TOP TEN IMPEDIMENTS

to Better Health & Health Care in the United States

Health Horizons Program
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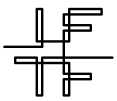

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ABOUT THE ...

INSTITUTE FOR THE FUTURE

The Institute for the Future is an independent, non-profit strategic research group with over 35 years of forecasting experience. The core of our work is identifying emerging trends and discontinuities that will transform global society and the global marketplace. We provide our members with insights into business strategy, design process, innovation, and social dilemmas. Our research generates the **foresight** needed to create **insights** that lead to **action**. Our research spans a broad territory of deeply transformative trends, from health and health care to technology, the workplace, and human identity. The Institute for the Future is based in Palo Alto, CA.

Acknowledgments

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Introduction

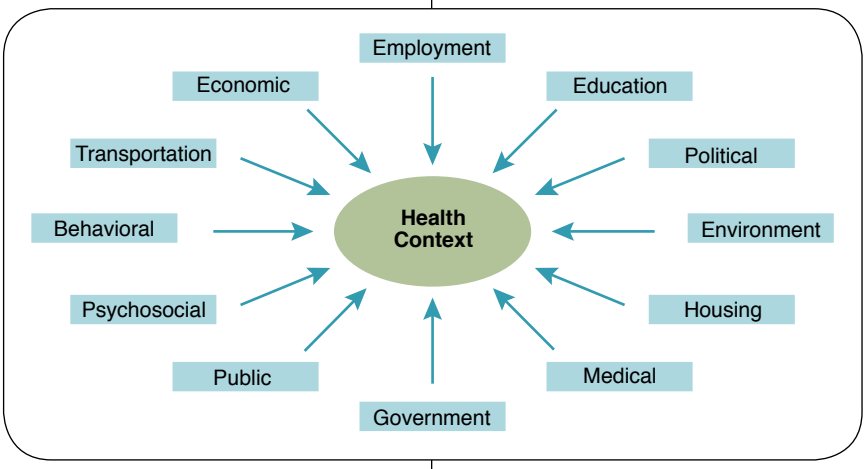
Health care is a central "good," to use the economists' term, and makes up a large and ever growing part of the U.S. economy. Unfortunately, despite much to be proud of, there's ample room for improvement. Indeed, some would argue that, with its skyrocketing costs, uneven access and quality, misaligned incentives, and uninsured patients, the U.S. health care system is nowhere near what the world's richest and most powerful country should be able to achieve. This report examines that gap.

In its health-related research projects, the Institute for the Future (IFTF) usually looks at emerging trends and discontinuities in order to understand what these mean for clients. For this report, *Top Ten Impediments to Better Health and Health Care in the United States* (SR-900), we decided to "invert the lens" and look not directly at the futures of health and health care, but rather at impediments to those futures. By better understanding those impediments, we hope to shed light on future risks—and opportunities.

CONTEXT SETTING

As noted in a recent special issue of *Health Services Research* on "The Social Determinants of Health" (HSR 2003), the context of health is quite complex (see Figure I–1). The *Healthy People 2010* report from the DHHS (DHHS 2000) also situates health in a larger context (see Figure I–2).

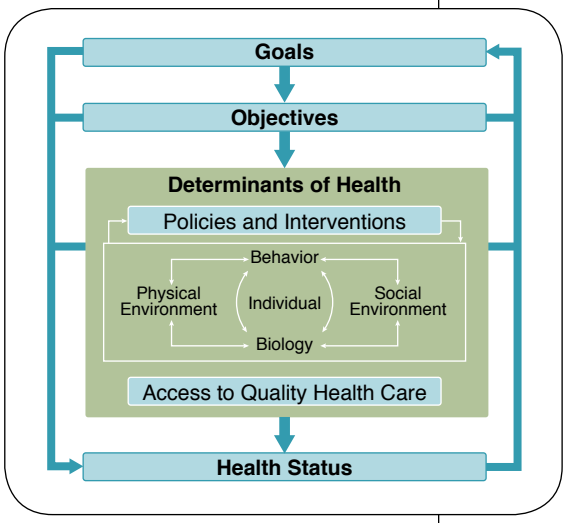
Figure I–1
Social Determinants of Health



Source: Adapted from Health Services Research, 2003.

As the figures suggest, health and health care are inextricably bound in a web of resources, constraints, dependencies, and forces that extend far beyond their traditional boundaries. To understand the impediments to better health and health care, we also need to go beyond these boundaries. Sociocultural and political forces are particularly important in this regard, but are typically deleted from discussions of health care as being external to the health system itself. This, indeed, is one of the biggest impediments to improving the health system and in one form or another is the guiding theme of this report—that there are cultural as well as economic and scientific explanations for the state of U.S. health care.

Figure I–2
Healthy People in Healthy Communities: A Systematic Approach to Health Improvement



Source: U.S. Department of Health and Human Services. *Healthy People 2010,* 2000.

Caveat: The Risk of Simple Solutions

We acknowledge the potential pitfalls of any "top ten list"—subjectivity, incompleteness, and oversimplification, among others—and concede that any such exercise is somewhat arbitrary. Health care is tremendously complex, and in exploring it we hope to avoid the pitfalls of H.L. Mencken's famous observation: "For every human problem, there is a neat, simple solution; and it is always wrong."

We accept that this report can only begin to outline the critical impediments to improving health care and the ways to bypass them. We hope that what follows is a reasonable set of issues to spark thought, debate, and insight into important features that will affect the future landscape of health and health care in the United States.

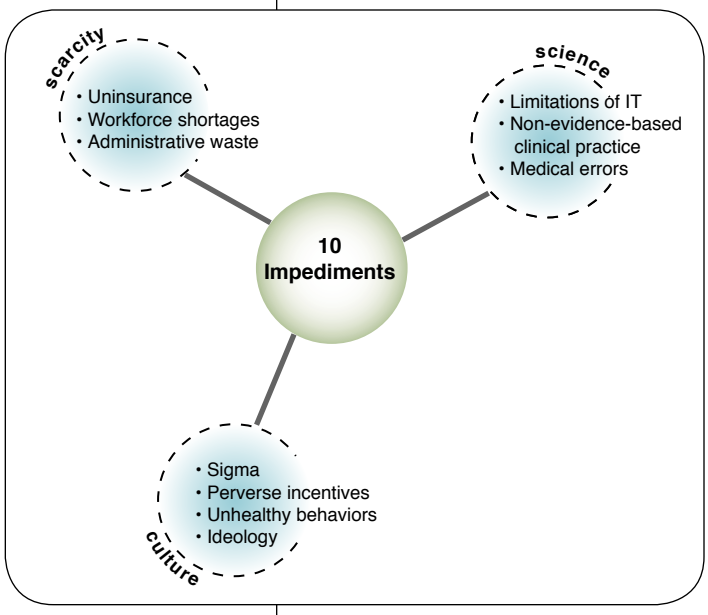
THE TEN IMPEDIMENTS

At the end of the processes detailed in the Appendix—searching the literature, laying out the context, gathering clues, and setting boundaries on the problem—we came up with the following list of top ten critical impediments to improving health and health care:

1. **Uninsurance**
2. **Workforce shortages**
3. **Administrative waste**
4. **Limitations of information technology (IT)**
5. **Non-evidence-based clinical practice**
6. **Medical errors**
7. **Stigma**
8. **Perverse incentives**
9. **Unhealthy behaviors**
10. **Ideology**

These impediments fall naturally into three groups: scarcity, science, and culture, depending on whether the impediment was primarily related to inputs, knowledge, or societal factors (see Figure I–3).

Figure I–3
Top Ten Impediments Fall into Three Groups: Scarcity, Science, and Culture



Source: Institute for the Future

For each impediment, this report outlines:

definition & magnitude — what the impediment is and how much of a problem it is

impact — what its effect is on health outcomes or other meaningful measures

details — additional context and information

foresight — thoughts on how this impediment might evolve

insight — business implications or possible action steps

By better understanding these economic, scientific, and cultural barriers, we hope to shed light on ways to bypass or overcome them to improve health and health care in the United States in both the short and long run.

Scarcity: Infinite Needs, Finite Resources

1

The first group of impediments is economic and in many ways the most obvious—those based on scarce inputs, whether of funding or labor, or the inefficient use of the two. As economic measures, these offer good opportunities for improvement, given hard work and hard choices.

The scarcity issues we address are uninsurance, workforce shortages, and administrative waste.

1. UNINSURANCE

definition & magnitude

It's well known that the United States is unique among wealthy, industrialized nations in not providing a universal package of health benefits for its citizens. Whatever this says about our societal values, the fact remains that uninsurance—the complete lack of health care insurance—affected up to 44 million Americans in 2004—nearly one in six citizens under age 65 (IOM 2004).

What's more, under-insurance—the lack of health care coverage for at least several months of the year—affects a much larger number of Americans. According to the U.S. Census Bureau's *Current Population Survey*, in the last two years more than 67 million Americans—almost one in four—had no insurance for at least three months; in some states, such as Florida, California, and Texas, this figure has been almost as high as 40% of the population under 65.

It gets worse. For some reason, children who are uninsured for less than a full year are often counted as "insured;" throughout 1999, 6.6 million children (8.4%) were uninsured in the United States, and an additional 11.4 million (14.4%) lacked insurance for at least part of the year, boosting total uninsured months by roughly 70% (Tang 2003). In 2002, 8.5 million children (almost 12%) were uninsured (Census 2004).

