformation are correspondingly high.

Successful transformation will require all stakeholders to actively participate, collaborate, and change. The following table summarizes recommendations by stakeholder to collectively transform to a value-based healthcare system with new models of delivering care to accountable consumers.

Healthcare 2015 paints a portrait of what the global healthcare industry could look like a decade from now. Parts of the portrait already exist in some countries. Even so, bringing the entire portrait to life is an extraordinarily difficult, but vitally important task, which must be informed and achieved through a process of debate and consensus, and action and accountability. We hope that our ideas will serve as a starting point in your transformation effort.

Summary of Healthcare 2015 recommendations by stakeholder.

	Transforming value	Transforming consumer accountability	Transforming care delivery
Healthcare systems	• Develop a vision, principles, and metrics that enable and reward a shared perspective on value	• Provide universal insurance for core services, including preventive and primary care • Expect and reward good behaviors	• Remove barriers to innovation while still protecting consumers and other stakeholders
Care delivery organizations (CDOs)	• Appropriately focus instead of being "all things to all people" • Develop teams of caregivers to deliver patient-centric, coordinated care • Implement interoperable electronic health records (EHRs) to help enable high-value services	• Help inform and empower consumers by providing transparency into pricing and quality	• Develop channels and care venues that are closer to the patient • Implement interoperable EHRs to support information exchange across new venues
Doctors and other clinicians	• Help develop and appropriately utilize evidence-based, standardized processes and care plans • Help develop meaningful outcomes data	• Develop collaborative partnerships with patients • Help consumers take more responsibility for their health • Expect and monitor compliance	• Expect interoperable EHRs to support information exchange across teams of caregivers • Focus on the opportunities that come with change
Consumers	• Expect CDOs and clinicians to provide pricing and quality information • Learn about the healthcare system and become a smart shopper • Utilize health infomediaries	• Learn about health and take responsibility for living a healthy lifestyle • Create and maintain a personal health record (PHR) to consolidate relevant, accurate clinical and health information • Document advanced directives	• Expect and demand new delivery models and coordination of care across these new models
Health plans	• Work collaboratively with CDOs and clinicians to develop a viable transition plan to value-based reimbursement • Help consumers navigate the health system to get more value	• Help provide personalized information and advice to help consumers maintain and improve their health status	• Align reimbursement and incentives with preventive and proactive chronic care, and with innovative, cost-effective approaches to health and healthcare
Suppliers	• Develop offerings that help provide better longer-term outcomes or lower prices for equivalent outcomes	• Help identify the right patients and providers and then educate them to achieve better results across all steps of the care process	• Help enable new models through simplification and miniaturization; mobile devices; and personalized targeted diagnostic and treatment solutions packages
Societies	• Clearly recognize the need for tough decisions, prioritization, and tradeoffs and the need to reconcile perspectives on value • Actively participate in efforts to improve healthcare	• Stress prevention and personal accountability • Expect and promote healthy lifestyles	• Keep pressure on the healthcare system to change and meet the needs of its customers
Governments	• Emphasize value, accountability, and alignment of incentives in health policy, regulations, and legislation • Require results reporting • Develop a funding strategy for the healthcare infrastructure and for independent research on the comparative effectiveness of alternative therapies	• Help protect security/privacy of electronic health information • Require insurance coverage for everyone, with subsidies for those who need them	• Change and set policies, regulations and legislation in order to remove barriers (e.g., the patchwork of licensure regulations) and to enable and promote the right actions

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1. Introduction

Unsustainable growth

Fueled by the unrelenting pressures of cost, quality, and access, we believe the first two decades of the 21st century are the era in which healthcare systems around the globe will be driven into crisis. Consumers worldwide are demanding more and better healthcare services. Yet, in virtually every country, the growth in healthcare demand is increasing more rapidly than the willingness and, more ominously, the ability to pay for it. If left unaddressed, financial pressure, service demands driven by aging populations and other demographic shifts, consumerism, expensive new technologies and treatments, and the increased burden of chronic and infectious diseases will cause most of the world's countries to reach a breakpoint in their current paths. In other words, their healthcare systems will likely "hit the wall" – be unable to continue on the current path – and then, require immediate and major forced restructuring.

The United States is one of the best, or more appropriately, worst examples of a runaway healthcare system. Per capita, the United States spends more on healthcare than any other country in the Organisation for Economic Co-operation and Development (OECD) – 22 percent more than second-ranked Luxembourg, 49 percent more than third-ranked Switzerland, and 2.4 times higher than the OECD average.[1] Unfortunately, this spending has not produced a commensurate improvement in the country's healthcare quality. The World Health Organization (WHO) ranks it 37th in overall health system performance[2] and a recent study by The Commonwealth Fund concluded, "The United States often stands out for inefficient care and errors and is an outlier on access/cost barriers."[14]

The United States may not stand alone; other countries may also have unsustainable healthcare systems. For instance, if current trends are not reversed in Ontario, Canada's most populous province, healthcare will account for 50 percent of governmental spending by 2011, two-thirds by 2017, and 100 percent by 2026.[3] "The baby boom is about to become a patient boom," warned Ontario Premier Dalton McGuinty.

The challenges posed by unsustainable growth are massive and grave. Muddling along on the current path, which has been the common response to the periodic calls for structural change in healthcare in the past, is no longer a viable course. Tough choices will have to be made to avoid hitting the wall in healthcare. But, no matter how difficult these choices, they are surely preferable to the choices that will be thrust upon any country that ignores the coming crisis.

The transformational challenge

It is difficult to generalize the global challenge of healthcare transformation. There are over 190 countries in the world, each with a healthcare environment that is uniquely affected by population health status, healthcare funding mechanisms and levels, societal expectations, and healthcare delivery system capabilities. Accordingly, the transformation path that each national healthcare system adopts must address different starting points, needs, expectations, and targets. Even so, there are several transformational challenges that we believe are universal.

First, healthcare systems must expand their current focus on episodic, acute care to encompass the enhanced management of chronic diseases and the life-long prediction and prevention of illness. This transformation requires patient-centric care orchestrated by health infomediaries – professionals whose aim is to help consumers optimize their health and navigate the healthcare system – and delivered by teams of clinicians heavily populated by midlevel providers. To support this expanded provision of care, interoperable electronic information systems and new physical and virtual delivery venues are also needed.

Second, consumer attitudes and behaviors must be transformed. Consumers must assume personal responsibility for their health. They must abandon the naive and financially unsustainable attitude that "someone should and will pay to fix whatever goes wrong with me, regardless of cause, cost, or societal benefit."

Third, societal expectations and norms must be transformed in tandem with the changes in consumer attitudes and behaviors. The citizens of countries around the globe will have to determine how much healthcare will be a societal right and how much will be a market service. Norms will have to change. Unhealthy lifestyles have to become as unacceptable as driving while under the influence of alcohol and smoking in public places have become in some societies.

Fourth, there must be a transformation in the willingness of governments to acknowledge the crisis in healthcare and more importantly, guide their countries to sustainable solutions. Without strong leadership and political willpower, national healthcare systems cannot change in a rational fashion. Further, changes in societal expectations and norms often require supporting governmental action. The world's governments will have to take a long view that extends beyond the terms of elected officials. The larger needs of equitable policy and funding will have to take precedence over short-term pain and special interest groups.

The universal need for accountability

Accountability is the force that will help enable the global transformation to sustainable healthcare systems. Today, most countries' healthcare systems lack a clear framework for accountability, a support that is urgently needed to increase responsibility among all stakeholders. From governments taking responsibility for financing and policy to healthcare professionals taking responsibility for developing and following evidence-based clinical standards and delivering quality care to citizens taking responsibility for their own health, accountability must span the healthcare system.

The incentives of stakeholders must be aligned to support the emergence of a viable accountability framework. Realigning incentives within healthcare systems is a daunting task, particularly given the entrenched positions of key stakeholders, including hospitals, public/private insurers, doctors, and consumers.

In the near term and as incentives are realigned, stakeholders will have to be prepared and willing to make sacrifices. Current governmental policy and regulations must also be realigned to support the new framework of accountability. Otherwise, these policies and regulations, which were instituted in and for a different healthcare environment, may well inhibit transformational change.

Finally, the key stakeholders must reconcile their different perspectives on value in order to align incentives. Today, the various purchasers and consumers of healthcare products and services independently define and determine value, often in conflicting ways. In the future, value must also have a shared, systemic component that all stakeholders will recognize and support.

Summary

In the absence of major change, we believe many of the world's countries will hit the wall with regards to healthcare cost, quality, and access within the next decade. The creation of a sustainable healthcare system is a substantial challenge and the consequences of failure are daunting, but the rewards of successful transformation are correspondingly high. Countries that are successful will be able to leverage the benefits of new medical technologies and treatments to create the healthiest citizenries in history. They will enjoy the benefits of a lower cost structure and enhance their ability to attract and retain the world's most talented people. They will be able to better compete in the many industries of the global economy, including the emerging global healthcare industry.

This leads us to two key questions. How likely is a healthcare system to hit the wall? And, how prepared are its stakeholders to confront the challenges and successfully transform their systems? In the next section, we will explore the factors that can help you answer those questions.

2. Healthcare in crisis: win-win or lose-lose transformation?

Introduction

Healthcare is rightly described as a complex adaptive system.[15] At any given time, there are a significant number of internal and external forces that are driving and inhibiting change in such systems. The amount of change that occurs in a system depends in part on the cumulative strength of the drivers versus the inhibitors. Of course, the strength of these driving and inhibiting forces will vary between healthcare systems, but they are major factors in each system's evolution.

Drivers of change in healthcare

A driver is a factor that stimulates change. It is important to distinguish between a driver and a trend. A driver is a force that will change the status quo and must be addressed at some point. A trend, on the other hand, is a current tendency or preference that may or may not cause substantive change and does not necessarily require a response. We have identified five drivers of change in healthcare: globalization, consumerism, aging, and overweight populations, the changing nature of disease, and new medical technologies and treatments.

Globalization – Globalization is a historic driver of change. Today, as ubiquitous computing power, software applications, and broadband connectivity combine to transform the earth into a high-speed network of seemingly limitless possibility, its influence and impact is accelerating. The global supply chain in manufacturing is a reality. In the services sector, intellectual work and capital are being delivered virtually anywhere and everywhere in the world. The world is flat, proclaims Thomas Friedman in his best-selling book, which describes how globalization is affecting everyone on the planet.[16]

Healthcare, which has remained largely regional and local to date, has not escaped globalization unscathed. The financial pressure arising from globalization is having the greatest and most obvious impact on healthcare systems. In many countries, competing on a worldwide basis is causing substantial shifts in their revenue bases and forcing alterations in their funding choices and spending patterns. Globalization is also laying the foundation for healthcare without borders. Further, as this driver gives rise to new social and political models, it will also irrevocably alter the environment in which healthcare operates and the key stakeholders who determine its course.

In some cases, particularly when globalization negatively impacts competitiveness, the inability to service healthcare costs may precipitate financial crises. For instance, in the United States, the financial pressure of globalization is colliding with what government, businesses, and individuals alike perceive as runaway healthcare costs. Healthcare spending in the United States currently accounts for more than 16 percent of the country's gross domestic product (GDP), approximately US$2.0 trillion.[17] To put this figure in perspective, as of 2005, only five other countries had GDPs as large as or larger than the United States' healthcare expenditures.[18]

In other cases, globalization will continue to raise societal expectations and fuel the demand for ever greater healthcare spending. In China, a notable benefactor of globalization, healthcare spending as a percentage of GDP is increasing and the government has made significant progress in expanding healthcare coverage. Yet, 39 percent of the rural population as well as 36 percent of urban population cannot afford professional medical treatment.[4]

Consumerism – Consumerism in healthcare is part of a broader movement promoting consumer interests and placing more power and control in the hands of individuals. In healthcare, consumerism is producing increasingly assertive buyers who are willing and able to promote and defend their interests.

We have all heard the stories of "literate health activists" who show up in clinicians' offices with a wealth of information – accurate and inaccurate – about their conditions and demand a larger say in their care decisions. They

are "literate" because they have the desire and capacity to obtain and understand the basic information needed to make appropriate health decisions. They are "activists" because they are no longer willing to accept the passive role of the traditional patient, meekly accepting whatever the healthcare system offers them or does to them. Many of these people are aging baby boomers who have growing healthcare needs *and* the ability to pay for treatment. They have high expectations for both service and clinical quality and little tolerance for "one-size-fits-all" services and solutions.

Defining developed, developing, and least developed countries

For the purposes of this report, United Nations' country classifications[19,20] have been adapted to classify countries into three major groups based on criteria such as economic status; personal income levels; and health, education, and nutrition factors:

- "Developed" countries are made up of the 30 OECD members which include countries in Europe, North America, and Asia and the Pacific.
- "Developing" countries include countries in the Middle East, East Asia and the Pacific, Latin America and the Caribbean, South Asia, Southern Europe, and Sub-Sahara Africa. Notable countries in this group include China, India, Brazil, and South Africa, as well as Russia and other Eastern European countries.
- "Least developed" countries include 50 countries in Africa, Asia and the Pacific, and Caribbean region.

The Commonwealth of Independent States (CIS), which is comprised of 11 former Soviet Republics and is classified by the UN as a distinct group, is separated into developed and developing countries according to the condition of each country.[21]

We believe a number of factors will accelerate the influence of consumerism on healthcare. In developed countries, the increasing financial burden for healthcare costs borne by the consumers will continue to be a factor. In developing countries, the growing middle class, who are better educated and more affluent, will expand the number of literate health activists.

A growing awareness of risks and adverse events will also drive consumerism in healthcare. The fact that preventable medical errors kill the equivalent of more than a jumbo jet full of people every day in the United States[11] and about 25 people per day in Australia is becoming widely known.[12] Literate health consumers are less and less willing to accept negative outcomes as inevitable or as the luck of the draw. In short, people who are bearing a significant portion of the financial burden for healthcare and are more knowledgeable about the risks posed by healthcare, will be much more demanding consumers.

Aging and overweight populations – Demographic shifts, which will require the re-examination of resources and priorities as well as the development of new care paradigms, are also likely to drive healthcare change.

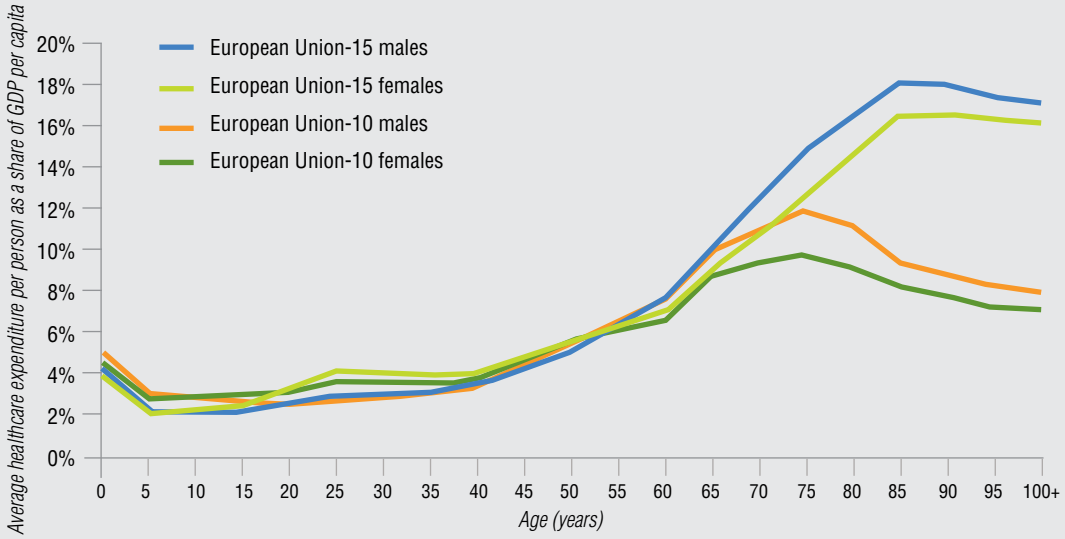
Primary among these shifts is the aging of the worldwide population. Before the first decade of the new millennium, young people always outnumbered old people; after it, old people will outnumber young people. In 2005, people aged 60 years and older accounted for a larger portion of the world population (10.4 percent) than children aged four years and younger (9.5 percent).[22] One impact of this change in the ratio of older to younger citizens is that there will be fewer younger workers available to fund the needs of the older generation.

Another impact is the increased healthcare demand and costs associated with aging. In 1999, in the United States, people aged 65 years and older made up 13 percent of the population, but consumed 36 percent of the country's personal healthcare spending. This represents four times the amount of per person spending for people under age 65 years.[23] The disproportionate need for and spending on healthcare among older people is consistent throughout many countries (Figure 1 represents per capita healthcare spending as a percentage of per capita gross domestic product by age for males and females).

The second demographic driver affecting the overall health profile of the planet is the alarming increase in the number of overweight people with all of the additional and well-established risk of disease that entails. There are now more overweight people in the world than there are underweight people.[24] The World Health Organization reported: "Globally, in 2005, it is estimated that over 1 billion people are overweight, including 805 million women, and that over 300 million people are obese… If current trends continue, average levels of body mass index are projected to increase in almost all countries. By 2015, it is estimated that over 1.5 billion people will be overweight."[25] Figure 2 illustrates this looming increase.

The changing nature of disease – We believe one of the most profound drivers of healthcare change is the growing incidence and impact of chronic illness. Chronic diseases now account for 60 percent of the 58 million deaths globally each year and represent a significant economic burden on societies worldwide.[25] As much as 75 percent of the healthcare resources of developed countries are consumed by the needs of those with chronic conditions.[26]

FIGURE 1.
Healthcare expenditures among European Union Member States by age and gender.