Contrary to popular belief, the uninsured are not mostly young, single, healthy adults who decline employer-sponsored insurance because they feel they don't need it: the number of workers age 18–44 who turn down workplace health insurance is only one fourth the number who are not offered health insurance at all, and 80% of the uninsured children and adults under age 65 live in working families (IOM 2001).

impact

The impact of un- and under-insurance is difficult to quantify, but is particularly significant in individual or small-group health coverage and rural areas. Lack of insurance has both health and economic effects.

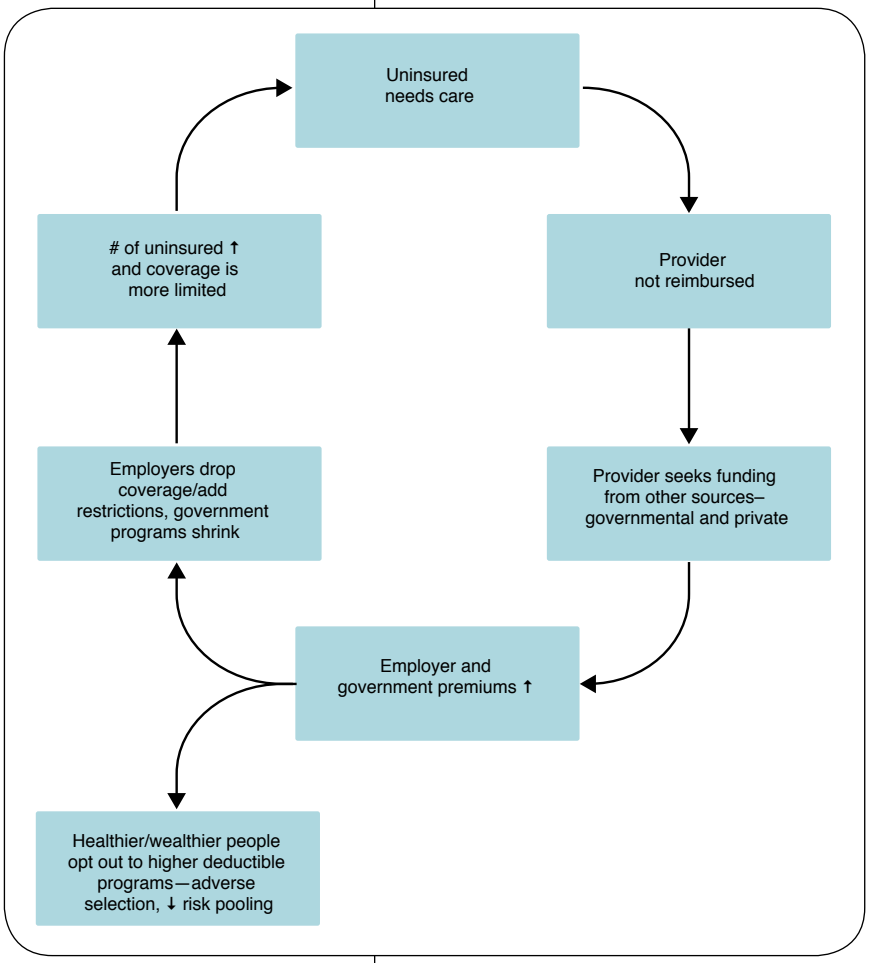
Health Effects

Lack of insurance causes roughly 18,000 unnecessary deaths in the United States each year (IOM 2004). Indeed, uninsured adults are less than half as likely as those with insurance to get needed care for serious medical conditions, and suffer 5% to 15% higher mortality for conditions such as cancer, diabetes, heart disease, and HIV (Roetzheim 1999) (IOM 2002) (McWilliams 2004). If we considered uninsurance a disease, it would rank with illicit drug use and sexual behavior in number of deaths per year (Mokdad 2004).

Economic Effects

Lack of insurance exacts economic costs as well. Public dollars used to rescue people who delayed care or were denied access to care because they didn't have insurance could arguably be better spent on prevention, education, screening, and primary care. Figure 1–1 diagrams the vicious cycle of uninsurance—how uninsurance leads to higher costs for everyone.

Figure 1–1
The Vicious Cycle of Uninsurance



Source: Institute for the Future

At the family level, even one uninsured person can threaten the financial security of the whole family. In fact, health costs are the number-one cause of bankruptcies in the United States, giving rise to the aphorism that many Americans are "one major illness away from bankruptcy" (Gottlieb 2000).

Uninsurance affects not only individuals and their families but their communities at large (IOM 2003). Resources diverted to the care of expensive conditions that might have been prevented or treated earlier incur an opportunity cost. Indirect costs are borne by insurers, taxpayers, and employers. Taxpayers fund about 75% of uncompensated care; this can amount to several hundred million dollars a year in many states. In addition, unreimbursed health care accounts for more than 6 –10% of gross incomes for many health care providers, and eventually costs us all in terms of higher deductibles and co-payments, and less money available for preventive care.

foresight

Looking ahead, it seems unlikely that national universal coverage will happen in the near- or mid-term. One reason is the relatively weak voice of uninsured Americans; another is the huge state and federal budget deficits and public uncertainty about what has largely been deemed a "jobless recovery."

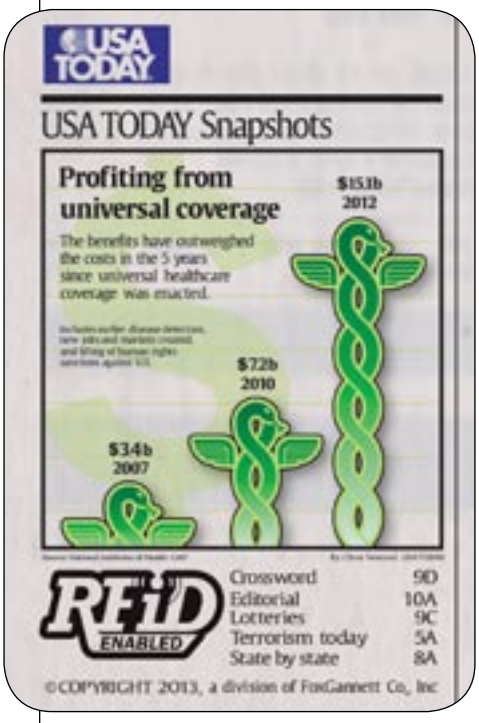
Related to this are the already severe stresses on Medicare and Medicaid, which are the primary health safety nets for millions of Americans. The most recent annual Medicare Trustees report made the stunning announcement that the assets of the Hospital Insurance trust fund will drop below expenditures by 2012, and the fund is projected to be exhausted by 2019 (Medicare 2004). In the mean time, state Medicaid funds are being depleted as states are required to give so-called "clawback" funds back to the federal government to pay for the recently enacted Medicare prescription drug benefit, which may end up costing nearly twice original estimates.

In this same report, the Trustees note that since Part B (which covers doctors' bills and other outpatient costs) and Part D (the new prescription drug coverage) are required by law to be adequately funded into the indefinite future, the implied burden on taxpayers and individual premiums will rise as much as 17% in 2005 alone. This bad news from Medicare is of particular concern in the context of severe stresses on the Social Security trust fund, which the Congressional Budget Office has estimated may be bankrupt as early as 2035 (CBO 2004).

Although the failure of the Clinton health care reform effort seemed to render the issue politically radioactive, the American public has once again elevated health benefits to the top position on its list of concerns, ahead of even jobs and terrorism. According to the AARP, more than two-thirds of workers currently between the ages of 50 and 70 plan to work in retirement or to never retire (CBSNews.com 2004).

Will there be any progress? To date, there's generally been gridlock: health benefits reform is complex, politically risky, and has an uncertain payback with few obvious win–win solutions. Purchasing alliances and regulatory reforms did not increase purchase of insurance by small business, for example. And so far, state initiatives have not produced

This report includes several "Artifacts from the Future," a method used at the Institute for the Future to both enrich our forecasts of upcoming trends and stimulate new conversations about alternate paths. This artifact illustrates one possible economic outcome if the United States were to implement universal health coverage for all of its citizens.



meaningful results, although programs such as Maine's Dirigo Health and current universal coverage bills in California bear watching.

What happens if we do nothing? We'll see a continued drag on productivity, earnings, tax revenue, provider finances, and employer health plan costs. In the mean time, employers will soon end up paying as much for health benefits as they earn in profits, as shown in Figure 1–2 (Bleil 2004).

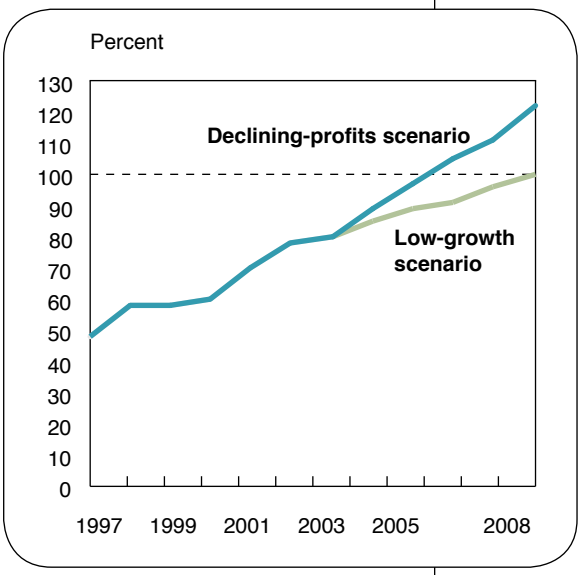
On the other hand, if the uninsured had continuous health coverage, workplace productivity would increase, earnings would likely rise by 10% to 30%, and we could avoid the economic loss associated with uninsurance estimated at $1,645 to $3,280 per person per year spent without coverage (IOM 2003). The bottom line: more productive people with longer careers making more money mean higher GDP and more tax revenues.

Cost shifting will continue to accelerate, increasing employees' premiums and out-of-pocket costs. One hopes this will lead to greater incentives for consumers to adopt healthier behaviors and take more interest in disease prevention, but it will also cause more anxiety since most consumers don't feel they have the knowledge and resources to choose among the often bewildering options.

Price pressure will increase on soft targets, including pharmaceuticals, with continued controversy surrounding drug importations. Hospital costs will continue to rise, leading to higher charges to health plans and growing consumer demands for some sort of government subsidy. For their part, health plans and employers must establish strong, long-term relationships with hospitals and providers, and become much more aware of and active in state legislative and regulatory affairs.

At some point, enough consumers, employers, private payers, providers, government, and labor groups will find escalating health care and health benefit costs unbearable. The exact nature of this phase change will be interesting, since not all stakehold-

Figure 1–2
Health Benefits Will Soon Equal Profits
(Heatlh benefits as a percentage of corporate after-tax profits)



Source: U.S. Bureau of Economic Anaylsis; U.S. Bureau of Labor Statistics; CMS; McKinsey analysis.

ers, or subsets of stakeholders, have the same price elasticity curves. When a large enough share of employees realize that they can no longer afford their share of health premiums, the government may be forced to step in. The result will likely be some sort of universal coverage package; political momentum is building to use the Federal Employees Health Benefits Program (FEHBP) as a model, if not the *de facto* plan.

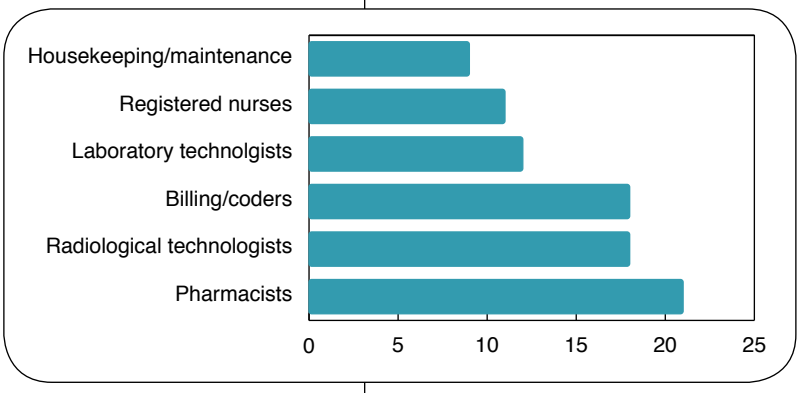
The good news is that to provide universal health insurance may actually not cost a whole lot more than what we are paying today. This is partly because the uninsured often pay "list price" for health services, while health plans pay discounted rates. In addition, the uninsured already pay about 35% of their medical costs themselves. We'll also recover some costs, since roughly 12% of uninsured hospitalizations could be avoided by earlier treatment of illness. All in all, the price tag of $34–69 billion (2001 dollars) on top of the $99 billion we already spent on uninsured health care would amount to a 3% rise in health care expenditures—not much more than a typical year's increase, and arguably a worthwhile investment compared with other societal priorities.

2. WORKFORCE SHORTAGES

definition & magnitude

The looming health care workforce shortage is a major issue, one that will get worse before it gets better. As seen in Figure 1–3, at the present time large numbers of budgeted positions for a range of health care professionals in hospitals are unfilled (Selvam 2001). Positions already experiencing big shortfalls include registered nurses, lab techs, pharmacists, and housekeeping and maintenance people.

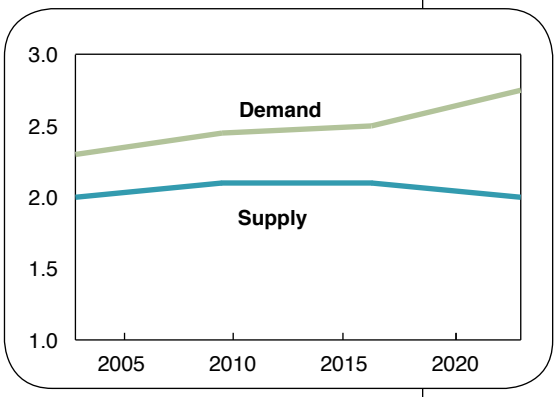
Figure 1–3
Many Hospital Positions Go Unfilled
(Percent of hospital positions that are unfilled, by department)



Source: Selvam, A. "The state of the health care workforce." *Hospitals and Health Networks*, 75(8): 41–48, 2001.

Unfortunately, the numbers are going to get worse. Probably the most acute shortage is that of registered nurses (RNs); there are currently about 2 million nurses working in the United States and a shortfall of some

Figure 1–4
Demand Will Far Exceed Supply of Nurses by 2020
(National supply and demand projections for FTE registered nurses)



Source: Bureau of Health Professions

126,000, but this is estimated to rise to 800,000 by 2020 (see Figure 1–4) (DHHS 2002). The average age of an RN in the United States today is already 43 years, and is projected to approach 50 in the next two decades.

The situation for physicians (MDs) is less clear (Weiner 2002). To meet the expected health care needs in the next 15–20 years, the current workforce of 650,000 practicing MDs in the United States will need to roughly double; with an estimated shortfall of 200,000 physicians (Cooper 2004), many medical schools are planning to increase enrollments (Cooper 2003). Perhaps more important than absolute numbers, however, is the maldistribution of physicians, both between primary care and specialists (roughly one-third are in primary care and two-thirds are specialists), and across regions. For example, according to the Council on Graduate Medical Education (CGME), in 1998, there were 304 active physicians per 100,000 people in large metro areas, and just 53 per 100,000 people in cities of less than 2,500 not near a large metro area. This means that many of those small cities had no doctors at all.

Another key role in short supply is that of the pharmacist. Pharmacists are less visible than doctors and nurses, but despite their smaller numbers they currently handle more than 2.8 billion prescriptions a year in the United States and serve a key role in patient counseling. Currently, there are about 217,000 practicing pharmacists in the United States and already a need for about 7,000 more. As with doctors, the overall pharmacist shortage is made worse in some locations by a maldistribution problem; many pharmacists are leaving hospitals to work in chains such as Rite Aid or big-box stores such as Wal-Mart and Costco.

impact

Workforce shortages in health care can affect patients, stress labor markets, and create international ethical dilemmas, among other issues.

Risk to Patients

Although staffing ratios are not the only determinant of quality of care—or of patients' perceptions of that quality (Bolton 2003)—a lower ratio of highly trained nurses to patients has been shown

to correlate with poorer health outcomes. In a recent report, a 10% increase in staffing by BSNs was correlated with a 5% decrease in risk of dying within 30 days of admission (Aiken 2003); in a British study of neonatal intensive care units (NICUs), infants who were admitted when the unit was full were about 50% more likely to die than those admitted when the unit was at half capacity (Tucker 2002). Working overtime or working a shift longer than 12.5 hours is associated with up to threefold risks of nursing errors (Rogers 2004). Furthermore, higher patient-to-nurse ratios were associated with a higher risk of nurse burnout (Aiken 2002), which can create a self-reinforcing cycle of understaffing.

Labor Market Stress

Over the long run, we might expect the "invisible hand" of the market to adjust supply and demand of health care professionals—the question is whether we're willing to tolerate the inevitable cost to individual patients and health professionals when market forces lag behind real needs.

In California, by 2016 the demand for RNs will outstrip the supply by one-third; for market wages to fill the gap, it is estimated that wages for nurses need to increase by 70% (Spetz 2003). Yet with many provider organizations, particularly academic medical centers, running razor-thin or even negative margins in an uncertain economic environment, it's not clear where the funds will come from to fill this gap.

There is less agreement on how much of a shortage there is in the physician workforce. For one thing, the United States has more MDs per capita than most countries, and at least some local physician shortages are due to maldistribution rather than insufficient supply. However, some specialties such as orthopedic surgeons, radiologists, pediatric specialists, and vascular surgeons likely do have a looming shortage (Ewart 2004), and recent initiatives point to an increase in the number of medical school and residency slots (McMahon 2004). An interesting twist on the workforce issue is the recent study suggesting that more experienced physicians may actually tend to provide lower quality care (Choudhry 2005), raising the issue of workforce quality and quantity as a function of age.

Drawing on a larger global labor pool is easing the health care worker shortage in the United States and other industrialized counties. But what happens to the countries doing the exporting? This "Artifact from the Future" explores one possibility for the future in India, one of the leading suppliers for needed medical professionals.

20 THE NEW YORK TIMES **INTERNATIONAL** FRIDAY, JUNE 7, 2013

INDIA IN THE NEW MILLENNIUM: The Brain Drain

MEDICINE

U.S. Vacancies Filled, At What Cost Back Home?