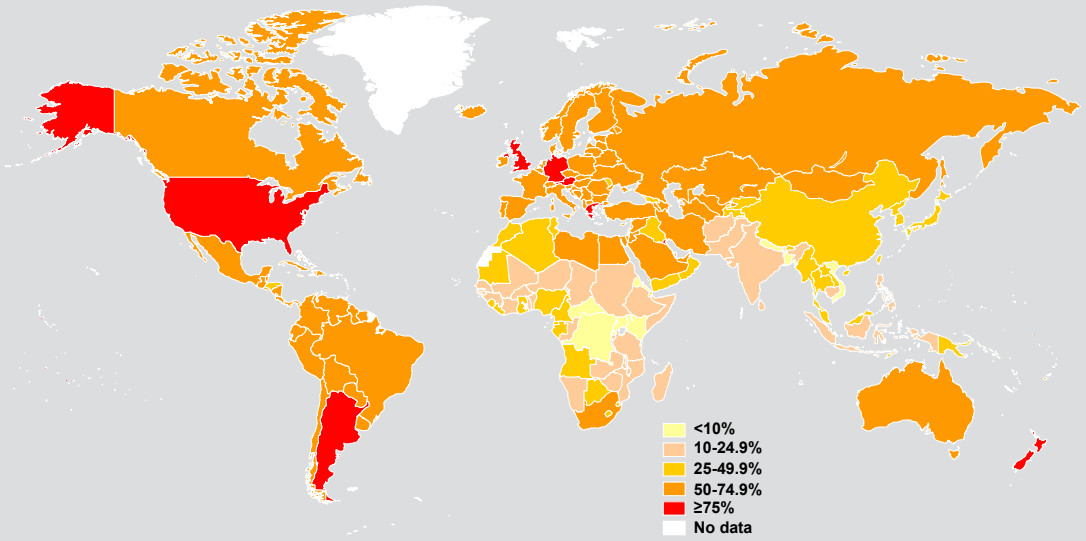


Source: Economic Policy Committee and the European Commission. 2006. The impact of ageing on public expenditure: projections for the EU25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004-2050). Special Report No 1/2006, DG ECFIN, February 14, 2006.
Note: "European Union-15" refers to the European Union Member States of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Portugal, Spain, Sweden, Netherlands, and United Kingdom. "European Union-10" includes those Member States that joined the European Union on 1 May 2004: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia. Although the two sets of lines illustrate that nominal healthcare spending is higher among the European Union-15 than European Union-10, both illustrate the general relationship between healthcare expenditure and age.

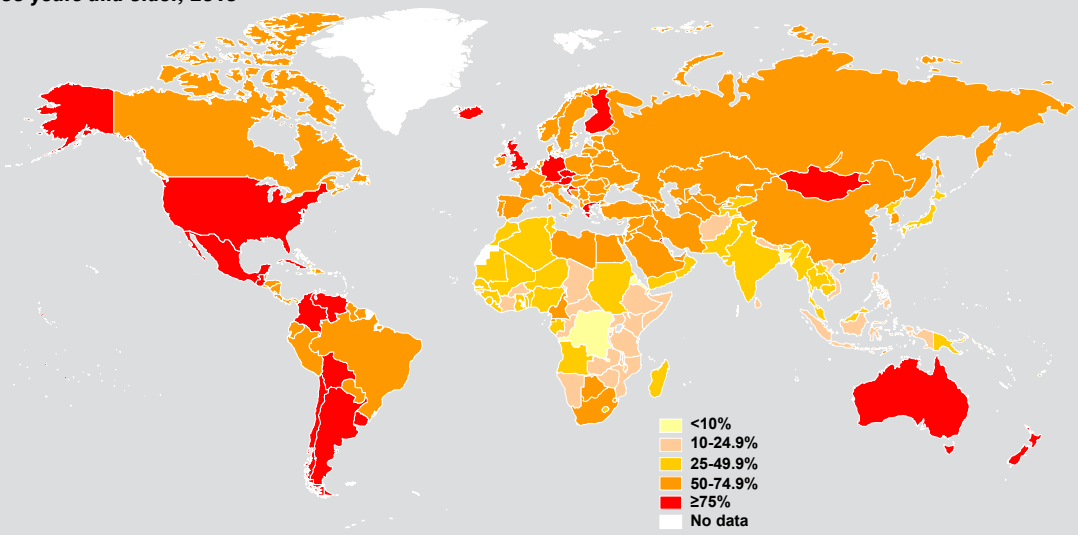
FIGURE 2.

Prevalence of overweight (body mass index ≥ 25 kg/m²) by gender, 2005 and 2015.

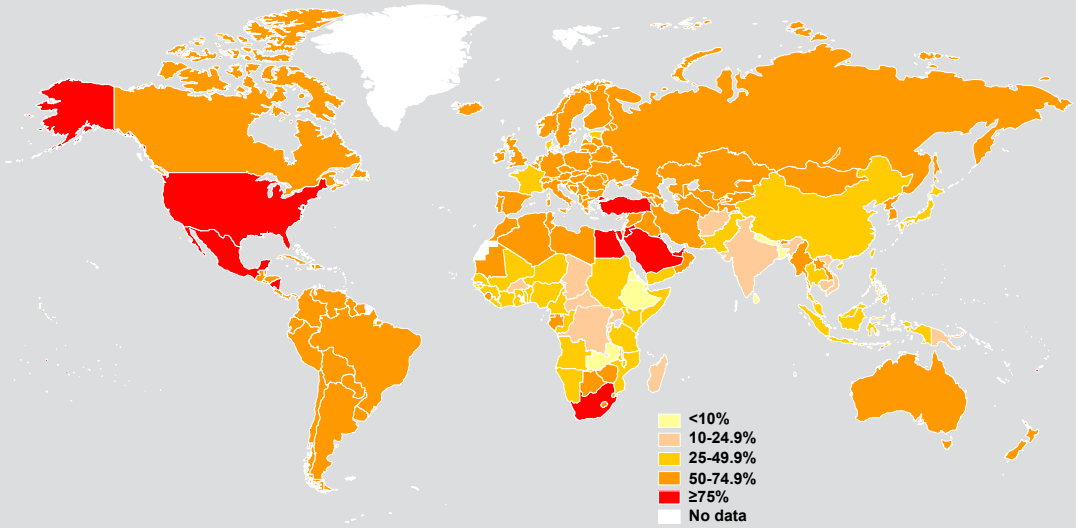
Men aged 30 years and older, 2005



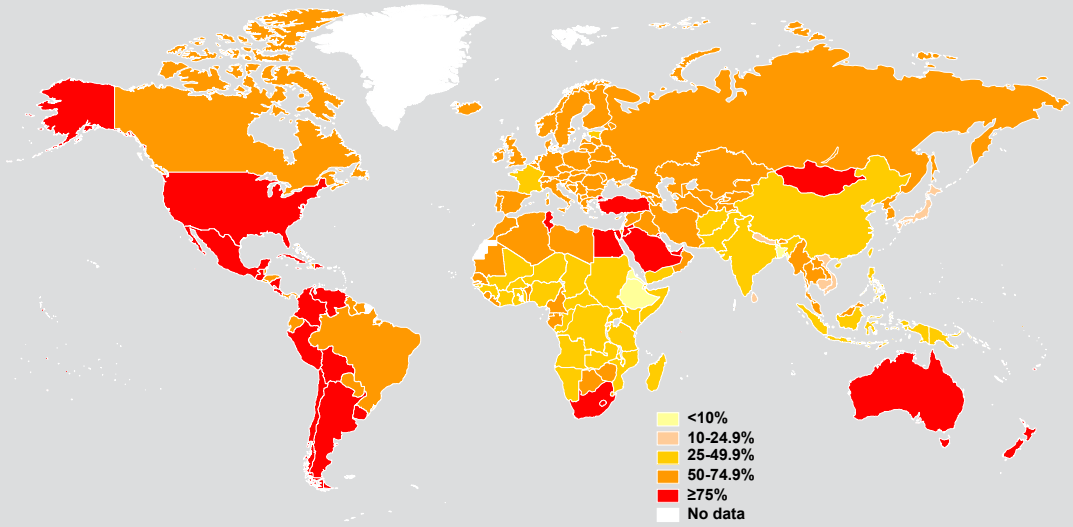
Men aged 30 years and older, 2015



Women aged 30 years and older, 2005



Women aged 30 years and older, 2015



Source: World Health Organization. 2006. WHO global infobase online. http://infobase.who.int/ (accessed 1 June 2006)

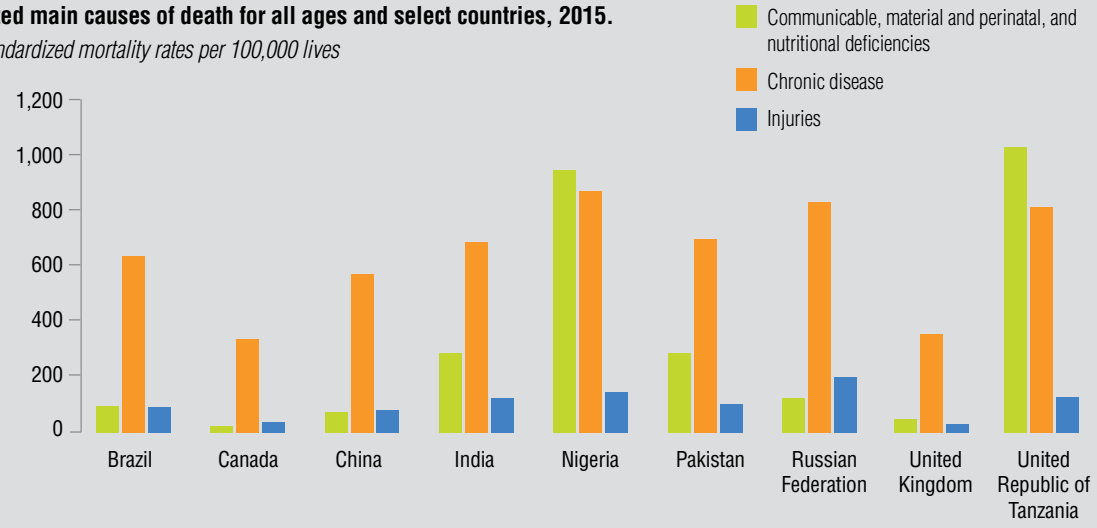
Not only are chronic diseases responsible for a growing percentage of the total deaths in developed countries, the incidence of chronic disease in developing and least developed countries is also on the rise. Worse, these so-called diseases of affluence are actually more prevalent among low and middle-income people, where 80 percent of deaths are due to chronic disease. In all geographies, the poorest populations – those who have the greatest exposure to risks and the least access to health services – are affected most significantly (Figure 3).[25]

Over the next 10 years, the global incidence of chronic disease is predicted to increase by 17 percent, further fueling the global burden of disease.[25] Several factors account for this driving force:

- The success of modern healthcare in transforming formerly lethal diseases, injuries, and conditions (e.g., HIV, spinal cord injuries, diabetes, tuberculosis, and multiple sclerosis) into chronic conditions that require continuous treatment;
- Reductions in premature mortality and increasing longevity resulting in longer-lived chronic conditions and health-related dependencies; and
- Increases in the behaviors (e.g., unhealthy diet, physical inactivity, and tobacco use) that significantly contribute to many prevalent chronic diseases.

The growing incidence of chronic conditions will likely continue to impact the provision of health services. Chronic conditions (e.g., diabetes, arthritis, chronic lung disease, asthma, congestive cardiac conditions, mental illness, and hypertension) require ongoing care and management. They are not amenable to one-shot fixes. Yet, most healthcare systems are organized to provide episodic care. They are neither structured nor resourced for the coordinated, ongoing care of chronic diseases. A striking example of the mismatch between the needs of chronic conditions and care delivery is the reliance on doctor office visits. A ten-minute increment of a doctor's time is not conducive to effective chronic disease management or patient education.

FIGURE 3.
Projected main causes of death for all ages and select countries, 2015.
Age-standardized mortality rates per 100,000 lives



Source: World Health Organization. 2005. Preventing chronic disease: a vital investment. Geneva: World Health Organization.

Infectious disease will likely be a second driver of healthcare change in this category. Some diseases, such as tuberculosis and malaria, have become drug-resistant or even multi-drug-resistant. Other diseases, such as AIDS, can now be kept in check for long periods of time, but not cured. Still other diseases, such as polio, are re-emerging in certain regions along with the attendant long-term debilitation of their victims. Finally, new infectious diseases against which humans have little immunity are appearing (see sidebar). All of these are contributing to the ever-rising costs of healthcare and the ever-greater need for change.

New medical technologies and treatments – We believe innovative new medical technologies will continue to drive change in healthcare. They promise improved population health and higher quality care. But this promise will often include higher unit costs and greater overall demand, which may well result in higher aggregate costs, particularly during the early phases of their development and growth. Genomics, regenerative medicine, and information-based medicine are three rapidly emerging technologies that will be major drivers of healthcare change.

Genomics

Genomics is a broad term defining the study of the functions and interactions of genes, molecular mechanisms, and the interplay of genetic and environmental factors in disease. Three areas of genomics have the greatest potential to significantly impact healthcare over the next decade and beyond: molecular diagnostics, pharmacogenomics, and targeted therapies.

- **Molecular diagnostics –** There are approximately 900 gene tests available today, including single gene (monogenic) disorder testing, chromosome testing, biochemical testing, predisposition testing, prenatal screening, and pre-implantation genetic diagnosis (PGD) of fertilized embryos, and forensic identification. Tests like these have already enabled the diagnosis of Down Syndrome, spina bifida, Tay-Sachs disease, sickle-cell anemia, cystic fibrosis, etc. The number of gene-based tests is rising dramatically and over the next decade, we will see tests of ever-higher sensitivity and specificity. By 2015, it is likely that a single US$1000 test will analyze millions of DNA fragments for evidence of disease.[28]
- **Pharmacogenomics** – The developing field of pharmacogenomic profiling analyzes genetic variation to predetermine how individual patients will respond to specific drug treatments. It promises to improve therapy risk assessment, to better target drug therapy, and most dramatically, to reduce and perhaps someday, eliminate the adverse drug reactions that injure or kill 770,000 people per year in the United States alone.[29] Currently, the United States Food and Drug Administration (FDA) is considering the use of a pharmacogenetic test that will enable doctors to prescribe the exact dosage of the blood thinner warfarin.[30] In the near future and because of its relatively low cost compared to the cost of an adverse reaction, pharmacogenetic testing will become a standard of care.

Emerging diseases[27]

1973 – Rotavirus

1977 – Ebola virus

1981 – Toxic shock syndrome

1982 – Lyme disease

1983 – HIV/AIDS

1991 – Multidrug-resistant tuberculosis

1993 – Cholera caused by strain 0139

1994 – Cryptosporidium infection (large outbreak in Wisconsin, USA)

1998 – Avian flu

1999 – West Nile Virus (first appearance in USA)

2003 – SARS (severe acute respiratory syndrome)

2004 – Marbu virus (largest outbreak in Angola)

- **Targeted therapies –** One of the goals of genomics is to design targeted treatments (e.g., for tumors, arthritis or osteoporosis) that are based on specific molecular signatures. Numerous cancer therapies are available that target individuals with specific genetic profiles. For instance, Herceptin/ Trastuzumab, a genetically engineered drug for metastatic breast cancer, is estimated to extend the median survival of patients with a specific gene (HER-2/neu) by several months. "Designer drugs" like these are expected to become increasingly available in the future, but will also pose major cost challenges. Herceptin has resulted in US$125,000 per quality-adjusted life year (QALY) gained, which may exceed acceptable or affordable societal thresholds for treatments, frequently in the US$50,000 range today.[31]

Regenerative medicine

Stem cell research is advancing our knowledge regarding how all living things develop from a single cell and how healthy cells replace damaged cells in adult organisms. It has been a field of ongoing inquiry for over two decades, but remains highly controversial and much debated, particularly in areas such as cloning. The therapeutic use of stem cells to treat disease, which is often referred to as regenerative or reparative medicine, promises to have a major impact on healthcare.

Today, donated organs and tissues are often used to replace ailing or destroyed tissue, but the need for transplantable organs and tissues far outweighs the available supply. Stem cells, directed to differentiate into specific cell types, offer a potentially endless renewable source of replacement cells and tissues, changing the way we treat a wide variety of diseases, including Parkinson's and Alzheimer's diseases, spinal cord injuries, strokes, burns, heart diseases, diabetes, osteoarthritis, and rheumatoid arthritis.

In March 2004, the FDA approved a clinical trial at the Texas Heart Institute that utilized stem cell therapy to treat patients with advanced heart disease. The trial provided the first clear documentation of the formation of new blood vessels in the human heart and suggests that stem cell injections can treat this previously incurable disease.[32] In the next decade, we expect that new applications will multiply exponentially. At the same time, we also expect that stem cell research and regenerative medicine will be centers of continued controversy and regulatory pressures.

Information-based medicine

Information-based medicine is the process of improving existing medical practices through the effective use and application of information in the diagnosis and treatment of patients. In order to fully realize its potential, researchers and practitioners must possess the ability to access, integrate, and analyze data encompassing a patient's clinical history, genotype (i.e., genetic makeup), and phenotype (i.e., the properties produced by the interaction of genotype with the environment). As clinical care and research become increasingly "digitized," this vision – a distant possibility only a few years ago – is becoming a reality.

Currently, healthcare organizations around the world are establishing platforms for information-based medicine. Australia's Melbourne Health and Bio21 have integrated a wide range of databases to support collaborative research and leverage critical biomedical information. In the United States, The Mayo Clinic provides its clinicians and researchers with real-time access to and search capability of over six million patient records. Sweden's Karolinska Institutet is establishing a national "biobank" – a biospecimen repository supplemented with clinical data – that will greatly enhance the ability of researchers to identify genetic and environmental factors, and their interplay, in the cause and outcomes of disease. In each case, information queries that once required days, weeks, and even months, now take seconds and minutes.

Integrated information infrastructures for clinical and translational research will enable and support the development of advanced Clinical Decision Intelligence (CDI). By mining biomedical and outcome data, health researchers can identify best clinical practices and new molecular breakthroughs. This knowledge will also be applied at the point of care in the form of advanced rules to help guide clinicians.

Early CDI applications are being developed at the University of British Columbia's iCAPTURE Centre, in Canada, to improve organ transplant outcomes; at

Molecular Profiling Institute, Inc. in the United States to create targeted, molecularly diagnosed cancer treatments; and at Canada's Ste. Justine Pediatric Research Centre to improve the treatment of pediatric cancers.

Information-based medicine will help drive the transformation of healthcare from its current local and regional sectors into a borderless industry that spans the globe. It will better enable practitioners to make more accurate diagnoses and targeted treatments and also help researchers to discover new cures. Additionally, patients will access and manage their personal health information and share critical information with their doctors and other caregivers.

In summary, we believe these five change drivers – globalization, consumerism, demographics, chronic and infectious diseases, and new, expensive technologies and treatments – are and will continue to upset the status quo of healthcare systems throughout the world. Crises in healthcare systems are not new per se, but these drivers are creating a healthcare environment that is fundamentally different from past periods of crisis. These drivers are creating higher costs, burgeoning demand, and increasing regulation. Healthcare systems will have to fundamentally adjust to their dictates.

Inhibitors of change in healthcare

No healthcare system is immune to the drivers of change, but the extent to which the drivers actually create change is also dependent on a variety of inhibiting factors. An inhibitor is defined as a force that supports the status quo, prevents change, and/or creates barriers to the forces driving the change. The strength of these inhibitors helps determine the healthcare systems' resistance or willingness to change. At any given time, the amount of change occurring – incremental or transformational – depends in part on the cumulative strength of the driving forces compared to the inhibiting forces.

Financial constraints – Funding constraints are consistently ranked among the chief inhibitors of change in healthcare systems. Unfortunately, the pool of funds available to finance healthcare is not limitless. Healthcare must compete for funding with a wide range of other needs, such as physical infrastructure and education. In many countries, this competition results in healthcare funding shortfalls that make it impossible to cover the full spectrum of needs from basic public health to treating end-stage diseases.