By ANDREW T. ORNE

MUMBAI, INDIA, June 5* – Deepak Pakhare looks anxiously at his son with the same feeling of helplessness that has plagued him for years. Mr. Pakhare's son, Shyama, 3, was diagnosed with leukemia shortly before his second birthday. While this diagnosis would be enough to give any parent great concern, in 21st-century India such parents have even more reason. Unlike many in his country, Mr. Pakhare has relatively generous medical insurance to cover himself, his wife and their two children. The real cause for the sporadic treatment Shyama receives is a lack of Indian doctors, nurses, and pharmacists, many of whom left their positions to fill high-paying vacancies in the United States.

Just last week the U.S. State Department issued a new travel advisory for Americans considering travel to India. In contrast to the typical advisory, this warning had nothing to do with terrorist attacks or government instability.

The sole reason for this new concern is the extreme lack of health care professionals left in India, and the subsequent poor health care travelers would be likely to receive in the event of illness or injury.

Over the past decade, qualified and even under-qualified Indians in medical professions, particularly nursing and pharmacy, have left India to fill the huge number of vacancies in those areas in the United States. In many cases the move comes with a four-fold salary increase, and in one widely-reported case, a woman in Bangalore left for a senior nursing position in Denver.

Women in the Indian city of Mumbai participate in a sit-in protest, known as a dharna, over the increasing shortage of nurses in the area.

International and Ethical Issues

Because the U.S. labor market is linked to that of the rest of the world, the impact of workforce shortages in the United States is felt around the globe. The migration of health professionals to the United States, while perfectly understandable from the viewpoints of the host institution, U.S. patients, and the immigrant, undermines health care in other countries (Reilly 2003). For example, Botswana's AIDS campaign is greatly weakened by the emigration of doctors and nurses, as is prenatal and natal care in Malawi with the departure of its midwives (Dugger 2004).

Indeed, one out of every four practicing MDs in United States is an international medical graduate (McMahon 2004). The annual influx is equivalent to 50 medical schools, each graduating 100 students per year. A similarly striking picture is true for nursing, where immigrants account for one-third of new nurses in the United States each year (Ginsberg 2004). In the United Kingdom, the situation is even more dramatic; in 2001–2002, more than 16,000 immigrant nurses joined the labor pool, exceeding for the first time the number of United Kingdom-trained nurse graduates (Buchan 2004). To make the health care labor market more liquid, the EU has already eliminated national licensure as a barrier to professional mobility. Meanwhile, the Philippines has started government-sponsored training of RNs for export, and similar initiatives have begun in China.

foresight

The combination of an aging population and increasing workforce shortages will create a "care crisis" that will take years to solve. The number of unfilled health related jobs will grow rapidly in the next decades, and international migration of health professionals will raise troubling ethical questions (Aiken 2004).

The combination of an aging population and increasing workforce shortages will create a "care crisis" that will take years to solve.

Care Crisis

Health care workforce shortages will peak as RNs and other professionals age out of the workforce just as the boomer wave hits. A total of 40% of RNs will be more than 50 years old by 2010, and despite tremendous dedication, many will be unable to sustain the physical, cognitive, and emotional challenges of the typical nursing workday. What's more, large numbers of physicians are curtailing their practice or leaving clinical practice altogether because of lawsuits and rapidly rising liability premiums.

The workforce shortage will be made worse by the increase in the dependency ratio (the ratio of Americans not working to those working, usually defined as those under age 15 or over age 64 compared to the number in the presumed working population age 15–64) from 0.19 to 0.23 by 2015. At the very time that the rising population of elderly citizens with chronic illness requires more health professionals and a more robust health care system, there will be fewer workers paying into safety net programs such as Medicare, Medicaid, and Social Security. This implies that each working American will need to contribute more than 20% more to Social Security, Medicare, and Medicaid in the next 11 years, not counting additional burdens imposed by the deferred costs of current federal tax policies—with no guarantee that these funds will ensure current levels of hands-on clinical care.

Health-Related Job Growth

In a recent study of job growth in California, many of the top occupations in terms of absolute job growth between now and 2010 are health related: besides RNs, there are nursing aides and orderlies, home health assistants, medical assistants, dental assistants, and so on. The good news is that many of these jobs require a shorter and less

rigorous training period than that required of nurses, pharmacists, and physicians. The bad news is that these jobs are less attractive because of lower pay and prestige, difficult working conditions, and risk for occupational injury (Brophy 2001).

International Dependencies

The "on-shoring" of health care jobs will have far-reaching implications for both the United States and countries around the world. For the United States and other aging societies, expect to see a shift in the overall job spectrum from high tech back to high touch, since hands-on, bedside health care jobs obviously need to stay where the patients are. Many of the workers taking these jobs will be immigrants. What kind of society will this create? What are the implications if the United States moves toward becoming a caretaker nation of young, largely immigrant health care providers taking care of an aging boomer population?

We also expect that the international ethical and political controversy over the brain and skills drain from other countries will sharpen (Stilwell 2004). China, which is aging faster than any major country in history, will soon begin to compete with the United States for the health care labor pool, and domestic factors in China such as a shrinking labor pool, competition for capital, rising taxes, and gender imbalance will heighten this competitive tension.

In the long run, health care jobs are likely to change, and the pipeline issues will have to be dealt with to meet demand.

Labor Substitution and Changing Jobs

In some areas, technology will substitute for labor, as we're already beginning to see with robots in the operating room and pharmacy. To the extent that this occurs, some of the pressure from a shortage of health care professionals will be relieved.

However, there are clear limits to the ability to substitute for humans, and introduction of such technology will in turn create demand for new skills among health care workers (Mullan 2002). As repetitive, routine tasks are increasingly taken over by robots, people will need

to acquire new skills, or acquire the skills to work with or manage these devices. An example is the concept of an RN first assistant who would actually make incisions and insert laparascopes during robot-mediated telesurgery (Eckberg 1998). Other hybrid roles may also evolve, such as positions with multi-functional combinations of clinical and technological expertise.

Humans will need to migrate up the skills ladder to perform diagnostic, therapeutic, cognitive, or other tasks they currently don't have time to do. This will be particularly critical as more machines lead to de-skilling—witness the continued decrease in physical diagnosis skills such as listening to heart sounds, or the drastic reduction in the need to be an excellent neurological diagnostician after the widespread adoption of CT scans. Several authors have recently linked the growing emphasis on procedural and technical skills in many areas of medicine with a decrease in diagnostic, problem-solving, and communication skills among physicians (Roy 2003) (Frymoyer 2002).

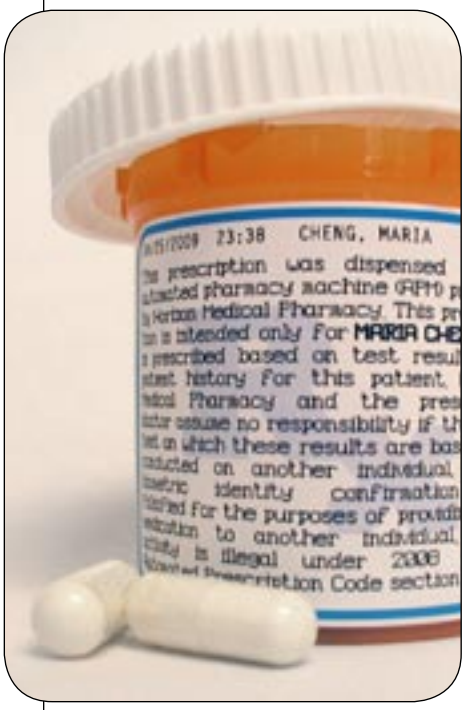
Another way to compensate for the labor shortage is to push some of the work onto patients, families, and nurse's aides. In some ways, this is similar to the caregiver role of families in hospitals in many developing countries, but it also portends an increased emphasis on workflow redesign to utilize all health care professionals to the maximum of their scope of practice.

Pipeline Issues

The educational pipeline will need to be widened immediately to avert major workforce shortages in the next decade or two. Part of the problem is that the pipeline is long; attempts to increase the supply of health professionals must go back as far as K–12 and college (Cooper 2003), which are often tied to political and community factors that are not focused on health needs.

Thanks in part to initiatives such as Johnson & Johnson's Campaign for Nursing's Future, nursing school enrollments increased by 8% between 2001 and 2002 and interest in nursing as a career seems to be on the rise. However, this has uncovered a further problem—the lack of sufficient faculty at nursing schools nationwide. As many as 16,000 qualified applicants were turned away from nursing schools in 2003 primarily because of the lack of faculty to teach them (Fest 2004) (AACN 2004). Thus, we're really facing a double, and sequential,

Shortages in some medical professions may be increasingly filled not by foreign workers but by automated technology. This prescription—an "Artifact from the Future"—might be dispensed from an ATM-like automated pharmacy based on the results of a home test taken by a patient.



pipeline problem—we need to increase the number of faculty in order to boost the number of graduating students.

3. ADMINISTRATIVE WASTE

definition & magnitude

Compounding the problem of shortages in funding and workforce is the inefficient deployment of scarce resources. Because health care is highly information-intensive and widely distributed among primary care providers, specialists, clinics, hospitals, and a famously complex health insurance industry, considerable resources are required to move that information around.

In fact, administrative expenses consumed about $400 billion of the total health expenditure of $1.6 trillion in 2003 (Himmelstein 2004). While not all of it was wasteful, a significant portion could have been put to better use.

Part of the problem is related to unreliable or uncoordinated access to information already obtained. For example, simple visits to a doctor for an uncomplicated medical problem often require the patient to list common pieces of information such as name, allergies, and medications over and over again, and this duplication (with its attendant opportunities for mistakes) is reflected in the patient chart (Geiger 1995). What's more, it's been estimated that up to 10% of lab tests are done simply because a previous test result can't be located during a patient encounter. In many settings, paper charts are missing in up to 30% of encounters, and the cost to find missing charts or files is roughly $10–15 per chart.

Transcription costs for dictated progress notes and correspondence are typically over $10,000 per year for each physician. Costs for filing, storage, retrieval, and transportation of paper charts—and the delays associated with delivering them to the point of care—could be reduced or eliminated by electronic medical records (EMRs), although EMRs are not without pitfalls of their own, as will be discussed in more detail later in this report.

Finally, part of the waste results from the practice of so-called defensive medicine—tests, treatments, and procedures done solely to reduce the likelihood of a malpractice suit. Defensive medicine has been estimated to account for 5–9% of health care expenditures (Kessler 1996), and proponents of liability tort reform argue that these dollars can be spent far more effectively (DHHS 2002).

Rising liability premiums have created what some experts have called a "malpractice crisis" (Mello 2003). Even though only about one sixth of malpractice lawsuits involve a negligent injury, upward pressure on premiums continues. The AMA has identified 18 "red alert" states in which providers are having grave difficulties finding affordable liability insurance and another 26 "orange alert" states with a serious and worsening situation.

impact

The impacts of administrative waste take several forms, but most boil down to diminished health and social outcomes. Clearly, waste engenders higher costs to society and to individuals; it's been estimated that reducing administrative overhead in the United States to Canadian levels would save about $286 billion, or $6,940 per uninsured American—enough to fully insure all of them. Roughly three-quarters of physicians say they order unnecessary tests or prescribe unnecessary drugs out of fear of litigation (HarrisInteractive 2003). Even if this occurred in only 1% of all patient encounters and involved only an extra $20 worth of blood tests or antibiotics, this would still amount to hundreds of millions of dollars annually, with attendant opportunity costs.

It's been estimated that reducing administrative overhead in the United States to Canadian levels would save about $286 billion, or $6,940 per uninsured American—enough to fully insure all of them.

In addition to economic costs, the fear of litigation, increases in malpractice premiums, and the sheer volume of otherwise unnecessary paperwork have decreased job satisfaction and even driven physicians to curtail their practices or retire altogether. In 2003 in Pennsylvania, 1,400 doctors left or limited their practice due to unaffordable malpractice premiums. This leads to local decreases in access to care and/or increasing workload burden on the remaining providers, which can initiate its own spiral of delayed diagnosis and treatment leading to higher downstream costs and secondary health consequences. Although they are less likely to be direct targets of malpractice lawsuits, nurses

are also mired in paperwork, with up to 30% of their workday involved with documentation, according to time-motion studies.

foresight

As will be explored in Chapter 2, information technology (IT) holds much promise, but it will not on its own eliminate administrative waste; workflow and market restructuring (e.g., moving to a single-payer system) are also required, but will not occur quickly or easily.

On the legislative front, California's 1975 Medical Injury Compensation Reform Act (MICRA) slowed the rise of malpractice premiums, is being adopted by a growing list of other states, and is now being considered for national adoption. While liability caps have a number of flaws, they can potentially decrease defensive medicine, thereby saving $25–40 billion per year (not counting secondary effects such as increased access to care, decreases in unnecessary testing and medications, and so on).

Some creative approaches that could have far-reaching impacts include exploring coordination between regulatory agencies. For example, drug approvals by the FDA and reimbursement decisions by the Center for Medicare and Medicaid Services (CMS) occur sequentially; an innovative conference recently began to explore the potential benefits of coordinating these processes (Wang 2004).

insight

The huge business opportunity to decrease administrative waste in health care has several subcomponents. One portion relates to increased reliability and efficiency in the management of information, a promise that motivates much of the hope pinned on health care IT systems. As we will see in the next section, for this promise to be fulfilled, a number of persistent bottlenecks including data input and sociocultural barriers will need to be solved.

Another part of the solution involves aligning incentives to reduce administrative waste. In order to optimally design incentives, work remains in estimating the actual nature and size of the benefit for indi-

vidual stakeholders if waste is eliminated, and then persuading disparate constituencies to work together to make the gains real.

Finally, if we eventually succeed in significantly reducing waste, it would be useful to have a prioritized list of alternative uses of the freed-up funds. There's certainly little danger that these funds will lie around unclaimed, but not putting them to the best possible use would defeat the whole purpose of the hard work required to claim them in the first place.

Science & Technology: Overuse, Underuse, and Misuse

2

The next group of impediments arises from the inefficient use or misuse of science and technology, specifically as it relates to clinical practice. We're not concerned here with Big Science—the R&D that creates revolutionary advances in medical care. We're concerned with how existing misuse of science and technology affects the everyday practice of medicine in doctors' offices and hospitals.

To this end, we examine the inefficient use of information technology, the failure of evidence-based clinical practice, and medical error. Since, like the economic measures discussed in the previous chapter, these impediments are fairly concrete, they offer good opportunities for real fixes to the system.

4. LIMITATIONS OF IT

definition & magnitude

As health and health care become increasingly information-intensive, the need for effective IT has become more compelling. A huge volume of administrative and clinical information from a wide variety of disparate data sources is generated by the roughly 33 million hospital admissions, 505 million outpatient visits, 2.8 billion prescriptions, and 4.8 billion insurance claims made annually in the United States.

Another huge flow of information comes from the exponential increase in scientific discovery and the medical literature. Nearly 10,000 clinical trials are conducted each year (Chassin 1998), and it's been famously estimated that a diligent physician who read two journal articles after dinner every day would be 550 years behind at the end of a year (Masys 2002). More and more patients and physicians are online; a recent Harris Poll suggested that approximately 80% of patients use the Internet to get medical information and that physicians spend an average of three hours online per week (Harris Interactive 2003).

As a result of attempts to cope with this flood of information, health care IT spending in the United States grew 9% to $23.6 billion in 2003, and is expected to continue to increase by about 9% a year through at least 2006 (Dorenfest 2004). Increasingly, IT is a prominent feature of the health landscape, indispensable to consumers, providers, payers, and other stakeholders.

Yet the promise of health care IT has remained disappointingly unfulfilled. When compared with other information-intensive industries such as banking or airlines, health care organizations have invested far less in IT (Bates 2002). The adoption of EMRs—a major step toward breaking down the information silos that prevent communication among providers—remains low and fragmented. The lack (or ironically, the profusion) of data and transaction standards has been a major factor (Goldsmith 2003). Despite the hard work of many dedicated volunteer groups, there's been only slow progress on creating and implementing information standards. And with perhaps the sole exception of the Veterans Administration's VISTA system, outside of a few, mostly home-grown academic health center systems, return on investment and user acceptance has been notoriously difficult to demonstrate (Bauer 2003) (Javitt 2004).

impact

A prominent example of the unfulfilled promise and forgone benefits of health care IT is computerized physician order entry (CPOE). CPOE has been shown to decrease medication errors, shorten hospital lengths of stay, reduce health care costs, and improve physician adherence to practice guidelines (Kuperman 2003). The Leapfrog Group—a consortium of more than 150 private and public-sector purchasers representing more than 34 million Americans and more than $62 billion in health care expenditure—has been strongly advocating CPOE for years. Yet only about 5% of hospitals have fully implemented it.

Part of the reason is due to cost—an average 500-bed hospital needs roughly $8 million to install and $1.4 million per year to maintain a comprehensive CPOE system, and most free-standing physician practices—where a large fraction of physicians practice—obviously have nowhere near the required level of available funding. Another reason relates to real-world implementation problems. Many systems require extensive customization to support local clinical practice, have never

WHY IT SYSTEMS FAIL

While the theoretical advantages of IT in health care have been talked about for decades, the puzzling fact remains that actual adoption and successful implementation of comprehensive systems have been quite rare. Underlying all the usual explanations—cost, complexity, poor user interfaces, and mismatch to the realities of clinical practice, among others—has been a long-standing neglect of rigorous evaluation.

Accelerated improvements in health care IT require meaningful evaluations. And meaningful evaluations have been infrequent and often flawed—under-resourced, not performed under real conditions with real patients, focused on physicians to the exclusion of other clinicians, excluding contextual or cultural factors that are critical to work practice, or tacked on as an afterthought rather than made an inherent part of the design process (Kaplan 2001) (Forsythe 1996).

Perhaps the most broadly implemented health IT system in the world today is that of the Veterans Health Administration (VHA), and it has received high marks from users, including time-pressed residents. Yet even this exemplary system has evolved only in fits and starts, and was designed in more of a bottom–up than top–down process. The VHA is in good company, as evidenced by well-known stumbles at medical centers as distinguished and diverse as Cedars-Sinai, Kaiser, Mayo, the United Kingdom's NHS, and numerous academic medical centers.

been tested outside an academic environment, and have difficulty meeting performance requirements with real users in real settings. Yet another reason is that the problem and solution are quite complex—one recent article listed nearly 60 criteria for assessing CPOE systems (Bell 2004).

As indicated by the example of CPOE, most individual health care providers still view IT systems as seriously flawed. This is partly due to shortcomings in the user interface, since many systems are still designed by software engineers with limited insight or ability to address clinicians' actual information needs and work practice. It's also due to the inherent mismatch between the usual costs and benefits of IT systems. Many of the benefits of IT accrue to the organization, while the main day-to-day burden of actually using the system is borne by frontline clinicians. To a harried house officer, nurse, or attending physician, the benefits of enterprise-wide dashboards of practice variations or roll-up statistics on antibiotic use are invisible. What they experience is the extra time it takes to find a workstation, sign on, and navigate screens and drop-down lists compared to scribbling or dictating a note or prescription.