The existing allocation of healthcare funding is another barrier to change and strong support of the status quo. Whenever new funding is unavailable, existing funding must be reallocated to finance change. Naturally, resistance arises from those stakeholders who will face reduced funding. In addition, investments in emerging or as yet unproven programs also meet with resistance. In both cases, conflict is generated among stakeholders and the ability to appropriately allocate funding to achieve the greatest good is impacted.

Societal expectations and norms – Societal expectations and norms, especially those regarding rights, lifestyles, and acceptable behaviors, can also inhibit change. Some healthcare services – clean water, sound sewage systems, basic nutrients, and basic medical care – are uncontroversial and widely accepted as societal rights. Others, such as cosmetic surgery and lifestyle drugs, are clearly considered "elective" market services. But there are many gray areas, where there is no clear delineation between societal rights and market services, in which heated battles will be fought.

Will tough choices be necessary?

From the beginning of human society, the demands of sustainability have raised profound ethical issues. In traditional Inuit society, when elders sensed that they had become a burden on their families and were compromising the family's survival, they voluntarily sought death in the cold. Today's healthcare systems are dealing with choices that are just as hard and explicit. In 1993, New Zealand passed legislation that set out to secure "the best health, the best care, and the greatest independence for its citizens within the limits of available funding." This resulted in several very high-profile lawsuits brought on behalf of elderly New Zealanders who were denied access to renal dialysis because they also suffered from other serious and non-remedial health conditions. The decisions to withhold care were upheld in the courts.[33]

Issues around the right to healthcare are especially difficult because there is virtually no limit to the amount of healthcare resources an individual can consume. Some interpret this to mean that "someone else should pay to fix whatever goes wrong with me, regardless of reason, cost, or societal benefit." These decisions will be difficult, even if metrics have been defined and quantified. For example, US$50,000 per quality-adjusted life year (QALY) gained has been considered as a threshold for cost-effective treatments. Who will dare to decide to withhold effective treatments that exceed the threshold?

Lifestyle expectations can be equally contentious. Will treatment for a 65-year-old who has "normal" use of his shoulder but needs surgery to remain a competitive tennis player, be a societal expectation as populations continue to age? The stakeholders within healthcare systems will have to decide which lifestyle expectations are reasonable and which are not – resetting the balance between societal rights and market services – or risk "hitting the wall."

Social norms around acceptable behaviors can have a similar inhibiting effect. Societies that embrace behaviors such as tobacco and alcohol consumption can inhibit the development of personal responsibility. In least developed countries, these inhibiting behaviors may stem from a seemingly irrational resistance to vaccines and vitamins or from a "culture of bribery," which forces people to pay for societal healthcare services that are intended to be free.[34] In developed countries, norms such as religious beliefs can inhibit technological advances such as stem cell research,[35] genetic engineering, and cervical cancer vaccinations.[36]

Societal norms regarding the security and privacy of personal information can also impact the development of information-based medicine. Under the European Union's Directive on Data Privacy, some types of information cannot be collected without the individual's consent.[37] In the United States and despite the implementation of national privacy protections under Health Insurance Portability and Accountability Act of 1996 (HIPAA), a poll by the California HealthCare Foundation and the Health Privacy Project revealed that 67 percent of adults are concerned about the privacy of their medical records.[38]

Lack of aligned incentives – The barriers to healthcare change are typically exacerbated by the lack of alignment in the incentives among stakeholder groups. Realigning incentives is a daunting task that is further complicated by governmental policy and regulations, many of which were instituted in and for different healthcare environments.

Major alignment issues revolve around the quality and timeliness of care. In the United Kingdom, for example, most general practitioners (GPs) earned a large portion of their income from capitation payments from the National Health Service (NHS). They were rewarded for having a large number of registered patients instead of quality of care. The NHS has begun addressing this disconnect; in 2004, it implemented a new contract aligning GP earnings with 146 performance metrics.[39] In Canada's healthcare system, extended wait times have created a crisis in patient access. Canada is studying reward mechanisms that will encourage clinicians and administrators to reduce the wait times for surgery.[40]

Misaligned financial incentives also inhibit the rational management of healthcare institutions. In China, where the government has set many fees below cost, hospitals are incentivized to oversupply the few profitable products and services, such as medications.[41] As a result, 85 percent of all medications are sold through hospitals and at prices generally higher than in the pharmacies. China's hospitals receive up to 44 percent of their income from the sale of drugs.[42]

In the United States, there is a tangle of conflicting incentives among key stakeholders. Employers, who provide most of the health insurance for their employees, are focused on balancing costs against the benefits required to attract and retain viable employee bases. On the payer side of the industry, the incentive is to minimize and slow payments to attain the most attractive medical loss ratios. The fee-for-service environment encourages clinicians and other providers to prescribe more services and more procedures. And insured patients, who often bear little direct financial liability, demand whatever they may desire regardless of cost.

Inability to balance short-term and long-term perspectives – The inability to formulate, agree upon, and act from a long-term perspective can be a serious inhibitor of change in healthcare. Of course, when healthcare systems are on unsustainable paths, the longer that stakeholders take to appropriately balance long-term and short-term thinking, the more drastic and difficult the decisions required to avoid hitting the wall become.

Many governments ignore the problem of unsustainable growth in the long-term and focus instead on more "urgent" short-term needs and wants, particularly those pertinent to the coming election. Private payers are reluctant to accept even relatively minor costs today to avoid higher future costs. Many consumers are reluctant to adopt healthy lifestyles today, when the benefits of decisions to eat well and exercise regularly may not be fully realized for many years.

Inability to access and share information – Information is an inhibitor as well as an enabler of change. Non-digital and digital healthcare data is being generated at unprecedented rates. The volume at which digital and non-digital data is accumulating and the speed with which it is proliferating is creating an indigestible information glut. For example, Canada's 60,000 doctors face 1.8 million new medical papers in 20,000 journals and 300,000 clinical trials worldwide each year. These doctors also face the onerous task of storing, organizing, accessing, and integrating large amounts of patient data (see sidebar).[43] At the same time, the information-intensive healthcare industry is years behind other less information-intensive industries in the development of its IT infrastructure.

The volume of patient information for Canadian doctors[43]

	Per doctor each year	Total each year
Office-based doctor visits	5,367	322,000,000
Diagnostic images	583	35,000,000
Laboratory tests	7,333	440,000,000
Prescriptions	6,367	382,000,000

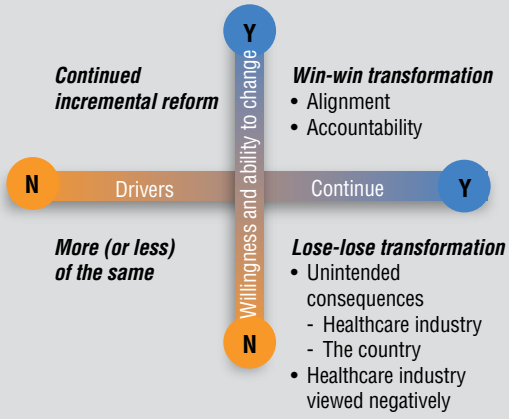
The challenge is how to facilitate healthcare decisions by getting the right information in the right form to the right person at the right time. Infrastructure and process are key issues here. In developing and least developed countries, the absence of information infrastructure and serious deficiencies in existing infrastructures is a clear barrier to change. In developed countries, the challenge revolves around standards-based systems interoperability and the reengineering of processes that are inefficient and/or counterproductive, yet firmly entrenched. The technology exists to solve these problems, but the challenge becomes ever greater as information proliferates at unprecedented rates.

In summary, we believe these five inhibitors – financial constraints, societal expectations and norms, misaligned incentives, short-term thinking, and the proliferation of information – are and will continue to create resistance to change in healthcare systems throughout the world. Each will have to be overcome in the process of mapping and navigating a new, sustainable healthcare path.

Transformation: four change scenarios

To construct a view of an individual healthcare system's future, the strength of and interactions between the various forces driving and inhibiting change must be evaluated. We can map this relationship in the form of a matrix (Figure 4). The horizontal axis of the matrix maps the overall force for change created by the five drivers. The vertical axis maps the system's willingness and ability to change as determined by the five inhibitors. The resulting matrix yields four general change scenarios. While there are many possible futures for healthcare systems, we believe that each will represent a variation on one of these scenarios.

FIGURE 4.
Healthcare transformation matrix.



Source: IBM Institute for Business Value analysis.

1. **More (or less) of the same –** In this scenario, the drivers are not sufficiently strong to stimulate major change and the country's healthcare system is neither willing nor able to change. A country might experience such a scenario if terrorism or a pandemic caused a major disruption in globalization. In such a case, the country and its healthcare system could become more, rather than less, isolated. The costs for companies competing within the country would be relatively equal and might become less of a factor driving change in healthcare. However, equilibrium would be the best case here. In becoming more isolated, most countries would be unable to sustain their current levels of overall healthcare spending and would likely experience "less of the same" in the form of forced eliminations and/or rationing of healthcare services.

2. **Continued incremental reform –** Again, in this scenario, the drivers do not create an urgent need for change. But, the country is willing and able to change its healthcare system. In the absence of strong drivers, change would be incremental and piecemeal at best. Short-term considerations would likely triumph over long-term needs, because the impetus for fundamental change would not be strong enough to overcome the attendant pain. This scenario reflects the path on which most healthcare systems are currently traveling, regardless of the strength of the drivers on a specific country.

3. **Lose-lose transformation –** In this worst-case scenario, the drivers for change continue to build as expected, but the country's healthcare system is unwilling or unable to change. In this "hit the wall" situation, fundamental change that no one wants is forced on the healthcare system. The lose-lose scenario creates unintended consequences both for the healthcare system and for the country.

   How might such a scenario play out? Using the United States as an example, we might see uncontrolled costs result in a government-funded, single-payer system, forced reductions in service fee schedules, and the elimination and rationing of covered services. This could significantly impact doctor salaries and satisfaction, resulting in fewer doctors overall. It could stifle innovation, since there would be less incentive for companies to develop new treatments and technologies. Consumers could be forced to accept "one-size-fits-all" healthcare or incur much higher expenses for the many services not deemed societal needs. We might see businesses and individuals immigrating to other more desirable geographic locales. Government might then be faced with diminished revenues leading to reductions in services. A classic vicious cycle could develop with virtually all stakeholders losing.

4. **Win-win transformation –** In this most desirable scenario, the drivers create an urgent need for change as expected and the country is both willing and able to transform its healthcare system. Given the fact that fundamental change is rarely simple or easy, the resulting change is not painless, but in the long-term, it is the best hope for creating a sustainable healthcare system. Sections 3-6 of this report are devoted to describing this scenario in greater detail and prescribing the actions needed to attain it.

Which countries will be up to the challenge?

You cannot map a viable path into the future without knowing where you stand today. In other words, transformation requires a baseline. There are four categories to consider in establishing an individual country's position on the transformation matrix and its ability to undertake change successfully:

- First, transformation requires the availability of sufficient funding and the ability to prioritize and spend these funds properly.
- Second because there is virtually no limit to the healthcare resources an individual can use, consumers – in their expectations, social norms, and the willingness to change behaviors – play an essential role in the transformation.
- Third and regardless of the portion of financing and delivery that is public or private, governments – for policy and, of course, funding – are indispensable agents of change.
- Fourth, successful transformation is dependent on the adaptability the healthcare system's infrastructure and the reaction and response of its key stakeholders.

In considering each of these elements, the questions and metrics in Table 1 can serve as a starting point in assessing a country's current transformational capabilities.

Transforming into the era of action and accountability

No matter what barriers stand between a healthcare system's current state and the achievement of a win-win transformation, action and accountability are basic ingredients of change. We believe those countries that successfully transform their healthcare systems will:

- **Focus on value –** Consumers, providers, and payers (public or private health plans, employers, and governments) will increasingly direct healthcare purchasing, delivery of healthcare services, and reimbursement based on a shared definition of value.
- **Develop better consumers –** Consumers will make better lifestyle choices and become wiser purchasers of healthcare services, frequently with the help of health infomediaries.
- **Create better options for promoting health and providing care –** Consumers, payers, and providers will increasingly seek out more convenient, effective, and efficient means and settings for healthcare delivery.

Source: IBM Institute for Business Value.

Sections 3-6 articulate our vision for a successfully transformed healthcare system (i.e., a win-win transformation), based largely on these three major actions.

A clear accountability framework will help empower the change actions required to achieve a win-win transformation of healthcare systems, increasing responsibility at all levels. Accountability can span the system with governments providing adequate healthcare financing and rational policy, healthcare professionals ensuring clinical standards and delivering quality care, payers incentivizing preventive and proactive chronic care, and citizens taking responsibility for their own health.

This kind of win-win transformation is rarely easy, but with action and accountability come new opportunities and the potential for a sustainable healthcare system that supports all of its stakeholders. As Don E. Detmer, President and CEO of American Medical Informatics Association, says, "A good healthcare system is both a social and an economic good. That is, effective healthcare results in a society with healthier, happier people, who at the same time contribute to the culture's productivity and economic growth. In short, it makes both good dollars and good sense to assure that all citizens have access to genuinely effective healthcare services, and the earlier the better."[44]

TABLE 1.
Assessing a country's willingness and ability to transform.

Category	Questions	Sample metrics
Funding	Will enough be available?	• Public/private spending percentage • Growth rate • Percentage of GDP compared to competing countries • Per capita spending compared to competing countries
	Will it be prioritized and spent well?	• Percentage of administrative costs • Estimated potential savings • Breakdown of current spending (public health, end-of-life diseases, etc.)
Consumers	What is the overall health status?	• Healthy life expectancy at birth (HALE) • Disability-adjusted life years (DALYs) and quality-adjusted life years (QALYs) • Percentage of obese, overweight and underweight people
	What are societal expectations?	• Current public spending on end-stage diseases • Willingness to accept less than most state-of-the-art care in the interest more equitable access
	What is the willingness to change behaviors?	• Scale from Confucian to individualistic cultures • Individuals responsibility for their health through health behaviors (smoking rates, obesity rates, sexually transmitted diseases, seatbelt use, etc) • Participation of those with chronic conditions in self-management programs
	What are social norms on privacy, new technologies, etc?	• Individual-centric, provider-centric, and government-centric potential norms
	How many "literate health activists"?	• Adult health literacy rate • Number of Internet users • Penetration of consumer-driven health plans
Government	Does the government have the leadership, political will, and stability to drive significant change?	• Recognition and acknowledgement of the problem of sustainability and the need to make difficult choices • Ability to prioritize and follow through • History of addressing tough challenges
	Do government policies and regulations enable transformation?	• Policies and regulations that promote healthy behaviors • Policies that emphasize/reward healthcare delivery performance • Policy driven by "evidence" and objective analysis rather than entrenched interests or history • Emphasis on accountability in funding arrangements • Government capacity to take long-term view in terms of health spending
Healthcare system	Are key stakeholders (e.g., payers, doctors and hospitals) willing to change to address the challenges?	• Incentives reward a longer-term perspective • Gap between current financial incentives and aligned incentives • Clear accountability framework • History of successful change management • Leadership buy-in
	Is the healthcare infrastructure (e.g. facilities and IT) appropriately robust?	• Adequate facilities exist or will exist • Ability to educate to enable continuous improvement • Ability to share information

3. Transforming value

Introduction

To successfully achieve a win-win transformation, consumers, payers, and society must base their healthcare decisions on a shared definition of *value*. This increased focus on value drives more efficient, effective healthcare delivery. Further, by 2015, the concept of healthcare value, in both its definition and scope, will itself be significantly more expansive.

In this section, we explore value specifically from the perspective of the key purchasers of healthcare – consumers, payers, and society. Then, because the definition and primary drivers of value also depend on the evolutionary position of a country and its healthcare system, we offer a healthcare hierarchy of needs to describe what type of services might apply at different points in a country's development. Finally, we explore how value needs and perceptions differ among stakeholders depending on their country's position on the healthcare hierarchy.

The eye of the purchaser

Good value can be defined as an optimal point on a cost and quality curve. Both cost and quality include a product component (e.g., the clinical outcomes from a regimen of medical treatments) and a service component (e.g., the delivery of the treatments). In healthcare, value further includes access and choice components.

Defining and measuring value in treating Alzheimer's disease

In 2006, the United Kingdom's National Institute for Health and Clinical Excellence (NICE) recommended doctors continue prescribing drug treatments for Alzheimer's disease patients with moderate forms of the disease but cease prescriptions to patients with mild or severe forms. Based in part on a cost-effectiveness assessment, this ruling leaves hundreds of thousands of patients in England and Wales without licensed drug treatment for this degenerative disease.[45,46]

The ruling illustrates key questions about value. For instance, if a treatment helps people, should it be paid for and who should pay? Should governments and private insurers automatically pay or should they first measure benefits against costs? And, what cost-benefit ratio will trigger treatment?

Further, there are broader ramifications that must be considered as each country determines value in its journey to a win-win transformation. If drugs or procedures with high costs and little benefit are routinely denied, what are the consequences on innovation and the ability to attract world-class workers and companies? Healthcare systems and their stakeholders will have to balance the dual and often conflicting goals of quality improvement and cost control.

Currently, determining value in healthcare is a difficult task. We do have some information regarding cost, but it is neither comprehensive nor widely available. Quality data is scarcer still. In fact, some argue that healthcare quality cannot be defined, let alone measured – an argument that is unintentionally supported by the difficulty in obtaining the codified clinical data needed to achieve these tasks. Consequently, in today's healthcare environment, value decisions are based primarily on cost and supported by anecdotal and in other ways unreliable quality information.

By 2015 and in the win-win scenario, the ability of stakeholders to measure healthcare cost and quality and determine value will be dramatically transformed. Aided by the widespread application of information technology to healthcare delivery, access to the standardized clinical data needed to define good quality care and measure provider and patient performance will be vastly improved. The increasing use of electronic health records (EHRs) will expand the perception of value to encompass additional components, including individual care preferences, unique medical circumstances, and care delivery options. At the same time, value perceptions will shift in response to the drivers mentioned previously, particularly the aging of populations, increased prevalence of chronic disease, and new medical technologies.

Of course, value remains in the eye of the beholder and the concept of "good value" differs depending on where one falls in the healthcare purchasing chain. A 55-year-old consumer who wants to keep playing basketball might consider an advanced hip replacement costing US$50,000 a good value. Society and payers may not agree. As the purchasers and benefactors of healthcare, *consumers*, *payers*, and *society* all have different opinions as to what is good value. Balancing and resolving these conflicts are major challenges in the transformation of healthcare systems.

Perspectives on cost – Cost in healthcare, for the purposes of this discussion, is the monetary amount that is paid for a healthcare treatment and its associated service, such as a medical procedure, consultation, hospital visit, or medication. Consumers, payers, and society view costs very differently.