The result is that there remains a huge unmet need for the theoretical efficiencies of health care IT to become real and more widely disseminated. Until that happens, patient care will remain suboptimal, clinical information silos will not be truly interoperable, clinical and administrative workflow will be unnecessarily slowed, and enterprise-wide data mining won't achieve its full promise. All this will discourage further IT investment, creating a vicious cycle.

On a societal level, lack of interoperable databases and fully effective electronic medical records—what IBM terms "health information liquidity"—will perpetuate inefficiency, restrict access to data by patients, clinicians, and researchers, and hamper public health efforts including biosurveillance, pre-approval drug trials, post-market pharmacovigilance, and the development of evidence-based clinical practice guidelines.

If electronic medical records are slow to be implemented, new opportunities may emerge for patients to outsource to third parties the tedious task of maintaining their patient information among multiple doctors. The service in this "Artifact from the Future" advertisement would appeal to upscale patients willing to pay for simplification of their overall medical experience.

foresight

The disappointments of IT are real and will only slowly be solved, particularly since sociocultural barriers will remain even as technological bottlenecks are cleared away. Take, for example, the important question of return on investment. Why would doctors' offices around the country put in expensive information systems when the bulk of the savings will accrue to larger players in the system, especially insurance companies?

Currently, several types of uncertainty have inhibited broader adoption of electronic or telemedical consultations. Whether their fears are justified or not, providers are worried that patients might overwhelm them with consultations if asking a question is only a few clicks away. A related issue is how to establish medical necessity and set rates for a telemedical consultation. Another thorny issue is liability for missed or erroneous diagnoses based on a virtual visit; how will liability be parceled out among the referring physician, the consultant, the hardware and software vendors, and other links in the chain?

In the mean time, patient medical records will continue to strain current systems. And cutting-edge genomics research will only put further pressure on health-related IT—GenBank, the largest genomic databank, currently contains over 37 billion bases and 32 million gene sequences from 130,000 organisms. In the next five years, research datasets may encompass up to 4 billion genotypes and roughly 1 million genetic loci with medical relevance to the approximately 400 diseases of commercial importance.

There are still grounds for hope, however. Although funding for President Bush's declaration of intent to provide computerized patient records for all Americans in the next decade remains uncertain, the government's increased attention to

this area is at least a step toward a fundamental enabling platform for health data management and mining. Public and private initiatives including the National Health Information Infrastructure, the Health Insurance Portability and Accountability Act (HIPAA), Integrating the Healthcare Enterprise (IHE), and the Markle Foundation's "Connecting for Health" effort are gradually building momentum for interoperability. It's likely that gradual progress on standards and software architecture will enable a tipping point in the next decade, and the logic of interoperability will eventually be exploited commercially and clinically.

What would be some benefits if the limitations of IT are overcome? In addition to the promised efficiencies and reductions in medical error already mentioned, one recent estimate suggested that perhaps one-third of current office visits could be replaced by more convenient, Web-based consultations (Halvorson 2003).

As health care becomes more data intensive, IT will play a larger enabling role, but also will become a more critical bottleneck. Reliability, scalability, interoperability, security, and performance will continue to be the criteria on which such systems are judged. When users are busy health care providers, "blink-time" responses to data queries and other inputs are a required performance characteristic.

But everyday experience with software crashes and dropped wireless phone calls raises serious questions about whether critical and time-sensitive health decisions can be entrusted to complicated technology that isn't as reliable as, say, land line phones or kitchen toasters. Elegant "toy" information systems are of little use to increasingly large health care enterprises if they can't be scaled up to handle terabytes of data and hundreds of simultaneous users. CIOs are increasingly wary of vendor lock-in and dissatisfied with proprietary systems that require continual, extensive, and expensive custom interfaces to actually work with other systems. As highlighted by HIPAA and consumer advocates, security and privacy are vital to public perception of the risks and benefits of IT.

In addition, "softer" metrics such as usability, customizability, accessibility (for people with disabilities, for example) and fit with work

practice will be increasingly recognized as being important. While technical and sociocultural factors are inextricably entwined, at this point most everyday clinical and administrative applications are arguably more limited by sociocultural than technical constraints, and evaluations of information systems increasingly reflect this (Kaplan 2001). Early but surprisingly persistent "blame the user" attitudes among software engineers are gradually giving way to a more nuanced understanding of the key role of cultural assumptions in system design (Forsythe 1991), and the realization that technical excellence is necessary but not sufficient for successful deployment. Companies that understand this, such as consumer electronics firms, may be the source of surprising breakthrough products.

5. NON-EVIDENCE-BASED CLINICAL PRACTICE

definition & magnitude

Although the health care profession views itself as highly science-driven, the reality is that evidence-based medicine (EBM) is not the norm. For example, should you:

- Take vitamins to decrease the risk of cancer or heart disease?
- Start a statin drug if your lab tests show a serum triglyceride level ≥ 150 mg/dl and a fasting glucose ≥ 110 mg/dl?
- Involuntarily hospitalize an adolescent who admits to feeling suicidal but has signed a "no-suicide contract" and has a friend who will stay with the patient for the next two days?

The lack of clear-cut answers and divergence of actual clinical practice around these issues and myriad others illustrate the problem of clinical practice based on incomplete, conflicting, or otherwise unreliable evidence (Halpern 2002). Indeed, a major researcher in this field has stated that "unwarranted variation is a ubiquitous feature of U.S. health care" (Wennberg 2004).

Some of the best-known work on this topic is that of John Wennberg, Mark Chassin, and their colleagues on geographic variation in clinical practice (Wennberg 1973) (Wennberg 1999) (Chassin 1987). Over the years, these researchers have demonstrated that rates for a wide variety of common procedures vary up to tenfold across the United States,

even when local variations in disease prevalence and severity are taken into account. While the reasons for this are complex, reimbursement incentives, physician supply, and market penetration by managed care (which tends to restrain interventions with high cost–benefit ratios) all play a part.

This is a problem both of commission and omission. A total of 20% of patients get contraindicated chronic care and 30% of patients get contraindicated acute care; conversely, patients receive only 54% of recommended care, whether for chronic or acute conditions. As a result, we see indicators such as:

- 30% of antibiotics for ear infections are unnecessary
- 20–50% of surgical procedures are unnecessary
- 50% of back x-rays are unnecessary
- 50% of eligible elderly patients don't get vaccinated for pneumonia

impact

The impact of non-evidence-based clinical practice has several facets. The most obvious is that patients may be harmed and unnecessary costs incurred by using unproven tests or interventions, not using proven tests or interventions, or using proven tests or interventions inappropriately. The phrase "underuse, overuse, or misuse" neatly sums up possible impacts, although much work remains to be done to better define medical necessity (Shekelle 1998), and some interventions may have a genuine gray zone of discretionary use (Guadagnoli 2001). This applies not only to clinical practice, but also to administration and management of health care enterprises (Walshe 2001), and may be a major reason for the well-known lack of correlation between spending on health and outcomes.

There are also social costs of non-evidence-based practice. Consumers may experience confusion and disillusionment when they encounter poor outcomes, conflicting medical advice, or evidence of inconsistency. This can lead to an erosion of the patient-provider relationship, which can further predispose the patient to medical harm when good advice is disregarded. What's more, non-EBM is likely to increase existing race, gender, and wealth disparities in health care, because

disadvantaged patients are less likely to have access to better-educated physicians who practice EBM.

details

What are some causes of non-EBM? To be sure, many health care practices cannot be rigorously linked to formal double blind, randomized controlled trials, extensive meta-analyses of published literature, in-depth ethnographic studies, or other robust evidence, and they must remain the best educated guess of sincere providers who genuinely have the interests of their patients in mind. We certainly don't intend to disparage the well-intentioned and diligent efforts of health care professionals who are doing their best under conditions of uncertainty. Rather, our intent is to highlight ways in which the impediment of non-EBM might be overcome.

Part of the problem is simply a lack of clinical practice guidelines based on high quality evidence. One important approach to increasing the knowledge base for clinical practice is to redouble efforts to increase enrollment of patients in clinical trials. Even if the patients sometimes enjoy only limited direct benefit from being in the trial (Peppercorn 2004), the results of their treatment are essential for improving future practice. It's too early to tell whether current calls for pharmaceutical companies to register and publish all drug trials will help or hinder overall patient enrollment, but assuming this will push research firms to more carefully target their trials, perhaps through pharmacogenomic patient segmentation, we may at least expect more efficient and higher quality studies.

Physicians play their own role in the slow adoption of EBM. Even when well-supported clinical guidelines exist, clinician ignorance, time pressure or self-interest, patient resistance, and other structural barriers to optimal health care often conspire to prevent the practice of EBM (Newhouse 2002). On the one hand, whether due to intellectual curiosity, the desire to give their patients the newest treatment, or economic self-interest, physicians often adopt new technologies and procedures before they've been rigorously tested and validated. On the other hand, physicians tend to overestimate their own adherence to guidelines (one study suggests by roughly 25%), and thus often don't deploy proven interventions even though they think they do (Adams

1999). Promoting EBM will require both "push" (clinician education) and "pull" (clinician adoption). That is, we need to do a better job of educating clinicians about the best guidelines, as well as aligning incentives to maximally encourage adherence to those guidelines in actual clinical practice.

Patients, too, who now have it drilled into them to advocate for themselves, may have an incomplete understanding of EBM. They may make demands based on flawed or incomplete information, whether from misinterpretation of data from complex clinical trials, or from acceptance of faulty information reported by biased or even unscrupulous sources. Many times, misguided patient expectations are the result of lack of medical knowledge; as pointed out in an Institute of Medicine report on medical literacy, nearly half of all adult Americans—about 90 million people—have difficulty understanding and acting upon health information (Nielsen-Bohlman 2004). In other instances, a major driving force is the triumph of hope or expediency over reason, when patients understandably grasp at straws in the face of a frightening diagnosis or severe fiscal constraints. Whether the situation is as mundane as requesting antibiotics for a cold or as dire as begging for last-ditch experimental cancer chemotherapy, patients can certainly affect whether or not EBM is practiced.

Other stakeholders also affect whether EBM is practiced. In the last few years, the Leapfrog Group, a consortium of large employers, has waged a strong campaign to encourage the adoption of measures known to improve clinical outcomes such as computerized physician order entry, staffing of intensive-care units by specialists, and preferential referral of patients to centers of excellence that perform enough surgical procedures to be more expert. Employers, recognizing that employee and retiree health benefits are an increasingly large drag on financial performance, are redoubling efforts to promote employee health. Payers are also moving beyond utilization management to promoting EBM; since its inception among six California health plans in 2002 (IHA), the movement toward pay for performance has gained momentum, and, although it's still too early to judge the results, Medicare has begun to tie reimbursement to submission of quality indicators (Japsen 2004). Finally, regulators have a part to play in setting policies that encourage EBM and reduce unwarranted practice variations.

foresight

Employers, health plans, providers, and patients alike will eventually push the creation, dissemination, and adoption of evidence-based clinical practice guidelines.

Although the ideal of universal EBM remains a distant goal, employers, health plans, providers, and patients alike will eventually push the creation, dissemination, and adoption of evidence-based clinical practice guidelines because they're all increasingly concerned about—and have a stake in—improving health care quality and managing costs. Leading-edge payers and providers have already begun to embrace EBM, and these efforts will gain momentum. A harbinger of this trend is the recent study showing that the immediate costs of prescriptions alone (not counting long-term health benefits) for evidence-based treatment of hypertension could have saved roughly 25% of expenditures, or some $1.2 billion annually in the United States (Fischer 2004).

With increased interest in EBM among major stakeholders, we expect louder calls to address one of the major bottlenecks to its wider adoption—the difficulty of enrolling patients in clinical trials. There can be no "evidence" in EBM without sufficient numbers of patients enrolled in well-designed studies. Federal, state, or private health insurance sources could help remedy this by means of payment incentives or other mechanisms (Gross 2004). Online enrollment in clinical trials could be another enabler, and may become a major avenue for patients to learn about and to enroll in trials (Wei 2004). To this end, additional education of physicians—and patients—about the importance of clinical trials will be required (Martin 2003).

Further down the discovery pipeline, although not currently within the FDA's charter, approvals of drugs, devices, and off-label use will likely include cost-effectiveness data. Making that information transparent will discourage costly development of drugs and devices that offer little advantage over existing modalities, as well as enable more informed clinician decision making at the point of writing a prescription. The potential cost savings from such pharmacoeconomic analyses are enormous, and with current public scrutiny of the role of the FDA in drug approval and post-market surveillance, the time seems right for change.

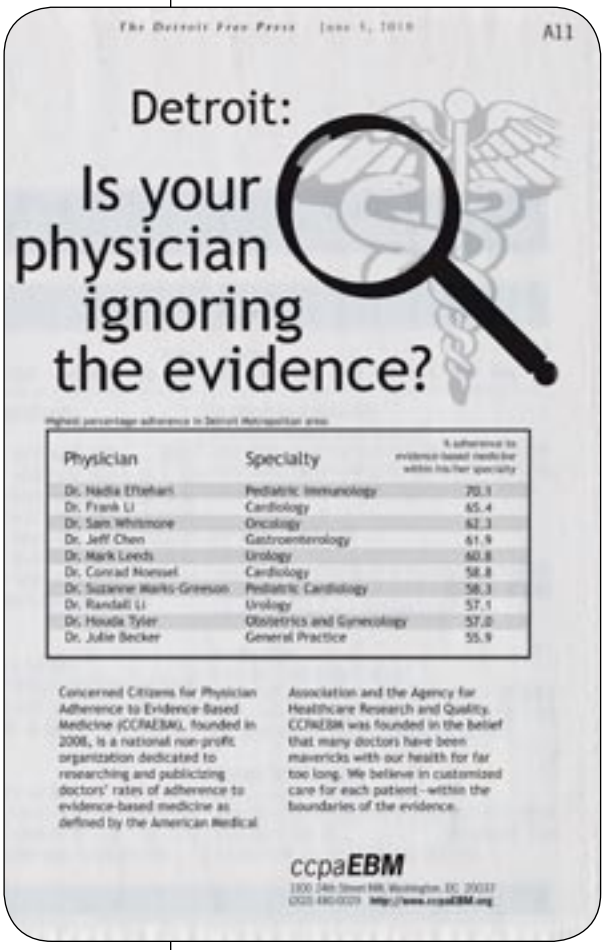
insight

Promoting the practice of EBM will be a complex and many-sided effort. As mentioned above, obstacles to the wider practice of EBM include a wide range of factors related to the underlying evidence itself, physician behavior, patient expectations, and employer- and payer-related incentives. Where well-founded practice guidelines exist, much of the low-hanging fruit of eliminating unnecessary practice variation is rapidly being harvested, but a good deal of unrealized benefit remains along the entire chain from clinical studies to generate guidelines through dissemination, funding, physician adoption, and patient acceptance.

A key area of research will be refinements of risk adjustment for valid comparisons of clinical outcomes as well as practice and provider profiles. As genomic segmentation of patient populations and more complete multifactorial risk adjustment models become the norm, universal guidelines, like blockbuster drugs, will give way in many cases to targeted guidelines. "One size fits all" may be true for some diseases and treatments, but with more comprehensive clinical databases and granular risk-benefit models, we can expect to see increasingly specific guidelines for patient subpopulations, culminating perhaps in personalized recommendations.

One obstacle sometimes mentioned to more widespread adoption of best practices in the United States is the fact that many Americans switch employers and health plans every few years. Thus, employers and health plans run the risk of spending money upfront to institute preventive health measures (e.g., promoting regular check-ups and diagnostic testing, or encouraging regular exercise by subsidizing memberships in health clubs) only to see the long-term benefits of those measures "leak" or accrue to other employers or health plans down the road. One would hope that knowledgeable consumers would migrate to and stay with those employers or health plans that promote better health—and adopt those practices anyway. But beyond this, a possible solution to the dilemma would be the creation of a market for such benefits, so that

Popularizing evidence-based medicine (EBM) will require educating consumers about the practice, even if the sources of this information are not entirely unbiased. This "Artifact from the Future" demonstrates how a motivated consumer action group might take it upon themselves to spread the word about EBM and encourage the use of physicians that rigorously follow established guidelines.



an employer or health plan that starts an employee on, say, an exercise program gets a pro-rated credit when that employee migrates to another job or health plan.

Finally, guideline development and adoption for increasingly stratified patient populations is only part of the solution—actually moving patients from higher to lower risk strata is also necessary. Thus, we need to reduce behavioral health risks related to smoking, poor diet and sedentary lifestyles, alcohol and other drug abuse, unsafe sex, firearms, and motor vehicle accidents (Mokdad 2004). And as consumers are increasingly asked to assume risk and make decisions about their own health, there will be more pressure to reduce health illiteracy. But another important set of activities is not only "doing the right things," but "doing things right." We now turn to the important issue of patient safety and medical error.

6. MEDICAL ERROR

definition & magnitude

The problem of medical error and threats to patient safety was catapulted into the national spotlight with the publication of the Institute of Medicine's report, To Err is Human (IOM 2000). That report used the following definition:

> *An error is defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.*

For the purpose of this discussion, we will focus on the imperfect execution of interventions once they're embarked upon.

While some medical errors can be as egregious as "wrong-side surgery"—e.g., amputating the wrong leg—most near misses and actual errors are the stuff of everyday clinical practice—post-surgical wound infections or other complications, the unintentional prescription or administration of a drug that causes an adverse interaction with another drug, miscommunication among providers, or even something as mundane as a patient on a low-salt diet being given a high-salt meal. Given the hundreds of millions of medical encounters in the United States each year, relatively few medical errors are dramatic headline

material, but the cumulative effect of many small errors exacts a high human and economic toll.

impact

The true impact of medical error is difficult if not impossible to fully capture, but the IOM estimates of some 44,000 deaths per year in the United States ranks it above motor vehicle accidents, breast cancer, and AIDS—and was famously compared to a jumbo jet falling out of the sky every few days. For a wide range of reasons, however, deaths and injuries due to medical error have only recently attracted funding and public attention.