- **Consumers –** Today, consumers often have little direct responsibility for bearing the costs of healthcare. In most parts of the world, consumers pay for a majority of their healthcare indirectly through taxes, insurance premium contributions, and nominal co-payments and deductibles. As a result, consumers have little idea of treatment costs and very limited access to cost information.

  By 2015, consumers in transformed healthcare systems will directly pay for a larger portion of healthcare costs and assume greater financial oversight and responsibility, which, in turn, will drive increased cost transparency and comprehensibility.

- **Payers (public or private health plans, employers and governments) –** Today, payers shoulder the burden of healthcare costs. They see costs as episodic in nature and work to control them by limiting the amount of services available or reducing the amount reimbursed for a specific procedure or medication.

  By 2015, as their focus on value is transformed, payers will take a more holistic view of cost – looking not simply at the episodic costs of procedures but also at how investments in prevention, alternative treatments, and proactive health status management can optimize the balance between short-term and long-term costs of care.

- **Society –** The relationship of society as a whole to cost is difficult to define. While societal perceptions tend to reflect the thinking of the individuals that make up a society, conflicts often arise between what people believe in the abstract sense and how they respond when they are directly affected. Generally speaking, society today tends to see healthcare costs in the aggregate, using metrics such as percentage of Gross Domestic Product (GDP) or per capita spending. While these are interesting statistics, they say little about the value of the healthcare being purchased nor do they provide useful tools for managing cost.

  By 2015, to control costs and prevent healthcare from hitting the wall, societal perspectives on what is "worth it" (e.g., the best use of limited funds) will be factored into the value equation.

Tangible and intangible measures of quality – Quality in healthcare is a multifaceted characteristic. It includes tangible measures, such as whether and how quickly a patient is able to resume normal activity after a procedure and how quickly a needed appointment to see a specialist can be obtained. It also includes intangible measures, such as the bedside manner of a provider and the friendliness and attentiveness of the support staff. The determination of healthcare quality is further complicated by the impact of patient behaviors on treatment outcomes. As with cost, quality resonates differently with consumers, payers, and society.

- **Consumers –** Today, the consumer's ability to predict quality in healthcare is equivalent to a roll of the dice. For the most part, consumers must base their decisions on the recommendations of others, anecdotal information on the outcomes of previous patients, service measures (e.g., wait times), and their personal impressions of the doctor's bedside manner. Quite understandably, the consumer's perception of quality is also egocentric and highly subjective.

  By 2015, data that definitively measures the clinical quality of providers and facilities will be available in same degree that consumer product information is available today. This data will be obtained through the ubiquitous use of health information technology and it will be more readily accessible, reliable, and understandable. There will be less inclination for people to accept on faith that although there may be "bad doctors," their doctor surely must be one of the good ones.

- **Payers –** Today, governments and private payers do not know much more about healthcare quality than consumers. Their financing mechanisms rarely take quality into account and most payers, whether private or public, are focused on keeping interventions and the rates that determine payment in an affordable and acceptable range.

  This is already changing and by 2015, payers will have modified their reimbursement mechanisms to reflect the reality that prevention and doing the right thing well once are more cost effective in the long run. Pay-for-performance programs, such as those already appearing in the United States, Singapore, and the United Kingdom, will differentiate reimbursement based on pre-established quality metrics.

- **Society –** Today, society pays little attention to healthcare quality. The prevailing attitudes are "anything goes" and "if it's broken, fix it." These attitudes are unsustainable, of course.

TABLE 2.
Transforming value perceptions.

		Today	Future
Demand	**Consumers**	• Fix me regardless of cost or cause	• Help keep me well • Provide appropriate, cost-effective, high quality care when needed
	Society	• Healthcare is a societal right	• Healthcare is a societal right - but available funds must be prioritized well across the hierarchy of needs
	Payers	• Minimize unit costs	• Transparent cost/quality information • Able to accept value-based reimbursement
Supply	**Provider incentives**	• Financial incentives to treat and to do more, not prevent	• Wellness and prevention • High quality, cost-effective acute and chronic care

By 2015, societies will demand that payment for healthcare services be aligned to the value those services return to the society as a whole. Societal healthcare decisions will be based on the ability to measure quality – of services provided and the corresponding effect on the recipients and their ability to contribute back to society.

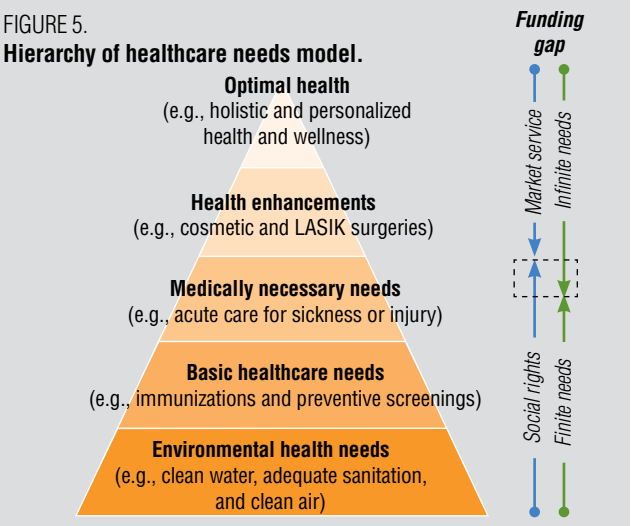
Hierarchy of healthcare needs model

In 1943, Abraham Maslow introduced his Hierarchy of Human Needs to explain the psychology of motivation. In Maslow's hierarchy, our most elemental physiological needs, such as food, air, and water, form the base of a five-tiered pyramid. As our physiological needs are satisfied, the next level of needs – safety needs – emerge and motivate us, until we reach the peak of the pyramid, which represents actualization or spiritual needs.[47] The aggregated motivations and value perceptions of stakeholders in healthcare systems can also be thought of as being governed by a hierarchy of needs. In this case, they are:

- **Environmental health needs –** Rudimentary healthcare needs, such as clean water, adequate food and nutrition, clean air, and adequate sanitation, form the base of the pyramid.
- **Basic healthcare needs –** The next level up includes basic medical care, such as immunizations and preventive screenings, which eradicate substantially premature death.
- **Medically necessary needs –** The third level includes the medical treatment of acute, episodic illness, injury, and chronic disease. Conceptually, this level includes affordable treatments (as determined by societal opportunity costs) that enable patients to perform the activities of daily living.
- **Health enhancements –** The fourth level encompasses treatments that are not strictly medically necessary, but improve overall health and the quality of life, such as lifestyle drugs, cosmetic surgery, and corrective surgeries that address problems that are not seriously health-threatening (e.g., arthroscopic surgery to improve mobility or strength of a joint so an individual can resume levels of activity beyond the normal activities of daily living).
- **Optimal health –** The peak of the pyramid encompasses a higher and more holistic understanding of health in which individuals attain optimal physical and mental health, a state beyond the mere absence of symptoms or disease. Treatments at this level include genetic testing and personalized wellness plans.

Generally speaking, there is a natural precedence in the healthcare needs hierarchy, with the lower levels taking priority over the higher levels for both individuals and societies. It is clear that in healthcare systems in which a significant portion of the population cannot obtain basic immunizations, public resources would not and should not be assigned to providing access to elective cosmetic surgery. But, after the bottom three levels are adequately satisfied, we would expect to see the value demands shifting upwards to health enhancements and optimal health.

FIGURE 5.
Hierarchy of healthcare needs model.



Source: IBM Institute for Business Value analysis.

Interestingly, as a system moves up the pyramid, the demand for resources increases. The bottom two levels, for instance, represent relatively finite needs. In simple terms, only one smallpox immunization per child is required. At the third level, however, the resources required to satisfy healthcare needs begin to expand. The treatment of an episodic illness may require finite resources, but diabetes creates an ongoing demand for resources. As a system moves up the hierarchy, the aggregate demand for resources continues to grow. Examples include the treatment of end-stage diseases (e.g., certain types of cancer and heart disease), the maintenance of patients on life support, and serial cosmetic surgery.

Each healthcare system copes with this demand for resources by drawing a line between needs and wants that are considered societal rights and those that are generally considered market services. In any given system, if you compare the position of the societal rights/market services line to the position of the finite/infinite needs line, you can obtain a sense of the magnitude of the funding gap the system faces (Figure 5).

Value needs vary with hierarchy level

If we consider the world's countries in relation to the hierarchy of healthcare needs, we can see that needs of individual countries tend to vary by their position on the hierarchy. In general terms, in the least developed countries, the basic needs are encompassed within lowest two levels in the hierarchy are the highest priority. Developing countries are grappling with the provision of needs in the lower and mid levels of the pyramid. And developed countries struggle with the greater resource demands in the mid and upper levels (Figure 6).

Least developed countries – To date, the least developed countries have been largely bypassed by the effects of the drivers of healthcare change, particularly globalization.[22] Survival is the issue in these countries and in order to survive, they must create and maintain healthy populations.

A sound physical infrastructure enabling healthy lives is essential to this goal. Countries cannot progress up the economic ladder if their citizens are in poor health and must devote large portions of their time to acquiring basic needs, such as clean water and food. So, the least developed countries generally have a strong need to address environmental health issues.

Disturbingly, the least developed countries are also beginning to experience the rise of chronic illnesses arising from previously fatal infectious diseases and lifestyle choices, such as smoking, while remaining in the least capable position to manage them. For instance, the WHO reports that chronic disease will be a leading cause of death in Nigeria by 2015 (Figure 3, page 9).[25] The ability to provide the healthcare needs in the least developed countries is also affected by high birth rates. These countries will continue to experience higher population expansion than developed or developing countries.

Developing countries – In developing countries, the drivers of healthcare change are creating a mixed outlook. For those that have managed find a place within the global economy, their economies and populations are moving up the value chain, a shift accompanied by higher expectations of their healthcare systems. The incursion of technology is leading to increased productivity, but difficult tradeoffs are surfacing. There is a tremendous demand for continued spending on affordable education and the physical infrastructure, such as water, sanitation, energy, and transportation. At the same time, the need to maintain a healthy workforce is critical and the demands of the population for additional healthcare services are growing.

The prevalence of chronic disease, which is not only expensive to treat but also negatively impacts national productivity, is a major factor in developing countries. By 2020, the WHO estimates that two-thirds of all deaths in India will be caused by chronic disease. The loss of income to China over the next ten years as a result of heart disease, stroke, and diabetes is estimated at

US$550 billion.[25] At the same time, developing countries are still fighting infectious diseases – not only existing ones, but also new diseases and new strains of disease, such as multidrug resistant tuberculosis.

Developed countries – In developed countries, the drivers of healthcare are having a substantial impact. Globalization, for instance, has resulted in expanded markets for the goods and services of those countries, but has also created greater competition and related cost/price/quality pressures. As economies expand and populations become more educated, healthcare needs also expand. In fact, public expenditure for health in all OECD countries has increased nearly 2.0 times more rapidly than economic growth.[48]

On average, life expectancy across OECD countries reached 78.3 years in 2004, up from 68.5 in 1960.[49] The longer life spans in developed countries are accompanied by the increased incidence of chronic diseases, such as diabetes, depression, stress-related illnesses, congestive heart failure, coronary artery disease, and asthma. As we have seen, obesity is also a major trend in developed countries as well as an additional risk factor in many chronic diseases. More than 50 percent of adults are now defined as being overweight in ten of the 30 member countries in the OECD.[49]

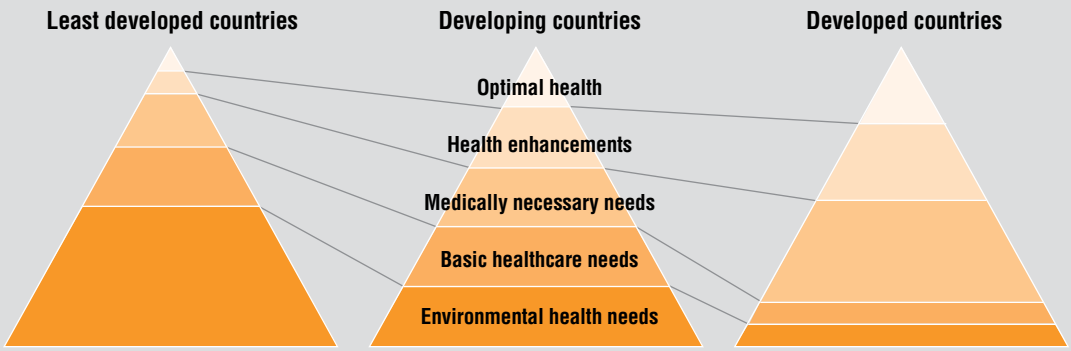
Value perceptions vary with the hierarchy level

In any given country's healthcare system, the value *perceptions* of consumers, payers, and society will also vary with its position on the healthcare needs hierarchy. Further, as a country rises up the hierarchy in its ability to meet more sophisticated healthcare needs, the number and intensity of value conflicts between consumers, payers, and society tend to increase.

When the focus of a government is on the provision of clean water, sanitation, clean air and other environmental needs, there tends to be little conflict between value perceptions (Table 3). Individual consumers, payers (in this case, the government), and society as a whole can all agree that everyone benefits from these necessities.

The same is true for basic healthcare needs. The perception that immunizations and preventive screenings create good value is near universal. In fact, vaccines were credited with preventing two million child deaths in 2003 alone.[50]

FIGURE 6.
Relative value needs in developed, developing and least developed countries.



Source: IBM Institute for Business Value analysis.

TABLE 3.
Perception of value by hierarchy of healthcare needs level and stakeholders.

	Consumers	Payers	Society
Optimal health	• Lifelong quality of life, including predictive and preventive measures and care • Above average functional performance • Access to information and health education • Access to sophisticated medical technology	• Minimizing public pay for optimal health services • Minimizing unacceptable opportunity costs for public pay care • Costs and volumes of tests and medical procedures	• Availability of personalized medicine • Cost/benefit of sophisticated medical technology
Health enhancement	• Opportunity to shape healthcare consumed to meet personal priorities • Wait times for elective procedures • Choice of providers, choice of diagnostic and treatment options	• Lifetime costs of healthcare • Reasonable burden/competitiveness of healthcare costs • Equity – high users should not be an excessive burden on any public system • Minimizing unacceptable opportunity costs in public pay care	• Life expectancy at birth • More comprehensive population based screening
Medically necessary needs	• Access to primary care • Right care at right time in right place • Safe care • Integration/coordination of care • Choice in care decisions (e.g., end of life care)	• Per capita healthcare costs • Return on investment	• Life expectancy at birth • Disability adjusted life years • Equity – all potential users should have access regardless of their means • Population wide screening
Basic healthcare needs	• Eradication from major infectious diseases • Ability to access medical care	• Minimizing the financial burden arising from infectious disease	• Immunization rates • Minimizing prematurely lost life years • Death from infectious disease or malnutrition
Environmental health needs	• Survival of children • Potable water • Clean air • Basic sanitation	• Minimizing the financial burden arising from infectious disease	• Infant mortality • Life expectancy at birth

Differences in value perceptions tend to begin in earnest once a society has substantively addressed environmental and basic healthcare needs. At the level of medically necessary needs, consumers often think that treatment for any health issue they are experiencing, even those self-inflicted through poor living choices, is both medically necessary and a good value. Payers tend to take a narrower view and make decisions based on how much care can be provided given the available funding. Society will tend to side with the wishes of the individual consumer until granting those wishes negatively impacts other services it holds dear, such as retirement benefits, law enforcement, or public education. The biggest challenge will be in determining what is a medical necessity versus an enhancement and what should be a societal right versus a market service.

Surprisingly, value conflicts begin to clear at the optimal health level of the hierarchy. Wellness, prevention, and personal responsibility tend to require relatively low cost investments and generate high quality outcomes. Consumers value the services available at this level as they come to understand the relationship between lifestyle decisions and their health status. Payers with a long-term view, especially governments and employers, find that wellness and prevention programs create improved financial returns and increased productivity. Society, mirroring the attitudes of consumers, places greater value on smoke-free environments, active lifestyles, and healthy foods. As in the first two levels of the hierarchy, the perceptions of value once again begin to merge.

Summary

That healthcare decisions in 2015 should be based on value is obvious, but value-based transformation is not a foregone conclusion. In a value-based healthcare environment, high levels of accountability will be required on the part of consumers, payers, providers, society, and governments. For this to occur, the definition of value in the minds of consumers, payers, and society must expand. Countries and regions making value-based decisions will also face extremely difficult choices. These include the value-based allocation of funding and the accompanying need to reconcile the conflicting perspectives of stakeholders. None of this will be easy to achieve. In fact, absent a clear framework for defining value, a process to resolve inevitable conflicts, and the willingness to make the tough decisions, successful transformation will not be possible.

Singapore – A model for value-based healthcare transformation

Singapore has stood out for its achievements since gaining its independence in 1965. During this period, for example, the country's per capita gross domestic product increased from S$1,567 (US$512) in 1965 to S$44,666 (US$26,833) in 2005. This island city-state with 4.4 million residents and a land area of 699.4 million square kilometers benefited from strong economic growth (6.4 percent), low unemployment (3.4 percent), and low inflation (0.5 percent) in 2005.[51]

Singapore's health status has been equally impressive. Compared to OECD countries, Singaporeans had a higher life expectancy at birth (79.7 vs. 78.3 years) and lower infant mortality rate (2.0 vs. 5.7 deaths per 1,000 live births) in 2004.[1,51] Yet, Singapore's health spending is equivalent to 4.5 percent of GDP, or about half the OECD average.[19, 51] Key to this success has been the country's innovative financing system.

Before 1984, medical services were primarily delivered by the public sector either for free or at a nominal charge to patients. As healthcare costs and inefficiencies mounted, the government decided to reform its healthcare system based on the following tenets:

- Promote good health among all Singaporeans;
- Encourage individual responsibility;
- Provide affordable basic medical services to all Singaporeans;
- Rely on free market competition to improve services and increase efficiencies; and
- Intervene when free market competition fails to control healthcare costs.[52]

Singapore has since launched a series of innovative financing programs based on these tenets. Under the **Medisave** program, for example, employees contribute 6 to 8 percent of their monthly salary to an employer-matched medical savings account (MSA) which is currently capped at S$32,500 (US$20,533). Singaporeans can use their MSA funds for their healthcare services but must pay more for higher-level services (e.g., higher- vs. lower-service hospital wards) using other funds. The motivation is to encourage wise consumer behavior in staying well and consuming healthcare services.

The government has also launched two insurance programs covering catastrophic, life threatening disorders (**MediShield**) and severe disabilities (**ElderShield**). For both programs, Medisave members are automatically enrolled but can opt out of the programs if they wish. In addition, Medisave funds are used to pay the premiums for these programs.

Finally, Singapore has introduced programs that cover Singaporeans not adequately covered by the aforementioned ones. For example, **Medifund** serves the poor and indigent and the **Interim Disability Assistance Program for the Elderly (IDAPE)** provides financial support to disabled Singaporeans not covered by ElderShield. In the case of Medifund, funds are allocated on a case-by-case basis from a set pool of resources. This illustrates the government's view that healthcare is not entitlement; rather it is a good that is purchased within the limits of available resources.[53]

Singapore has transformed its healthcare system into a national asset. By following a set of guiding principles, the government has established a financing system in which its citizens assume a more active role in their own health and healthcare yet still provides coverage to those citizens unable to assume this role.

4. Transforming consumer responsibility and accountability

Introduction

The second key element in a win-win transformation of healthcare systems is increased consumer responsibility for the management of and payment for healthcare services, as well as personal health management. As countries are pressed ever closer to the wall of healthcare crisis, the financial pressure is building for consumers to change counterproductive health behaviors and actively participate in decisions regarding which services will and will not be deemed societal rights.

Today, many consumers continue to operate under unrealistic expectations of what their healthcare systems can and should do for them. In the least developed countries, consumer behavior is enabling the spread of infectious disease. In the developed countries, aging populations want to feel, look, and live as they did at age 16 or 25 or 40. And, they expect their healthcare systems to enable this fantasy.[54]

At the same time, public healthcare plans and systems are struggling to contain costs and limiting access to some diagnostic and therapeutic procedures. From Canada to China and South Africa to Japan, under many different models for healthcare financing, the monetary burden that consumers assume is growing. In the United States, employee contributions to employer-sponsored plans continue to rise as do deductibles and co-payments.[55] In fact, the continued escalation of healthcare costs in the United States has stimulated renewed discussions regarding the radical reform of healthcare financing, with options such as a universal health voucher system and even a single, national system being proposed by influential experts.[56,57]

The outlook for a win-win transformation is not entirely bleak, however. As consumers become more directly accountable for their health and healthcare choices, they can also become wiser, more value-based purchasers, improve their health through better choices, and at the same, exert pressure to keep system costs in line.

Information access

The transformation in consumer accountability is influenced by the healthcare system's information technology infrastructure, adoption, and interconnectivity. Today, integrated information networks exist in most countries in only the most rudimentary form. The result is financial waste and service failure in the form of misdiagnoses, unnecessarily repeated tests, the use of medications that contradict one another, etc.

By 2015, consumers will no longer have to accept the current levels of waste and inefficiency. Electronic health records used by providers and personal health records controlled by consumers will encapsulate and communicate an individual's critical health information. These records will enable consumers – and their chosen providers – to make high quality decisions about their care.

Danish citizens manage their healthcare online

In 2001, the Danish government launched the Sundhed public healthcare patient portal (www.sundhed.dk). This portal was created to increase patient involvement in their healthcare, increase the quality of patient life, and lower overall healthcare costs. Some of the features of the portal include self-scheduling of appointments and online interaction with healthcare providers. Patients are able to access their medical records, including information related to inpatient hospital stays, going back to 1977. The portal also allows for the monitoring of chronic diseases, such as diabetes, by providers and patients alike. This feature helps ensure consistent care is delivered across today's complex healthcare networks.

The access to information around healthcare options, costs, and quality will also empower healthcare consumers to make better-informed choices around care delivery channels and providers. By 2015, for instance,

they will be able to easily discover that they can have a quick, walk-in strep test at the local retailer. Consumers will be further encouraged to make sound channel and provider choices by their insurance plans, which in the case of strep test might notify them that the cost of the retail clinic will be fully reimbursed while the visit to doctor's office will require the patient to pay 50 percent of the bill. In understanding what is covered, in which care channel, and to what extent, the accountability of healthcare consumers will be further enhanced.

Once care delivery channels and providers are chosen, information access will also empower consumers to make better treatment decisions. They will be able to obtain and weigh outcome data, and participate in their course of treatment to a much greater extent than today. Consumers will be further aided by the rise a new breed of healthcare professional, the health infomediary.

A glimpse into the promises of personalized medicine

At present, consumers typically undertake genetic testing in response to a known history of inherited conditions. But genetic testing can also identify other conditions with grave medical consequences, such as phenylketonuria (PKU), hemochromatosis, and Factor V deficiency.

Sometimes these are treatable with simple interventions. The parents of a baby with PKU, a metabolic disorder in which an enzyme is lacking, can give the infant a special diet. An adult with hemochromatosis, an iron overload disorder, can undergo a phlebotomy to remove iron. A pregnant woman identified with Factor V deficiency can avoid a thrombotic event through the use of specific anticoagulants.

These examples are just the beginning of the value that personalized medicine can provide consumers. As molecular diagnostics and other aspects of personalized medicine become more sophisticated, consumers will become ever more empowered. By 2015, a 21-year-old could undertake a whole genome test to identify risk factors for chronic conditions, such as a specific cancer or heart disease. It would also reveal, via a pharmacogenomic profile, the potential for adverse drug reactions to drugs. This knowledge will enable a new level of consumer responsibility.

Comparison shopping for healthcare

Today, the receiver of healthcare services is usually disintermediated from its payment. Typically, consumers do not know what healthcare costs nor do they really care, because they see it as free or prepaid.

Not only do consumers not understand what healthcare costs, they do not know if it is good. Nor do they necessarily take good care of themselves by making healthy lifestyle choices and seeking preventive care. Since healthcare is perceived to be free and comparables are scarce, consumers fail to shop for healthcare as they would for most other goods and services.

By 2015, in the win-win scenario, consumers will comparison shop for healthcare in the same manner that many of today's buyers exhaustively research the purchase of a new automobile. The demand for reliable information about healthcare value will drive increased availability and transparency of cost and quality data. It will also drive the adoption of global quality standards around that data, helping ensure the validity of the information on which consumers base their healthcare decisions. Further, "medical tourists" and, as the Internet continues to enable remote consultations and second opinions, online consumers will use this data to evaluate providers and facilities around the globe.

Rise of the health infomediary

If the good news is that by 2015, all this information will help consumers take greater responsibility for their healthcare choices, the bad news is that many consumers will not be able to navigate these choices. One challenge is "health literacy," that is, the capacity of consumers "to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health."[58]

Health illiteracy affects individuals' ability to successfully navigate the healthcare system and to understand the information needed to manage their own and their family's healthcare. It has been linked to adverse health outcomes (e.g., higher rates of hospitalization and less frequent use of preventive services) which lead to higher

healthcare costs. Further, the distribution of health illiteracy falls disproportionately on those consumers who typically have more reason to require healthcare services, namely older adults, people with low income levels, and people with compromised health status. Recent studies estimate that more than 90 million, or about 50 percent of American adults are health illiterate.[58,59]

True, there are "literate health activists," predominately computer-literate, aging baby boomers who want to retain control over their lives. But they are in the minority of healthcare consumers. There are also health infomediaries (HIs) who help individuals navigate the insurance, channel, and service options in long-term care. But they are not widely available.

By 2015, as consumers more actively manage their health, they will need to access and evaluate information on preventive care, genetic testing, chronic disease management, and healthcare provider quality (to name just a few topics). As consumer responsibility for healthcare rises, so will the numbers of people who will require assistance in obtaining and interpreting the available information and applying it in their healthcare decisions. In the win-win scenario, the health infomediary will become a fixture in the landscape of many healthcare systems for both the well and the chronically ill, and for a much broader socioeconomic segment of the population.[60]

HIs will help patients identify the information required to make informed choices, help them interpret medical information, help them choose between care alternatives and channels, help them interact with the providers they choose, and in some cases, act as care providers themselves. By 2015, these professionals could well be the overseers of a patient's healthcare team. They will coordinate the healthcare services required, with particular emphasis on health status improvement strategies based on lifestyle choices. In this scenario, doctors will become part of the healthcare delivery process only when a certain level of acuity is required, such as surgery or complex diagnostics. Other midlevel providers, such as physician assistants, nurse practitioners, nurses, medical assistants, and pharmacists, and other settings of care, such as home monitoring, retail clinics, Web video conferencing, and disease-specific clinics, will be utilized as needed for preventive and routine care, as well chronic and some types of acute care.

Better health through better lifestyle decisions

Finally, the direct involvement of consumers in healthcare will influence lifestyle choices. Today, as we have seen, there is a relatively widespread disregard for these choices among consumers. The rising rates of obesity and chronic disease clearly indicate poor eating and exercise habits. The continuing scourge of HIV/AIDS is an indicator of unsafe sexual behavior.

By 2015, in the win-win scenario, lifestyle choices will be more explicit and poor choices will come with short-term consequences. Non-smoking, non-obese, non-sleep deprived, non-sedentary consumers will need less healthcare and a result, will pay less in total health-related expenditures and treatments. Healthy living education programs will be prevalent.

In a win-win scenario, as the governments and employers wake up to the reality that a healthier population is more productive and costs less in the long run, both will beat the drum for healthy life choices. Both HIs and electronic personal health records will be major conduits of lifestyle information.[61] Mandatory physical fitness programs will be re-introduced in many schools. Bike paths will proliferate and municipalities, through their master plans, will encourage mixed-use development, such as the so-called New Urbanism in which residents live within walking distance of stores and work.[62] While the absolute number of people who will live in these developments will remain relatively small, their cultural impact will have a larger potential, with society at large embracing and promoting healthier, more active lifestyles.

Social responsibility programs will also increase. Smoking bans are already commonplace, with even Italy and Ireland prohibiting smoking in cafes and bars. WHO has made a policy decision to no longer hire smokers.[63] Decisions such as these will spread. By 2015, access to organic foods will become ubiquitous and the issue of junk food in American school cafeterias, for example, will be a quaint and wholly misguided practice of the past.

By 2015, in the developed world, the combined, sustained message of health responsibility delivered by the government, schools, and employers will have a noticeable effect on individual lifestyle choices. As the developing world demands better healthcare and bears more financial responsibility for its delivery, it too will embrace the lessons learned in the developed world. The expanding middle class in countries such as India and China will not adopt the current unhealthy eating habits of the West. In the least developed world, cultural mores and societal stigma will change and simple lifestyle changes will help loosen the devastating grip of infectious diseases, such as HIV/AIDs.

Summary

As the rising expense of healthcare shifts more financial responsibility to consumers, the same trend will trigger the mechanisms required to slow and perhaps, reverse the rate of cost increases. As patients assume more responsibility for their care, they will demand the information they need to determine their best value options and they will demand more cost-effective care channels, settings, and providers. Many consumers will require help making these decisions, but in the win-win scenario, the consumer demand for value and accountability will create a more rational, sustainable healthcare delivery system.

5. Transforming care delivery

Introduction

The third key element in the win-win transformation of healthcare is a fundamental shift in the nature, mode, and means of care delivery. Today, healthcare delivery is overly focused on the episodic treatment of acute care. By 2015, the emphasis of healthcare systems around the world will expand from acute care services to include prevention and chronic condition management.

This new environment will be significantly more complex than the existing one (Figure 7). Redefining how, where, and who delivers patient care will require the development of alternative healthcare means, channels and settings, and providers. But this shift will be driven and supported by value-based healthcare purchasing/reimbursement and the demands of responsible and accountable consumers for alternatives that offer convenience, effectiveness, efficiency, and, last but clearly not least, cost advantages. For example, telemedicine expands the catchment area by providing electronic access to additional care providers for diagnosis, triage, monitoring, consultations, and therapeutic procedures.

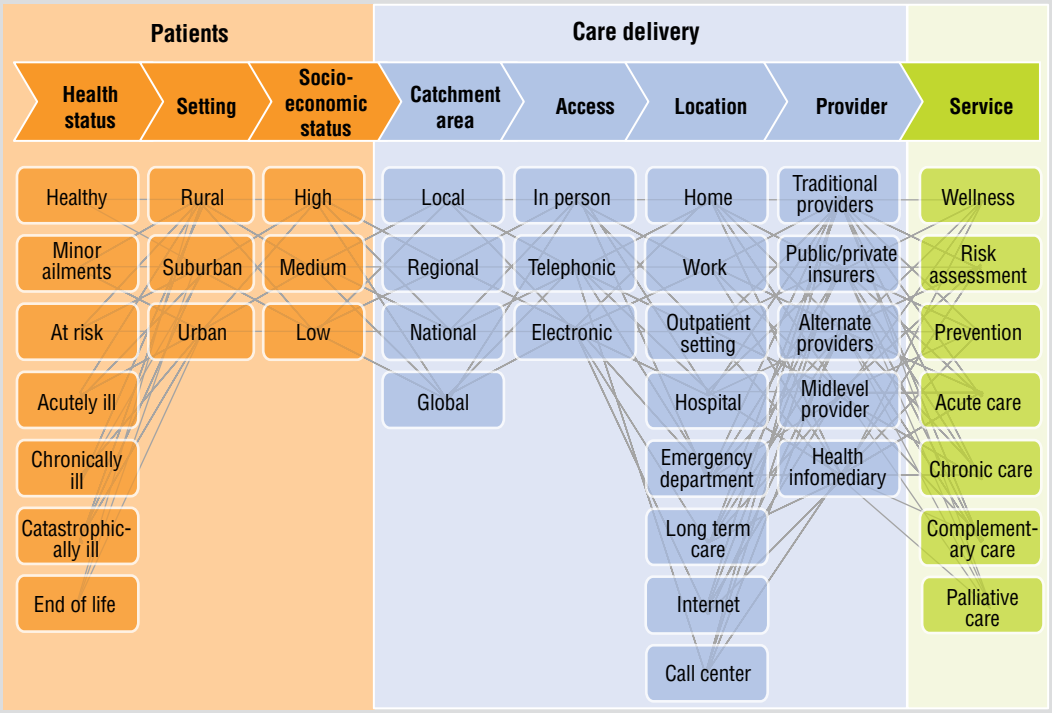
As always, the challenge of transformation in care delivery will differ in the developed, developing, and least developed countries. The developed countries will have to repurpose and supplement their existing systems. In the least developed countries, the struggle will continue to improve the basic health status of the population. The developing world will have a foot in each category – it will race to design and build an infrastructure that anticipates and supports the growing care demands of the emerging middle class and at the same time, will struggle to enhance the health status of underserved and rural population segments. The efforts of all countries, however, will be informed by a growing emphasis on prevention and a growing need for proactive chronic care management.

The remote practice of medicine has become a reality

Telemedicine – the remote provision and exchange of healthcare and healthcare information – is not a new concept. In 1905, Willem Einthoven used analog telephone lines to transmit electrocardiograms from the University Hospital of Leiden in The Netherlands to his laboratory, 1.5 kilometers away.[64] In 1924, as radio became ubiquitous, the idea of doctors linked to patients by image and sound was illustrated on the cover of a **Radio News** magazine issue.[65] Today, as communications and information technologies have evolved, costs have decreased, and access increased, telemedicine has become a reality.

- One common remote application is the **diagnosis** of medical conditions. Sweden's Sollefteå Hospital transmits non-emergent MRIs to Spain's Telemedicine Clinic (TMC) which has excess capacity of radiologists. Within 48 hours, TMC specialists analyze and advise on the MRIs.[66]
- Telemedicine is also increasingly used to provide remote **triage** services. In Cambodia, local healthcare workers receive triage advice and consultative support from Harvard Medical School-affiliated doctors via an email-based system.[67]
- Another application is remote patient **monitoring**. The United States Department of Veterans Affairs (VA) is installing 50,000 home-monitoring systems to supplement nurse visits. The VA has reported that these systems have cut patient care costs by one-third and have been well received by most patients.[68]
- Telemedicine is also used to provide remote **consultations** between doctors and patients. In Mexico, satellite technology is used to provide teleconsultations to 10 million governmental employees throughout the country.[69]
- Finally, telecommunications and IT are used to perform remote **procedures**. In 2001, the first trans-Atlantic robotic telesurgery took place when a surgical team in the United States performed gall bladder surgery on a patient in France – 7,000 kilometers away.[70]

FIGURE 7.
Care delivery channels, 2015.



Source: IBM Institute for Business Value analysis.

Preventive care

Preventive care focuses on keeping people well through disease prevention (including early detection) and health promotion. There is overwhelming evidence that the lack of appropriate preventive care costs lives and money and degrades the quality of life. For instance, Vitamin A deficiencies affect 250 million children under five years of age and remain the single greatest preventable cause of childhood blindness. It also estimated that approximately 80 percent of coronary heart disease,[5] up to 90 percent of type 2 diabetes,[6] and more than half of cancers[7-10] could be prevented through lifestyle changes, such as proper diet and exercise.

Nature of preventive care delivered – Today, preventive healthcare is a concept without a champion. Generally speaking, consumers ignore it, healthcare purchasers do not incentivize it, and healthcare providers do not profit from it. By 2015, and as healthcare purchasing shifts to a value basis and consumers assume ever increasing responsibility, there will be a greater focus on prevention as a viable long-term strategy to reduce overall health-care costs and improve health.

By 2015, in the developed countries, the notion of preventive healthcare will expand as it embraces and combines Eastern and Western approaches and the best of the old and the new, such as Traditional Chinese Medicine, Ayurvedic medicine, homeopathy, naturopathy, etc. A

notable addition to this expanded approach will be genetic testing, which will enable preventive screening. The least developed countries will focus on prevention and the achievement of improved health status in terms of water supply, sanitation, nutrition, access to vaccines, vitamins, and other low cost, but vital services. Developing countries will juggle the needs of both environments, adapting preventive care measures of the developed world to the cultural mores of their individual societies, while also addressing the basic health status of their more remote, rural populations (Table 4).

Location and mode of preventive care delivery – Today, traditional healthcare venues (e.g., hospitals, community clinics, and doctor offices) are the primary centers of care delivery. But, in many cases, they are neither equipped for nor conducive to the delivery of preventive care. By 2015, with value and accountability driving healthcare decisions, consumers will not only accept alternative venues of preventive care, they will demand them.

In the win-win scenario in the developed world, consumers will seek preventive care in settings, such retail stores, work, and their homes, that offer lower cost options, more convenience, and more effective delivery modes than traditional healthcare venues. Further, the rise of personal and electronic health records and the corresponding ability to disseminate targeted information will transform the consumer's home computer, cell phone, and personal digital assistant (PDA) into important preventive care delivery tools. In the least developed countries, preventive care delivery will, by financial necessity, be restricted. It will be focused on outreach clinics in local settings and supplemented by itinerant healthcare providers. The developing countries will have the opportunity to avoid the current over-investment in large, broad-based, acute care hospitals and concentrate their resources on providing more focused, accessible means of care delivery – significantly leveraging the advantages of information technology to drive preventive care to the home and local retail clinics.

Who provides preventive care? – Today, the doctor is the center of healthcare delivery and the focus of most doctors is acute care, followed by chronic disease management and lastly, prevention. By 2015, the shift in emphasis to preventive care will create a corresponding shift in provider roles. There will be many more midlevel providers, such as physician assistants, nurse practitioners, and other as-yet-unnamed professionals, and the larger healthcare team will include nutritionists, genetic

TABLE 4.
Preventive care in developed and least developed countries, 2015.

	Developed countries	Least developed countries
Nature of healthcare delivered	• Genetic risk assessment • Holistic approach (mixture of Western and Eastern) • Lifestyle changes	• Basic public health services – vaccination, sanitation, nutrition, clean water, etc. • Educational outreach
Location and mode of healthcare delivery	• Lower-cost settings: clinics, retail, employer, and home	• In-person encounters at government and outreach clinics/ hospitals
Who provides healthcare	• Self and family care • Healthcare teams including doctors, midlevel providers, and specialists (e.g., nutritionists, genetic counselors, exercise experts, etc.)	• Limited local staff and aid workers • Development banks, UN agencies, bilateral aid agencies and non-governmental organizations (NGOs) have become significantly more active technically and financially

counselors, exercise experts, and other specialists who will contribute to comprehensive consumer wellness programs designed to enhance illness prevention and early detection.

By 2015 and in the win-win scenario, labor substitution and the emergence of health infomediaries will be present to varying degrees in all countries. The developed world will accept and seek out both for their cost-effectiveness and expertise in prevention. The least developed countries will be particularly attracted to alternative providers as a means to stretch their healthcare budgets. This is particularly important in sub-Saharan Africa, which needs 2.5 million healthcare workers for essential services – between three and four times as many workers currently available. In Ghana, about 75 percent of the country's doctors emigrate within 10 years of graduating from medical school[71] and between 1978 and 1999, Zambia retained only 50 of the 600 doctors in its public sector.[72] There will be greater cultural challenges in some developing countries where high quality care is associated with doctors only, but here too, the need to contain healthcare costs coupled with information and associated educational drives regarding the effectiveness of non-doctor providers, will overcome the barriers to change.

Complementary and alternative medicines – East meets West

The growth in **complementary medicine** (therapy performed along with conventional medicine), **alternative medicine** (therapy in place of conventional medicine), and **integrative medicine** (the combination of conventional, complementary, and alternative medicine, or "CAM")[73] is a global phenomenon. Recent surveys show that CAM treatments are used by 85 percent of the general population in the developed world[74] and in some countries, the number of visits to CAM providers (e.g., massage, chiropractor, hypnosis, biofeedback, and acupuncture) is greater than the number of visits to primary care doctors.[75]

In the United States, consumer out-of-pocket spending for CAM exceeded US$27 billion in 1997 – a sum that was comparable to all out-of-pocket expenditures for all United States doctor services.[74] In Australia, the spending exceeded A$1.8 billion (US$1.3 billion) in 2004. And in Japan, the integrative medicine market reached ¥2,358.6 billion (US$20.3 billion) in 2004, a 17 percent rise from 2002.[76] This market is expected to exceed ¥5 trillion (US$43.1 billion) in 2013.[77]

Complementary medicine, alternative medicine, and integrative medicine remain controversial. Some providers reject them as unproven based on the clinical standards of modern Western medicine. Others undervalue these approaches as "folk" medicine because many of them have been used for millennia.[74] But major changes are occurring. The Chinese government has been integrating Traditional Chinese Medicine (TCM) and Western medicine since the 1950s. The resulting blend of the two forms of medicine has led to landmark integrative therapies, including the first tonsillectomy under acupuncture anesthesia in 1964, and scientific explanations for the effectiveness of these unconventional treatments approaches.[78] In Germany, thousands of general practitioners and nearly all pharmacists are trained in CAM treatments, such as herbal medicine, and three quarters of the population use them.[79] In 1998, the United States established the National Center for Complementary and Alternative Medicine (NCCAM) as part of the National Institutes of Health, which examines CAM in the context of rigorous science, trains CAM researchers, and disseminates authoritative information to the public and professionals.

Today, a small but growing number of Western medical schools are teaching these therapies. Private health insurers and large employers are now endorsing some alternative therapies and including them in benefits plans. Traditional providers are actively exploring a greater integration of medical approaches. For instance, India's Apollo Hospitals Group, the largest in Asia, has established hospitals that offer both Western medicine and the traditional Ayurvedic Medicine, and is working with Johns Hopkins Medicine International to research the benefits of the Ayurvedic Medicine in addressing common diseases.[80] By 2015, the safety and efficacy of therapies like these will be established and they will be offered to consumers around the world.

Chronic care

Chronic care is the ongoing provision of medical, functional, psychological, social, environmental, and spiritual care services that enable people with serious, persistent health and/or mental conditions to optimize their functional independence and well-being. Globalization, urbanization, population aging, and lifestyle choices, as well as the early detection and improved treatment of acute illness, are all contributing to the worldwide increase in the demand for chronic care.

Today, chronic diseases, such as cardiovascular disease, diabetes, cancer, chronic respiratory diseases, and mental and neurological disorders, account for 60 percent of deaths globally, with a projected increase of 17 percent by 2015. While chronic diseases have often been characterized as "diseases of the affluent," four out of five chronic disease deaths now occur in low and middle-income countries.[25] In addition to being the leading cause of death worldwide, these diseases are also the leading cause of disease burden as measured in Disability Adjusted Life Years (DALYs). They account for approximately half of the economic burden of disease worldwide.[25] It is a burden that will continue to grow.

Nature of chronic care delivered – Today, chronic care management programs are fairly common, but the expense and complexity of these labor-intensive, manual approaches makes them 'affordable' to payers only for patients at the highest levels of risk. Further, there is wide variation in care effectiveness because, in the absence of standards of care, various providers often 'invent' their own management programs for each particular condition. By 2015, chronic care management will rely on standards of care derived from evidence-based best practices, be individualized through genomic and pharmacogenetic applications, and cross multiple care venues.

In the win-win scenario, chronic care management programs, such as the NHS's Expert Patients Programme Pilot, which recorded a seven percent reduction in general practitioner consultations, a 10 percent decrease in outpatient visits, a 16 percent reduction in Ambulatory and Emergency (A&E) attendances, and a nine percent reduction in physiotherapy use, will be widespread in the developed countries.[81] Chronic patients in these countries, as well as in those developing countries that can develop the necessary infrastructure, will be empowered to take control of their diseases through IT-enabled disease management programs that improve outcomes and lower costs. The least developed countries will continue to struggle to meet basic environmental needs and, thus, will lack the infrastructure to substantially limit the progression of chronic disease. Their efforts to stem chronic disease will necessarily be aimed at the infectious and lifestyle contributors to chronic conditions (Table 5).

TABLE 5.
Chronic care management in developed and least developed countries, 2015.

	Developed countries	Least developed countries
Nature of healthcare delivered	• Disease management (proactive) • Standardized approaches to individual conditions • More tailored treatment (e.g., pharmacogenomics, metabolomics, regenerative science)	• No change – traditional medicine in combination with more advanced medications
Location and mode of healthcare delivery	• Shift from traditional locations to wherever the patient is (i.e., retail, employer, and home)	• In-person encounters at government and outreach clinics/ hospitals
Who provides healthcare	• Self and family care • Healthcare teams including doctors and midlevel providers	• Limited local staff and aid workers • Development banks, UN agencies, bilateral aid agencies and NGOs have become significantly more active technically and financially

Location and mode of chronic care delivery – Today, chronic care is almost completely located in the traditional healthcare venues with all of the ensuing cost. By 2015, however, the treatment of chronic conditions will center on the patient's location. Home monitoring devices, such as scales, glucometers, and blood pressure cuffs, will automatically transfer daily values to electronic personal health records (PHRs). The combination of the PHR, where patients record information, the electronic health record (EHR), where providers record information, and their linkage to clinical knowledge bases and rules engines, which will automatically evaluate data and generate alerts and action recommendations to the patient and appropriate providers, will transform chronic care management and reduce the need for acute interventions.

In the win-win scenario, the connectivity of health information again plays a critical role in the management of chronic care. In the developed countries, patient information will be readily accessible to healthcare providers no matter what their location and this will enable proactive chronic care management in channels and venues outside the traditional healthcare system. The developing world will follow in this path based on the rate at which the technical infrastructure is established. Unfortunately, however, the least developed world will lag significantly in chronic care transformation – funding pressures will preclude the necessary infrastructure and healthcare needs will remain focused on the lower levels of the hierarchy of healthcare needs and only the most serious and costly causes and cases of chronic disease.

Who provides chronic care? – Today, the doctor is the leader in chronic care management, a reality that is major contributor to its cost and, because of doctor reimbursement models and time constraints, its brevity. By 2015, however, this role will migrate to patients, who will be better educated regarding the condition, its management, and early warning signs of related health issues. When problems do arise, health infomediaries, who will manage multiple chronic conditions and midlevel providers, who will specialize in a particular chronic disease, will respond. Care will only escalate to the attention of a doctor if and when acute problems arise.

In the win-win scenario, patient responsibility, non-traditional locations of care, and midlevel providers will be the hallmarks of chronic care in both the developed and developing world. This shift in responsibility and care provision will be key to creating comprehensive, affordable, and lifelong chronic care programs. Advancements in information technology infrastructure, including decision support, will propel labor substitution. They will also help combat the medical "brain drain" in developing and least developed countries. In the least developed countries, the development of the environment needed to support empowerment and self-management will continue to lag, but the training of larger numbers of less expensive care providers will enable increased outreach efforts.

Delivering care in retail settings

We are already witnessing the transformation in the location of care delivery. Consumers are increasingly turning to non-traditional settings, both locally and abroad. One such example is **retail healthcare** – the delivery of healthcare in retail pharmacies, groceries, and mass merchants.

In 2006, the United Kingdom's National Health Service proposed to make medical care more accessible by shifting some care from the hospital and into the community. This could include retailers like Boots and Tesco establishing clinics that offer diagnostic services and even, surgeries. Even a shift of approximately five percent of services from hospitals would amount to £2.5 billion (US$4.7 billion) per year.[82]

In the United States, the emergence of retail healthcare is a trend driven by cost and access. Overseen by doctors, but staffed by nurse practitioners or physician assistants, retail clinics diagnose and treat a limited number of common illnesses, such as strep throat and sinus infections. Lower cost clinicians and low overhead allow retail clinics to price their services at an average cost of US$45 – less than 1/2 the cost of a primary care office visit and at most 1/5 the cost of an emergency room visit. In addition, standardized practice guidelines and decision support technology streamlines the treatment process – usually to within 15 minutes – while aiming to maintain or even enhance quality of care through decreased variation.[83]

Examples of retail clinics in the United States include Interfit Health, MinuteClinic, and Take Care Health Systems. Their business models are similar, differentiated mainly by their retail business partners, information technology, and geographic locations. With private, third-party payers now reimbursing consumers for these services and some self-insured employers reducing or eliminating patient co-payments, competition is sure to heat up.[83]

As retail clinics mature and demonstrate positive patient outcomes, we will likely see a proliferation of venues and business models that exploit variations in caregiver skills all boasting ever greater capabilities, ever more convenient locations, and lower costs. Examples of staffing models include a "video visit booth" clinic staffed with pharmacy technicians using a network of remote doctors for diagnosis and treatment, clinics staffed by nurses, or clinics staffed with paramedics.[83]

Acute care

Acute care is the treatment of episodic illnesses and conditions that typically takes place in a doctor's office, an emergency room, or during a short hospital stay. Today's healthcare delivery systems around the world are primarily designed to deliver acute care. Much of the healthcare economy – pharmaceuticals, medical devices, education, etc. – are also focused on treating acute episodes.

By 2015, however, prevention and new treatments will cause a decline in acute illnesses and accordingly, acute care services will represent a smaller portion of health-care delivery. This will create a major shift in current delivery channels and networks. Of course, acute episodes will still occur and will still require prompt diagnosis and treatment. Nevertheless, as with preventive and chronic care, certain aspects of how, where, and who provides this care will change.

Nature of acute care delivered – Today, acute care relies heavily on the individual choices of doctors. The value of evidence-based medicine (the practice of identifying and applying the best available practices to treat common conditions) is widely accepted. Implementation has been slow, however, due to the difficulty in obtaining data about the effectiveness of treatments, the challenges in disseminating results, and the inherent variation in patient responses and outcomes.[84]

By 2015, standardized approaches to acute care, developed through the careful analysis of clinical data and the unrelenting documentation of patient variation, will be widespread. These proven protocols of care will be targeted to the individual situations and needs of patients and enabled by computerized decision support systems (Table 6).

In the win-win scenario of acute care, the reduction of practice variation will conserve resources and improve outcomes. In the developed countries, the widespread adoption of IT in healthcare will support standards-based EHRs and provide access to ever-richer sources of clinical data. Additionally, EHRs will enable faster and

more consistent dissemination of new healthcare best practices, embedding them in the decision support capabilities of IT systems and applying them to individual patients. In the developing countries, evidence-based standards of care will be used to treat patient populations with common and uncomplicated conditions. In the least developed countries, care standards will enhance the education of local providers. In most situations and with the exception of scarce mobile healthcare services, however, people living in remote locations without basic services will still rely on traditional means of treating acute illness.

Location and mode of acute care delivery – Today, acute conditions that are urgent, emergent, and/or require surgery are treated in general purpose hospitals, in which the expertise of highly trained clinicians is supported with sophisticated and expensive devices, the appropriate environment, such as a sterile surgical suite, and specially trained staff. Non-urgent, non-emergent, yet acute conditions are treated in doctors' offices.

By 2015, acute care facilities will no longer try to be "all things to all patients." They will specialize and build their competencies around targeted conditions and treatments. And, non-urgent acute conditions, such as strep throat, sinusitis, and otitis media, will be treated from home via the use of telemedicine or at retail settings that provide low cost, good quality, and convenience, for example.

In the win-win scenario, in developed and developing countries, hospitals will become either "centers of excellence" devoted to a particular condition or combination triage centers, which determine which specialized facility the patient should go to, and post treatment recovery centers, in which patients will monitored before going home. There will be less reliance on visits to doctors' offices and emergency rooms for the treatment of non-urgent acute conditions. Even symptoms that may indicate an emergent situation will be assessed and triaged more immediately with the assistance of telemedicine providers, such as United States-based EKGuard, a portable electrocardiogram service monitored by cardiac specialists in a 24-hour call center.[85] Unfortunately, the funding shortages in the least developed world will stifle the shifts in the location of acute care delivery as well the treatment of acute illness.

Who provides acute care? – Today's emphasis on doctor care for almost all types of acute illness will fragment by 2015. The most urgent and emergent care, and certainly, invasive procedures, will continue to be provided

TABLE 6.
Acute care services in developed and least developed countries, 2015.

	Developed countries	Least developed countries
Nature of healthcare delivered	• Standardized approaches tailored to individual needs and conditions • Increased incorporation of evidence based medicine into practice	• No change - More and better medications
Location and mode of healthcare delivery	• Specialty hospitals, ambulatory clinics, retail clinics • Non-urgent and non-emergent at home; medical tourism	• Increased access • In-person encounters at government and outreach clinics/ hospitals
Who provides healthcare	• Individual clinicians • Healthcare teams including doctors and midlevel providers • Self and family care	• Respected leaders, limited local staff, and aid workers • Development banks, UN agencies, bilateral aid agencies, and NGOs that have become significantly more active technically and financially

by highly trained and skilled clinicians who specialize in a particular condition. The change will come in the care provision for more routine types of acute episodes. These conditions, many of which can be treated via telemedicine or in retail settings, will be handled mostly by the same types of midlevel providers who will facilitate preventive and chronic care.

In the win-win scenario, this adjustment in the provision of acute care will hold true in the developed and developing worlds. In the least developed world, there will be continuing pressure to identify alternative approaches to medical education designed to train more people faster, stretch scarce resources, and supply acute care providers to the population more rapidly. These countries will benefit from the fragmentation of acute care provision to the extent that they can train and deploy clinicians able to handle routine acute care situations without a full Western-style medical education.

Healthcare delivery goes global

In many countries, healthcare delivery is considered a local business, not subject to the same competitive regional or global pressures that companies in many other industries face. However, **medical tourism** – patients traveling across national borders primarily for medical, surgical, and dental care – is beginning to subject healthcare delivery to global competitive pressures. India's currently attracts 150,000 foreign patients each year,[86] while 375,000 patients travel to Singapore.[87] Thailand's Bumrungrad Hospital treats 350,000 patients from 150 different countries each year alone.[88] Medical tourist destinations are by no means limited to Asia. In fact, Europe's medical tourist market is estimated at €1.0 billion (US$1.3 billion).[89]

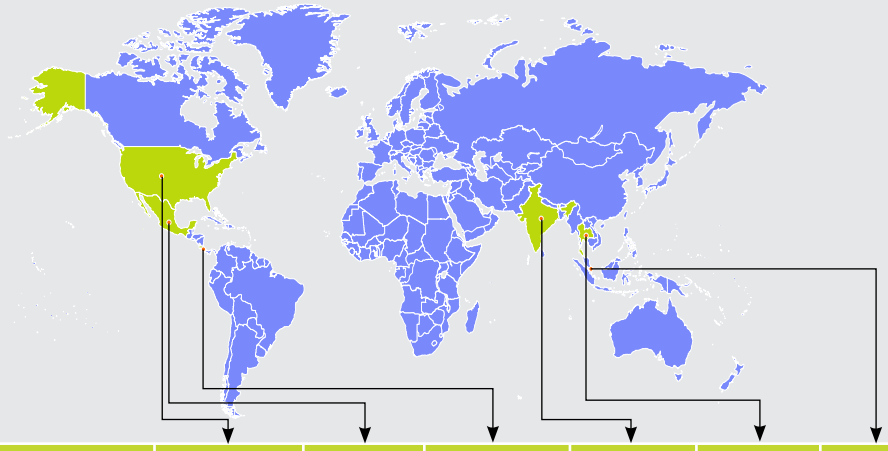
Medical tourism is particularly attractive to patients faced with issues like the high cost of care, long wait times, and sometimes, the inability to receive treatment altogether in their home country. For example, American patients are traveling to countries like Mexico, India, or Singapore, where the cost of surgery can be 90 percent lower (Figure 8). In Australia, New Zealand, Canada, and the United Kingdom, where wait times for elective surgery can exceed four months,[90] patients are traveling to destinations where the wait times are minimal. In addition to lower costs and improved access, patients can benefit from the quality of care received. For example, India's Escorts Heart Institute and Research Centre and Apollo Hospitals Group report mortality rates from some procedures are less than those at American hospitals.[91,92]

Obviously, not all healthcare services are suitable for medical tourism. Surgeries that share these key characteristics tend to be suitable to medical tourism: "(1) The surgery constitutes treatment for a non-acute condition; (2) the patient is able to travel without major pain or inconvenience; (3) the surgery is fairly simple and commonly performed with minimal rates of postoperative complications; (4) the surgery requires minimal follow-up treatment on site; (5) the surgery generates minimal laboratory and pathology reports; and (6) the surgery results in minimal post-procedure immobility."[93]

Although today's medical tourists often seek care abroad on their own, payers – governments, employers, and private insurers – are increasingly contracting with foreign providers in an effort to control their costs. For example,

- Following Norway's lead, the United Kingdom's National Health Service flies qualified patients to other European countries like Belgium, France, Spain, and Germany for select procedures.[94]
- Blue Ridge Paper Products (US) covers its employee's medical costs, pays for the employee and a family member's travel, and shares the savings derived from medical tourism with the employee (which could be up to US$10,000). Large corporations and government employers are reportedly considering similar arrangements.[95,96]
- Private payers such as BUPA (UK), Blue Shield of California (US), and Health Net (US) have contracted with foreign providers to serve their members. And, new payers specializing in medical tourism are targeting small to medium sized businesses as well as individual consumers.[95-97]

FIGURE 8.
Sample prices for select surgical procedures across select countries, 2006.



Procedure	United States	Mexico	Costa Rica	India	Thailand	Singapore
Angioplasty	$33,000	$13,125	$14,500	$7,800	$9,200	$12,500
Heart bypass	$37,000	$14,400	$13,600	$6,650	$11,000	$13,500
Hip replacement	$45,000	$9,400	$13,000	$6,500	$8,000	$9,000
Knee replacement	$21,000	$10,500	$9,500	$6,500	$8,500	$10,000
Laparoscopic hysterectomy	$19,000	$4,275	$6,500	$2,238	$4,500	$4,500
Laparoscopic prostatectomy	$27,500	$16,800	$11,500	$5,900	$9,500	$16,000

Source: PlanetHospital
Note: Prices do not account for travel or accommodations costs. Expenses can also increase if there are complications with the procedure. United States rates reflect Medicare reimbursements for hospital services but not for medications or anesthesia.

Numerous countries are actively developing and promoting their medical capabilities in response to medical tourism. In an effort to grow the country's US$333 million medical tourist market, for example, India's Health Ministry and Tourism Ministry have initiated an international advertising campaign promoting Indian healthcare.[98] Dubai will soon open Dubai Healthcare City which will be the largest medical center in the Middle East and is expected to attract patients from the entire region.[99] Singapore initiated Singapore Medicine, a multi-agency government initiative to develop the country as one of Asia's leading medical tourist destinations with the aim of attracting one million tourists each year – the equivalent of a US$3 billion market – by 2012.[87]

As competition for medical tourists intensifies, healthcare providers have sought ways to position and differentiate themselves. For example, German hospitals are marketing their services to foreign patients in an effort to make up for reduced revenues from government cost-cutting reforms.[100] India's Apollo Hospitals Group, Max Healthcare, and Wockhardt Hospitals Group are partnering with medical tourist agencies such as PlanetHospital and Medical Tourist International to reach patients in Western Europe and North America. Providers are also creating state-of-the-art facilities. For example, Escorts Hospital and Research Centre is building a US$250 million medical facility near New Delhi that will include luxury suites, a hotel, and restaurants.[95] In addition, providers have sought certification and/or accreditation, as Bumrungrad Hospital did when it became the first of over 80 non-American hospitals certified by the Joint Commission International, the international arm of the US-based Joint Commission on Accreditation of Healthcare Organizations. They have also bundled their healthcare services with other offerings and attractions, such as safaris in South Africa or the beaches in Malaysia.[101] The result of these efforts has been ever increasing numbers of consumers seeking care outside of their healthcare systems.

Summary

At present, many developed countries are utilizing advances in technology, education, and infrastructure to provide more value-driven care delivery, but developing and least developed countries are located at different places along the delivery innovation continuum. New models of care delivery will generally progress from the traditional focus on reactive healthcare to a more proactive and personalized approach to healthcare delivered by midlevel providers in variety of channels and venues located ever closer to the consumer.

By 2015, developed and many urban regions within developing countries will have started down the path of individualized care delivered by a more affordable and effective healthcare team at more convenient locations. Less evolved areas of developing countries will be largely focused on developing the healthcare infrastructure needed to provide basic access to their citizens, but advances in developed countries will accelerate their advancement. The least developed countries will continue to struggle to fulfill basic infrastructure needs across the board, but they will also be able to utilize the shift to lower cost providers and preventive medicine.

6. A prescription for accountability and win-win transformation

Introduction

In the preceding pages, we have described why we believe healthcare systems around the world must undertake transformational change. We have painted a portrait of a win-win transformation and used it to illustrate the fundamental differences between the unsustainable paths many healthcare systems are now following and new paths that could create winning outcomes for all of their stakeholders over the next decade.

We fully recognize the depth and difficulties of this transformation and we also realize that a few broadly drawn portraits of change cannot detail and fully address the complex needs of individual healthcare systems located throughout the development spectrum. But we are just as firmly convinced that change is essential, that a commitment to start the transformation journey must be made, and that action must be initiated. Toward that end, we conclude this report by summarizing the implications of our findings in the form of practical, relevant, and broadly-applicable prescriptive recommendations for healthcare systems and their major stakeholders.

Healthcare systems

The transformational challenge facing healthcare systems globally is daunting (Table 7). They must expand their primary focus on often poorly coordinated episodic care to encompass the life-long and coordinated management of preventive, acute, and proactive chronic care. This expansion must be accomplished with limited incremental funding in an increasingly competitive global economy and healthcare environment. This task will further require the establishment of a clear, consistent accountability framework supported by aligned incentives and reconciled value perspectives across key stakeholders.

The rewards of successful transformation are correspondingly high. The transformed healthcare system will become a national asset, instead of an open-ended, under-funded liability. It will help the citizens it serves lead healthier, more productive lives, and its country and industries compete globally. It will also win a competitive advantage in the emerging global healthcare industry. We offer six recommendations for healthcare systems considering transformational change:

- Develop a shared vision and a comprehensive, long-term plan.
- Build and sustain a case for change.
- Develop a set of principles to guide transformation.
- Provide universal coverage.
- Fully leverage the capabilities of IT.
- Balance collaborative innovation with proven global best practices.

Recommendation 1: Develop a shared vision and a comprehensive, long-term plan.

Healthcare transformation requires a shared vision and a comprehensive, long-term plan created through an open, inclusive process. This seems obvious, but is rarely done. Too often, change is addressed in a piecemeal fashion and solutions are generated by a few experts working behind closed doors. The result is systemic chaos and minimal buy-in.

The first step in developing a transformative vision and plan is an assessment of the magnitude of the problems facing the system, its ability to undertake change, and an evaluation of its overall sustainability (see Table 1, page 17). This would include the development of several scenarios illustrating how future events, including environmental change and non-healthcare related needs, could impact the current system. These scenarios will illuminate the gaps – financial, infrastructure, professional resources – that the system may face. Concurrent with the assessment, the system's key stakeholders should collaborate in the development of a shared vision and explicit set of values for desired future healthcare system.

TABLE 7.
Implications for countries' healthcare systems.

Healthcare system factor	From (typical of today's healthcare)	To (successfully transformed)
How viewed	• Open-ended, under-funded liability	• Asset to the vast majority of its citizens and companies and to the country when competing globally
Focus of system	• Acute, reactive, and episodic care	• Predictive, preventive, and chronic care • Personalized, life-long, and coordinated care management
Accountability	• Unclear, unaligned, inconsistent, or lacking	• Clear, consistent, and aligned accountability framework
Alignment of stakeholder incentives	• Perverse, conflicting, or unaligned	• Win-win alignment through a willingness to make some sacrifices for the "greater good" to avoid the "lose-lose" scenario
Perspectives on value	• Individual perspectives with no recognition of other perspectives or tradeoffs • Largely focused on cost containment	• Win-win compromises balancing stakeholder interests across value dimensions (cost, quality, access, and choice) • Value to consumer made much more explicit
Geographic scope/ catchment area of care organizations	• Local	• Regional, national, and global
Locations	• Hospital and doctor office centric	• Additional physical and virtual venues closer to the patient • Greater consumer choice of delivery channels
Patient/consumer responsibility	• Unclear or lacking	• Make good lifestyle choices • Understand how to get good value from the healthcare system
Access to information about value, quality, and costs	• Scarce and opaque	• Abundant, accessible, transparent, and comprehensible
Care delivery	• Doctor-centric • Shaped by habit, history, and tradition • Siloed and disconnected service channels	• Patient centric teams of caregivers • Evidence-based and standardized care • Multiple aligned and integrated service channels
Patient information and clinical knowledge	• Paper-based • Non-standardized • Limited accessibility reduces value	• Electronic • Standardized information and evidence-based knowledge • Shared interoperable, accessible, secure and private, guiding clinical decisions at the point of care
Innovation	• Shifting costs and exploiting system inefficiencies and market distortions • New devices and drugs • Slow path from research to widespread use	• System reform • New cost beneficial treatments and better coordination of care • More rapid adoption of best practices
Insurance coverage	• Some systems with universal coverage • Short-term view of coverage	• Widespread universal coverage for core services • More life-long view of coverage
Public health	• Siloed • Focused on environmental needs and immunizations	• Connected • Expanded to include real-time biosurveillance, pandemics, etc.

Once a shared vision is established, a master plan for change must be created. In addition to the shared vision and values, such a plan might include:

- A list of "non-negotiables" that are so important that they cannot be compromised in the process of developing the vision and plan.
- A transition plan focusing particular attention on areas which received low ratings regarding the ability to change.
- An overall implementation plan showing the sequencing and dependencies of the major transformation initiatives.
- An accountability framework and a set of incentives designed to maximize stakeholder success within the context of the greater good (see Table 8 for a sample accountability framework based on the hierarchy of healthcare needs).
- A scorecard or performance management system to measure the healthcare system's transformation progress.
- A decision framework, perhaps based on the hierarchy of healthcare needs, to establish the proper line between societal rights and market services.
- A change management plan, including education and communication plans.
- An overall governance model including representatives from key stakeholders to oversee implementation of and revisions to the plan.

Recommendation 2: Build and sustain a case for change. Given the level of change needed, the number of people impacted in healthcare transformation, and their extraordinary sensitivity to healthcare issues, the resistance and reluctance to change will be significant barriers. Decisions will be vigorously challenged by those who are negatively impacted, even when they are clearly the best course for the greater good. Constant reminders of the need for change will be required to keep the collective will to change alive and strong.

The case for change developed in the assessment must be clearly documented in a form that can be understood by all key stakeholders, including consumers. This case must be communicated frequently, both to educate and to 'sell' the eventual benefits of transformation. The case for change should include a likely lose-lose scenario, illustrating what would happen if the healthcare system hit the wall and reminding stakeholders of the risks and downside of not changing.

TABLE 8.
Sample accountability framework based on the hierarchy of healthcare needs model.

	Providers	Payers	Suppliers	Consumers	Society	Government
Optimal health						
Enhancement						
Necessity						
Basic						
Environmental						

Recommendation 3: Develop a set of principles to guide transformation.
We live in an ever-changing environment and no plan can predict every possibility or anticipate the changes that are sure occur during extended implementations. Therefore, a set of principles is needed to help guide decision-making and other activities. These principles might include statements, such as:

- The healthcare system must be sustainable. Changes made to the healthcare system should be considered in light of the overall environment and evolving healthcare needs.
- The healthcare system should be affordable to the individual, third party payers, and society.
- The healthcare system should provide universal coverage for a core set of services reflecting the shared vision.
- Services not available through universal coverage should be available as a market service. Some countries might also add the principle that the provision of market services should not undermine the delivery of universally covered services.
- Pricing and quality should be transparent, relevant, and comprehensible in support of value-based purchasing and value improvement.
- Solutions to transform the healthcare system should be practical in both the short-term and the longer term, and be as fair as possible to effected stakeholders.
- The healthcare system should be consistent with the country's health-related values.
- Public funds should be allocated on the basis of greatest need and greatest benefit/return to society at large. Ideally, this would include the metrics to help determine need and benefit.
- Providers should not benefit from medical failures, such as fixing treatment errors, or the misuse, overuse, or underuse of medical diagnostics and treatments.
- Solutions proposals should include estimates based on *total* cost, including administrative or other expenses that would offset potential savings or benefits.
- Proposed solutions should be compared to the "lose-lose" scenario, not the current unsustainable situation.
- There should be transparency in all decision-making.
- Criticism should be offered in open forums and require alternative solutions with rationales.

Recommendation 4: Provide universal coverage.
All healthcare systems should embrace universal coverage and appropriately balance comprehensiveness with overall affordability. This is not to imply that a government-sponsored single payer system is the only solution. Universal coverage can be market-based through vouchers and other mechanisms. But, no matter how it is achieved, healthcare systems must offer a core package of covered products and services for all citizens, with subsidies for those who cannot afford coverage, to be truly considered value-based and an asset to its citizenry and country.

Recommendation 5: Fully leverage the capabilities of IT.
Rational healthcare choices of all kinds and win-win transformation require better information. A robust IT infrastructure, enabling interoperable EHRs, PHRs, and networks connecting key stakeholders, is needed to provide the information required to improve quality and cost; to minimize clinical and administrative waste; to improve clinician productivity; to inform and thereby, empower consumers; to make informed decisions; and to trigger insights that can lead to innovations. Transformation plans must include a vision, strategies, and funding for the development of IT infrastructure.

Recommendation 6: Balance collaborative innovation with proven global best practices.

The case for healthcare change in Recommendation 2 answers the question, "Why change?" But there are more questions that still need to be answered, including:

- What do we need to do to transform the healthcare system?
- How do we develop "win-win" solutions to seemingly irreconcilable tradeoffs? For example, how does a nation extend coverage to all citizens without significantly increasing costs? Or how does a nation appropriately encourage innovation while providing insurance coverage for care that is "reasonable and necessary"?
- How do we do what needs to be done?
- How do we gain acceptance for the changes needed?
- How do we implement the changes needed?

The answers to these questions will rarely be evident. Instead, they will be determined by a combination of innovative responses and proven best practices from around the globe.

Innovations capable of addressing the system-wide, multi-enterprise, and enterprise-specific challenges inherent in healthcare transformation will require broad collaboration, commitment, and effort across disciplines and stakeholders. Whenever possible, these innovations should be tested through pilot programs designed to demonstrate feasibility and surface second order consequences.

While every healthcare system is unique, this realization should not inhibit the identification and utilization of proven best practices. Certainly, many best practices cannot be lifted from one healthcare system and simply inserted into another, but they can and should be evaluated, and serve as a basis for new ideas, lessons, and modified solutions.

Five ground rules for successful transformation

Our recommendations are relatively straightforward, but transformative change is rarely easy. We have made some of these points earlier, but all are worth considering again:

- Recognize that the status quo is not sustainable. Key influencers and decision-makers must not spend time and energy defending and maintaining unsustainable systems.
- Reconcile perspectives on value across the various stakeholders. A shared definition of the challenges and a shared vision are needed to avoid "hitting the wall."
- All stakeholders must be willing to change before they have no choice in order to attain a win-win future. An attitude of "Fix things, but don't affect me" is unrealistic; the level of change required will impact everyone.
- Be willing to prioritize and make tough decisions (e.g., decisions about medical ethics or about medical necessity versus medical enhancement) even when debate is sure to result.
- Believe that transformative healthcare change can be achieved and must be undertaken. Without this underlying faith, it is too easy to succumb to the inevitable resistance, obstacles, and challenges.

Payers

In most healthcare systems, there are public (e.g., governments) and private payers (e.g., health insurers or employers). The exact roles of private payers vary by system; in some cases, they are morphing from at-risk insurers and payment administrators into value-added service providers with more clearly defined customers. Table 9 represents the changes typically required for payers to be successful in a transformed healthcare system.

TABLE 9.
Implications for payers.

Payer factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Adequate network of core services at a reasonable price	• Holistic approach to health management, including better prevention and chronic management • Provide value by improving the health status of members
Incentives	• Minimize costs in the short term	• Help providers deliver and consumers receive short-term and long-term value
Information management	• Internal administrative/operational focus (e.g., timely and accurate claims processing; good actuarial data for pricing)	• Greater external focus to improve patient health status and to help providers deliver higher value services
Innovation	• Better forecasts and contained medical loss ratios	• Personalized products and services • Remove barriers to innovation by providers and suppliers
Basis for competition for private payers	• Price, coverage, network size, claims processing, and responsiveness	• Personalized and actionable information to improve health and healthcare • Targeted services across a broader healthcare spectrum of needs (e.g., preventive, acute, or chronic) and delivery channels; value delivered
Coordination of public and private insurance	• Uncoordinated, sometimes prohibited by regulations	• Coordinated and aligned with more sharing of best practices

Our recommendations for payers include:

- Develop a more compelling value proposition for both consumers and providers. Repair relationships with consumers, who want to know why they cannot get the care they need, and providers, who want to know why they cannot do what the patient needs, by sharing cost and quality information. This data can help providers improve the quality and efficiency of their practices and consumers make better choices and obtain better value from the healthcare system.
- Adopt more sophisticated customer segmentation strategies and develop multiple coordinated channels to better serve customers. In conjunction with determining the proper mix of services to be offered and the basis for differentiation, determine how best to align delivery channels and locations.
- Take a longer term, ideally lifelong, view of value. Provide incentives for the mitigation of future risks.
- Align reimbursement and incentives with preventive and proactive chronic care, as well as with innovative, cost-effective approaches to health and healthcare.
- Work collaboratively with clinical delivery organizations (CDOs) and clinicians to develop a viable transition plan to value-based reimbursement. Significant investments and effort may be required by CDOs (e.g. hospitals or doctor's offices) to migrate to value-based reimbursement. These CDOs must be able to maintain financial viability during the time after the investments are made until the benefits are realized.
- Reward providers who achieve better outcomes and value – and help less effective providers improve their performance.
- Be transparent. Coverage rationale should be clear, consistent, and comprehensible. Cost and quality information regarding the network providers for key medical conditions should be easily accessible, comprehensible, and relevant.
- Streamline administrative operations to make them more customer-centric and friendly.
- Develop intra- and interoperable information systems to enhance the exchange of data and to convert data into meaningful information.

Care delivery organizations (CDOs)

Most healthcare systems are centered on hospitals and doctor's offices. But the face of care delivery is changing, bringing with it new business models, delivery channels, services, facilities, skills, and the need for improved administrative and clinical information. Table 10 summarizes the changes needed for care delivery organizations to be successful in a transformed healthcare system.

Our recommendations for care delivery organizations include:

- Recognize that the ever greater complexity of the healthcare environment will make it less and less likely that your organization can be all things to all patients. Focus on core competencies and differentiate your organization from both traditional and non-traditional competitors.
- Help inform and empower consumers by providing transparency into pricing and quality.
- Gain a comprehensive understanding of your cost structure. Consider how revenue streams, types of services, or relationships with consumers will change in a rapidly evolving healthcare system.
- Evaluate growth plans in light of the possible changes in the healthcare environment. Beware of the traps inherent in strategies designed to maximize revenue in reimbursement environments that are destined to change.
- Like payers, segment customers and develop a channel strategy. Recognize the new influencers of healthcare purchasing, such as health infomediaries.
- Develop teams of caregivers and match their skill levels and locations to consumer needs. Make care more patient-centric and develop the role of midlevel providers in preventive, chronic, and routine acute care.
- Develop and follow evidence-based, standardized processes and care plans. Reduce variation in processes and care plans and continuously improve them.
- Implement interoperable EHRs. Provide practitioners with access to relevant patient information and medical content throughout the course of treatment.

TABLE 10.
Implications for care delivery organizations.

Care delivery organization factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Safety and quality but with few incentives or penalties	• Safety, value, and access
Incentives	• Financial incentives to treat and do more	• Financial incentives for better outcomes and for following evidence-based standards
Information management	• Paper-based • Non-standardized • Limited accessibility reduces value	• Electronics • Standardized information and evidence-based knowledge • Shared, interoperable, accessible, secure, and private, guiding clinical decisions at the point of care
Innovation	• New medical technologies to generate additional revenue • Basic research in academic medical centers	• Keeping people healthy • Improvements to the overall value and quality of care • Faster adoption of best practices and methods
Basis for competition	• Geographic coverage and reputation • Broad array of services • New technologies	• Differentiated value (e.g., cost, quality, and access) • Focused higher value services • Channels/sites closer to the patient

Doctors and other caregivers

Many of the same factors that impact care delivery organizations will also impact caregivers. Caregivers will have to meet the needs of smarter shoppers seeking higher value from the healthcare system. Table 11 summarizes the changes needed for doctors and other caregivers to be successful in a transformed healthcare system.

Our recommendations for doctors and other caregivers include:

- Develop collaborative partnerships with patients. Help consumers take more responsibility for their health and their interactions with the healthcare system. Build loyalty by being willing listen to and work collaboratively with patients to meet their needs and expectations.
- Expect and monitor patient compliance. Both clinicians and patients must do their part to the best of their abilities to achieve the best outcomes.
- Be prepared to work as part of a team of caregivers. Focus on providing good communication and coordinating care among the team members.
- Develop and appropriately utilize evidence-based, standardized processes and care plans. Reduce variation in processes and care plans and continuously improve them.
- Help develop meaningful outcomes measurements and data. This difficult but not insurmountable task will require collaboration across care venues and stakeholders.
- Utilize interoperable EHRs in order to have access to relevant patient information and medical content throughout the course of treatment and to better coordinate care.
- Recognize the challenge of a win-win transformation, help shape the future, and become part of the solution. Instead of focusing on maintaining the status quo, focus on the opportunities that come with change.

TABLE 11.
Implications for doctors and other caregivers

Doctors and other caregivers factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Inconsistent to the patient or payer • Service (not clinical) quality • Few consequences (e.g., punish "bad apples")	• Improved health status and outcomes by following evidence-based standards • Improved overall performance
Incentives	• Primarily financial and volume-based (e.g., patients and procedures)	• Value-based, aligned with accountabilities across preventive, acute, and chronic services
Information management	• Rely mostly on memories and paper	• Supported by electronic systems with comprehensive patient information and advanced clinical decision support
Innovation	• Overwhelmed by innovation and new knowledge	• Rapid adoption of new knowledge and approaches through the use of clinical decision support tools
Basis for competition	• Location and reputation	• Higher value and personalized care
Patient relationship	• Paternalistic • Prescriptive	• Collaborative partnerships • Knowledge sharing in decision making
Treatment approach	• Individual decisions based on experience and "sphere of influence" (e.g., who taught them or local peers)	• Standardized and evidence-based tailored to individual situation • Part of a collaborative care team

Suppliers

The transformation of healthcare systems creates change throughout the healthcare value chain. This poses a particular challenge for suppliers, such as the pharmaceutical (pharma) industry and device manufacturers, whose organizations are often global and research-based, which creates significant time considerations in responding to change. Further, these are companies that are already under increased pressure due to high-profile product withdrawals; blockbuster drugs coming off patent at unprecedented speed, and expectations for shareholder returns that are increasingly difficult to meet. In a healthcare system focusing on accountability and value, suppliers will also encounter increasing pressure to create products that offer substantive long-term value (e.g., preventing or delaying, treating, and managing a chronic disease) as opposed to "me-too" products and treatments that compete but do not represent true advances. Table 12 summarizes the changes needed for suppliers to be successful in a transformed healthcare system.

Our recommendations for suppliers include:

- Recognize that as providers implement interoperable EHRs, they will increasingly possess the most valuable outcome data and will be able to revise care protocols faster than your companies can conduct studies. Collaborate with care delivery organizations and clinicians to develop, test, and prove product effectiveness that truly improve outcomes over the longer term or risk being left on the outside looking in. Tap into the provider's IT-enabled initiatives to gain better, more complete information about outcomes and improve products and their related care protocols.
- Identify and establish relationships with the new influencers of healthcare purchasing, including health infomediaries, payers, regulators, and patient groups, who are increasingly defining the threshold for innovation. Be able to demonstrate a clear, compelling value proposition for key products.

TABLE 12.
Implications for suppliers.

Supplier factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Predominately accountable to shareholders and regulators, often achieving results through sales volume rather than value to the patient	• Increased accountability to payers, patients, and regulators to develop cost beneficial devices and treatments
Incentives	• Products are priced in line with competing products that are already available with the assumption that costs will be reimbursed • Sell more regardless of clinical effectiveness	• Premium prices paid for innovative devices and treatments that help create better outcomes or lower costs (i.e., improve value)
Information management	• Intra-company and functionally siloed	• Interoperable across healthcare stakeholders, including regulators and CDOs
Innovation	• Costly research and development (R&D) leading to "one-size-fits-all" treatments that share certain therapeutic and economic features	• Collaborative (e.g., with providers) disease-led innovation • Targeted solution packages for patients who will benefit the most (e.g., diagnostic tests, therapeutics, monitoring devices, and services) • Personalized, miniaturized, and mobile devices for home and other settings
Economic "buyer"	• Individual providers or CDOs	• Payers (who approve reimbursement); independent, third-party research groups (e.g., the Centers for Education and Research on Therapeutics in the United States); and patients who are actively managing healthcare value
Basis for competition	• Blockbuster drugs for the pharmaceutical industry • New features/functions on medical devices • Size of sales force and marketing budget	• Better longer-term outcomes or lower prices for equivalent outcomes • Impact on sales force and marketing budget

- Realize that healthcare is frequently highly fragmented with little knowledge of patient progress or outcomes across silos (e.g. hospitals, clinics, doctor offices, and home health). Become an integrator across healthcare's knowledge silos. Understand the value that the products offer to the patient across these settings. Help communicate and optimize this value in each setting.
- Recognize the impact that patients and providers have on the longer term product results. Help identify the right patients and providers and then educate them to achieve better results with key products by providing easily accessible and comprehensible information across all steps of the care process. Use these strengthened relationships to better track and improve product results over the entire product and care lifecycle.

Consumers

Consumers must take responsibility for their health and for maximizing the value that they receive from the transformed healthcare system. This will require fundamental changes in their attitudes and behaviors. Table 13 summarizes the changes consumers will need to make to help transform healthcare.

Our recommendations for consumers include:

- Learn about health and take responsibility for living a healthy lifestyle. Take advantage of education programs about healthy living and put that knowledge into practice. Become an advocate and teacher by promoting health education in schools and incorporating healthy living concepts into parenting.
- Learn about the healthcare system and become a smart shopper. Utilize health infomediaries.
- Expect care delivery organizations and clinicians to provide pricing and quality information. Do not assume that your provider or care delivery organization must be "one of the good ones."
- Create and maintain a personal health record (PHR). Use it to consolidate relevant, accurate clinical and health information.

TABLE 13.
Implications for consumers.

Consumer factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Limited if insured • Too much financial accountability for health services if not insured	• Live a healthier lifestyle within environmental parameters • Manage and coordinate healthcare services with assistance from health infomediaries • Reasonable amount of financial burden
Incentives	• Utilize system for insured events with little knowledge of causes, costs, etc.	• Stay healthy • Maximize value from health services • Comply with guidelines (e.g., chronic management programs)
Information management	• Manual process to manage information about personal health or about specific conditions • Little assistance from others	• Automated and integrated information management processes (e.g., electronic personal health records) • Assistance from health infomediaries • Accessible and online services and information (e.g., Danish patient portal)
Innovation	• Not relevant as it relates to healthcare	• New ways to live a healthier lifestyle • How best to utilize the healthcare system to address individual needs
Overall attitude and expectation	• Someone else should pay to fix whatever is wrong with me regardless of the cost, cause, or societal benefit	• I am responsible for living a healthy lifestyle • My healthcare system should help me live my life (i.e. resolve or prevent health problems)
View of health	• Passive relationship • Health viewed as a lack of symptoms (i.e., not a consideration until ill)	• Active/activist relationship • Forward looking, better informed, and more knowledgeable about health conditions and risks
Health concern	• More concerned with lower and middle levels in hierarchy of healthcare needs	• Increasingly concerned with health enhancement and optimization
Approach to choosing providers	• Anecdotal information from friends and family • Individual perceptions on service with no ability to discern true clinical value due to a lack of information	• More educated and smarter shoppers with increasingly more "coaching" to help varying levels of health literacy • Overall value

- Document advanced healthcare directives such as living wills or end of life decisions, medical power of attorney, organ donations, etc. Make sure that your family and your caregivers know your expectations and wishes.
- Expect your providers to accept information from your PHR and to use EHRs with clinical decision support for diagnosis and appropriate therapeutics. Healthcare issues are too numerous and difficult to be addressed only with information in a caregiver's memory or accessible only on paper. As former Speaker of the United States House of Representatives and founder of the Center for Health Transformation, Newt Gingrich, succinctly stated about paper-based medical records, "paper kills."[102]

Societies

Societal expectations and norms are shaped by a number of groups including governments, advocacy groups, the media, and businesses. While some consumers may refuse to change and others may already comply, societal expectations and norms can influence consumers' attitudes and behaviors over time. Table 14 summarizes the changes in society needed to help transform healthcare.

Recommendations for the groups that influence societal expectation and norms include:

- Become more knowledgeable about healthcare-related challenges.
- Actively participate in national or regional efforts to improve healthcare. Do not leave these efforts solely to healthcare insiders.
- Help educate consumers about healthcare issues and what they can do individually and collectively to make a difference.
- Help promote healthy lifestyles. For example, insist that physical education be part of all public school curriculums. Also demand that school meal programs support healthy living choices.
- Keep pressure on the healthcare system to change and meet the needs of its customers.

TABLE 14.
Implications for societies

Society factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Unclear, implicit or lacking	• Clear recognition of the need for tough decisions and tradeoffs and the need to reconcile perspectives on value • Expectations for and promotion of healthier lifestyles
Incentives	• Expect and ask for more	• Support universal coverage, high value services and tough decisions to optimally deploy scarce resources
Information management	• Largely ignored	• Emphasize transparency and education
Innovation	• Not relevant as it relates to healthcare	• New ways to promote healthier lifestyles • Engaging all consumers in taking responsibility for their health and healthcare
Expectations for healthcare	• Bipolar distribution: either healthcare should be "free" or healthcare is inaccessible or prohibitively expensive	• Recognition of limited funds • Tradeoffs needed when determining societal rights versus market services
Concerns about electronic information	• Security and privacy	• Timely and secure access to relevant information to improve quality and safety

Governments

Governments are both the most influential and the most reluctant change-makers in healthcare systems. They are most influential in their purchasing power – the typically large portion of healthcare services that are publicly funded – and their ability to set policy and regulate. Citizens look to governments for leadership in solving the biggest challenges in society. At the same time, governments also tend to be the most reluctant change-makers because of the difficulty and political liability of creating major changes in healthcare.

Thus, the crisis in healthcare has placed governments in a difficult position: it is extremely risky and difficult to change but it is too important to continue ignoring. Table 15 summarizes the changes governments need to make to help transform healthcare systems.

Our recommendations for governments include:

- Admit there is a problem. Then lead, educate, and be willing to make tough decisions to help solve the problem.
- Change and set policies and regulations in order to remove barriers, such as the patchwork of licensing regulations, and to enable and promote the right actions. Additionally, eliminate conflicting and/or harmful policies and regulations in other areas, such as subsidizing tobacco growers while promoting the benefits of not smoking.
- Emphasize value, accountability, and alignment of incentives in health policies, regulations, and legislations.

TABLE 15.
Implications for governments.

Government factor	From (typical of today's healthcare)	To (successfully transformed)
Accountability	• Respond to urgent issues • Avoid addressing critical issues (healthcare is "the third rail" in many countries)	• Lead • Bring players together to build the vision and plan • Prioritize and make tough decisions • Balance short and longer-term needs • Create clarity around values
Incentives	• Get re-elected • Hold down short-term costs	• Healthy population • Compete globally • Value (e.g., manage high costs)
Information management	• Fragmented and uncoordinated	• Electronic • Data availability and transparency to support research
Innovation	• Inconsistent • Temporary solutions to long-term and complex problems	• Policies and education programs to improve health status • Drive policy on grassroots issues on health and wellness • Funding for research to keep people well • Remove barriers to innovation (e.g., reimbursement practices)
Time horizon	• Short-term focus	• Balance short- and longer-term focus
Policy/regulations	• Inconsistent • Frequently counterproductive or conflicting	• Emphasis on accountability and alignment • Health a consideration throughout public policy (e.g., eliminate conflicting or harmful policies in other areas)
Alignment of jurisdictions (municipal vs. state/province/ canton vs. national vs. global/international)	• Disconnected with poor upward and downward communication • Inconsistent regulatory and licensure environment	• Connected and aligned communications with ability to mobilize on issues of common concern (e.g. pandemics) • Broader geographic licensure and harmonization of metrics (i.e., global comparability)

- Understand that healthcare issues will take years to address and cross more than one administration. Decide whether issues will be resolved via government mandate or be left to the free market. Be consistent across administrations. Build non-partisan mechanisms to address healthcare policy and legislation.
- Determine affordable, sustainable funding levels and prioritize across the hierarchy of healthcare needs.
- Require health insurance coverage for everyone. Provide subsidies for those who cannot afford to purchase insurance.
- Develop a funding strategy for the healthcare infrastructure, including facilities and IT, and for independent research on the comparative effectiveness of alternative therapies. There is very little evidence today regarding effectiveness – or lack of effectiveness – of widely used treatments, particularly over the longer term. Information is needed on both total costs and longer term outcomes.
- Help protect the security and privacy of electronic health information. Interoperable electronic health records (EHRs) and other health information are key enablers of successful transformation. Yet, consumer concerns regarding security and privacy can be a major barrier to implementing or utilizing electronic health information.
- Develop a consistent policy regarding healthcare delivery. Determine how much and what care will be government-provided and what will or can be provided by private healthcare organizations.
- Demand cost and quality transparency from private insurers and from care delivery organizations.

7. Conclusion

This report paints a portrait of what the global healthcare industry could look like by 2015, but we fully acknowledge that bringing this portrait to life is an extraordinarily difficult task. Transformation is difficult, and there are very few arenas in which stakes are higher and more sensitive than in healthcare. All too often the status quo is not a viable long term option and there are no politically-expedient, quick fixes to challenges that are of the magnitude and complexity of healthcare system transformation. Successful transformation will require all stakeholders to actively participate, collaborate, and change. Table 16 summarizes recommendations by stakeholder to collectively transform to a value-based healthcare system with new models of delivering care to accountable consumers.

Source: IBM Institute for Business Value.

Healthcare transformation is an immense challenge. It cannot be solved without a clear and shared understanding of the severity of the problems and their consequences, compelling consensus-driven visions and plans, and the commitment of stakeholders who will be called upon to work collaboratively with full accountability over the years that it will take to fully realize them. We hope that you will use our ideas as a starting point in your transformation effort.

Table 16. Summary of Healthcare 2015 recommendations by stakeholder.

	Transforming value	Transforming consumer accountability	Transforming care delivery
Healthcare systems	• Develop a vision, principles, and metrics that enable and reward a shared perspective on value	• Provide universal insurance for core services, including preventive and primary care • Expect and reward good behaviors	• Remove barriers to innovation while still protecting consumers and other stakeholders
Care delivery organizations (CDOs)	• Appropriately focus instead of being "all things to all people" • Develop teams of caregivers to deliver patient-centric, coordinated care • Implement interoperable electronic health records (EHRs) to help enable high-value services	• Help inform and empower consumers by providing transparency into pricing and quality	• Develop channels and care venues that are closer to the patient • Implement interoperable EHRs to support information exchange across new venues
Doctors and other clinicians	• Help develop and appropriately utilize evidence-based, standardized processes and care plans • Help develop meaningful outcomes data	• Develop collaborative partnerships with patients • Help consumers take more responsibility for their health • Expect and monitor compliance	• Expect interoperable EHRs to support information exchange across teams of caregivers • Focus on the opportunities that come with change
Consumers	• Expect CDOs and clinicians to provide pricing and quality information • Learn about the healthcare system and become a smart shopper • Utilize health infomediaries	• Learn about health and take responsibility for living a healthy lifestyle • Create and maintain a personal health record (PHR) to consolidate relevant, accurate clinical and health information • Document advanced directives	• Expect and demand new delivery models and coordination of care across these new models
Health plans	• Work collaboratively with CDOs and clinicians to develop a viable transition plan to value-based reimbursement • Help consumers navigate the health system to get more value	• Help provide personalized information and advice to help consumers maintain and improve their health status	• Align reimbursement and incentives with preventive and proactive chronic care, and with innovative, cost-effective approaches to health and healthcare
Suppliers	• Develop offerings that help provide better longer-term outcomes or lower prices for equivalent outcomes	• Help identify the right patients and providers and then educate them to achieve better results across all steps of the care process	• Help enable new models through simplification and miniaturization; mobile devices; and personalized targeted diagnostic and treatment solutions packages
Societies	• Clearly recognize the need for tough decisions, prioritization, and tradeoffs and the need to reconcile perspectives on value • Actively participate in efforts to improve healthcare	• Stress prevention and personal accountability • Expect and promote healthy lifestyles	• Keep pressure on the healthcare system to change and meet the needs of its customers
Governments	• Emphasize value, accountability, and alignment of incentives in health policy, regulations, and legislation • Require results reporting • Develop a funding strategy for the healthcare infrastructure and for independent research on the comparative effectiveness of alternative therapies	• Help protect security/privacy of electronic health information • Require insurance coverage for everyone, with subsidies for those who need them	• Change and set policies, regulations and legislation in order to remove barriers (e.g., the patchwork of licensure regulations) and to enable and promote the right actions

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