In economic terms, direct and indirect (including lost income and household production) costs in the United States are estimated to be at least $17 billion and as high as $76 billion, with adverse drug events alone accounting for an estimated $2 billion of preventable hospitalizations a year (IOM 2000). Errors also trigger secondary effects, such as additional tests, treatments, and hospitalizations, which in turn incur additional costs. Several categories of noneconomic costs also accrue, including mental anguish, loss of trust in the health care system on the part of patients, dissatisfaction, and reduced morale for both patients and providers.

details

Many approaches could be taken to eliminate or minimize medical error. A major move in the last few years has been to approach medical errors not as the fault of individuals, but rather as the outcome of a cascade of events that are the result of system-level design flaws. Thus, the point isn't to catch and punish individual wrongdoers (except in the most egregious cases), but to redesign the system to make it easier to do the right thing and more difficult to do the wrong thing. Creating a "no blame" culture of safety that encourages the identification and analysis of medical errors rather than attaching stigma to anyone associated with the incident is not easy, but is gathering momentum.

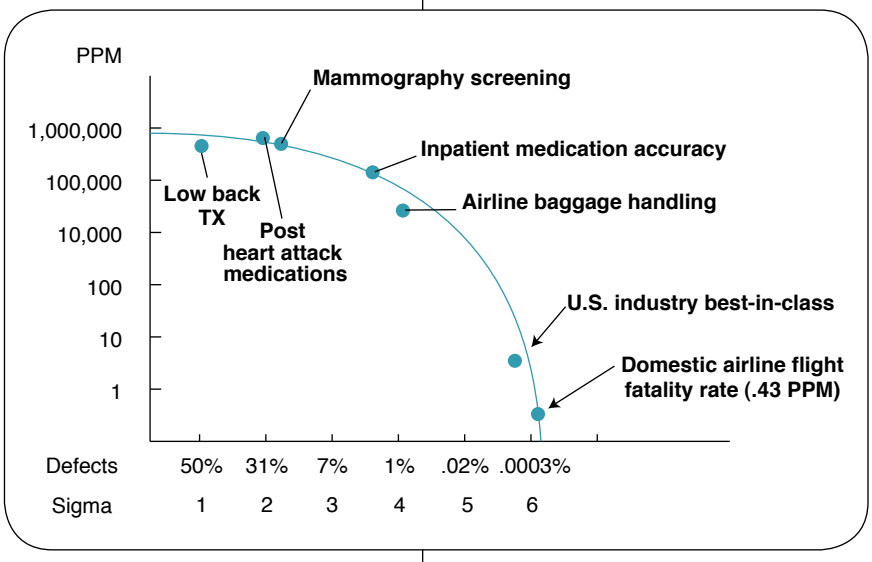
Given the hundreds of millions of medical encounters in the United States each year, relatively few medical errors are dramatic headline material, but the cumulative effect of many small errors exacts a high human and economic toll.

For example, the *Pittsburgh Regional Healthcare Initiative* (PRHI) has announced the audacious goal of "perfecting patient care." This consortium of 44 hospitals in 12 counties, four insurers covering 85% of the commercial market, and 32 purchasers (covering more than 200,000 workers and dependents) is working to achieve zero medication errors, zero hospital-acquired infections, and perfect clinical outcomes as measured by indexes such as complications and unexpected re-admissions. To accomplish this, PRHI is implementing regionwide shared learning about correlations between care processes and outcomes, near real-time error reporting, and decentralized, front-line problem solving based on the Toyota Production System model (Sirio 2003).

Similar initiatives exist elsewhere; while the creation and adoption of evidence-based practice guidelines is a necessary component, it's crucial to go beyond that to the flawless execution of those guidelines, and to the use and sharing of best practices for process and quality improvement.

Medical error will be gradually reduced as public attention and economic self-interest of patients, providers, health plans, employers, and regulators align with each other. Industries such as the airlines, and even fields within medicine such as anesthesiology, have demonstrated that systematic attention and effort can drive error rates from 1 or 2 sigma down to 6 sigma, or roughly less than one in a million (see Figure 2–1).

Figure 2–1
Error Rates in Health Care Are Higher Than Other Industries



Source: Robert Galvin, General Electric

On the other hand, it's not clear how long it will take to achieve widespread low error rates and changes in attitudes toward medical errors, as highlighted by current debates in the United States over medical tort reform. In an ideal, "zero avoidable errors" medical future, patients, providers, and

regulators will come to expect "6 sigma" error rates, but will be more focused on improving health care systems than singling out individual practitioners. Technology, whether mechanical (e.g., preventing confusion of anesthesia hoses by having different connectors for each gas) or digital (e.g., having software alerts whenever a physician orders a drug that may cause an adverse reaction) will certainly play an important role in reducing errors. But technological solutions will need to be coupled with organizational safety mechanisms.

At least three major forces could drive hospitals and other providers to pursue patient safety—professionalism, regulation, and market forces. Although market forces are often deemed preeminent drivers of change, a recent study of hospitals in twelve communities found that certification and scoring by a quasi-regulatory body, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), was actually more influential (Devers 2004). Of course, one could argue that ratings by JCAHO and similar groups—or professional accolades for that matter—can always be exploited in marketing messages, but the point remains that nonfinancial incentives can be powerful accelerants of accomplishments in patient safety.

Outside of hospitals, as more care diffuses into outpatient and even home settings, tools and approaches for reducing medical error will follow. Efforts to create medical error-free clinics, homes, and eventually mobile personal spaces will uncover interesting implications for urban planning, product and facility design, sensor and communication networks, and civil liberties.

Culture: Making Visible the Invisible 3

The final group of impediments are perhaps the most fundamental but also the most elusive, since they concern culture, the sometimes hidden assumptions and shared values of the various groups we belong to. Culture is at the root of just about every choice we make, as individuals and as a society, and understanding the way culture affects health care decisions across the health care ecology—from payers to providers to the patients themselves—can go a long way toward aligning incentives and improving the efficiency of the health care system overall.

In particular, cultural assumptions have important impacts on our first two groups of impediments–decisions about resource allocation and the translation of science into clinical practice and health outcomes. Since cultural issues deal with human nature, they offer less concrete but nonetheless important opportunities for improving health care. Indeed, one could argue that, until these cultural issues are understood and addressed, fixing economic and technology issues won't get to the root of the problem.

The cultural aspects of health care we consider are stigma, perverse incentives, unhealthy behaviors, and ideology.

7. STIGMA

definition & magnitude

In recent decades, social stigma has emerged as an increasingly salient impediment to good health and health care. Stigma can retard the adoption of healthier lifestyles, frustrate attempts to identify at-risk populations, and interfere with high-quality patient care, and will remain a major challenge for a variety of health-related stakeholders for the foreseeable future.

Any characteristic that is shameful or discrediting can lead to stigma. It can arise from physical deformity or infirmity, from private struggles such as with mental illness, or as a result of group identity, as when minority ethnic groups are stigmatized (Goffman 1963; Wailoo 2001). And like politics, all stigma is local. It arises and thrives only within a particular social environment, so it varies widely around the world. For example, mental illness that is highly stigmatized in American society can be ignored or revered in others. Stigma also changes over time: although attitudes change slowly, most minority groups in the United States experience less stigma today than they did 50 years ago.

Research by the sociologist Erving Goffman in the 1950s first described the impact of social stigma in health care settings, focusing on mental illness (Goffman 1961; Goffman 1963). Cancer and HIV/AIDS also attract their share of stigma, as Susan Sontag discussed in *Illness as Metaphor* (Sontag 1979; Sontag 1988).

impact

The worldwide HIV/AIDS epidemic sparked a re-emergence of interest in stigma and health care in the last few decades (Das 2001; Link 2001). The stigma of HIV/AIDS—a sexually transmitted disease that disproportionately strikes gay men and intravenous drug users—has been particularly intense, and its impact particularly devastating. Stigma enables the

spread of HIV/AIDS by deterring testing, safe sex, and other efforts to slow the disease.

The impact of stigma goes far beyond HIV/AIDS, of course. Altogether, a substantial proportion of the U.S. population—approximately 100 million people or one-third of the population—may be considered "stigma vulnerable." This diverse group includes:

- Roughly 35 million people (12% of Americans) living in poverty
- Approximately 44 million Americans (15% of the population) who did not have health insurance in 2002
- More than 47 million Americans (21%) who had less than a high school education
- 70 million Americans (25%) who self-identify as non-white, 35 million (13%) as Latino
- Millions of individuals afflicted with certain diseases and conditions, such as HIV, substance abuse and other mental disorders, cancer, and disorders related to food, eating, and weight, including anorexia nervosa, bulimia, and obesity
- Vast new populations who may find themselves grappling with stigma as new genetic technologies are adopted for disease screening and clinical practice (Markel 1992; Sankar 2003)

The impact of stigma on these diverse vulnerable populations is difficult to estimate since to date, we lack a reliable method to measure stigma or its social or economic costs. However, the impact is no less real, and researchers have identified how stigma produces its negative consequences. The stigmatizing conditions themselves—being poor, belonging to a minority group, and so on—constitute "primary deviance." "Secondary deviance" refers to changes in behavior that occur after a person experiences the primary stigma. This secondary deviance can actually have greater health consequences. For example, poor people may allow medical conditions to worsen (increasing the complexity and cost of care) when they avoid going to the doctor to avoid the shame associated with—or assigned to—having no insurance. Primary and secondary deviance can reinforce each other in circular ways, as when the shame associated with being overweight leads to more eating and less exercise. Substance abuse can feed on itself in a similar fashion.

details

Research suggests that it may be difficult to reduce stigma. Client-side fixes may not be realistic, since poverty, race, and stigmatized diseases can't be wished away. Changing attitudes and behaviors is also hard; basic social-psychological mechanisms lead us to discredit people who are members of particular groups, to see certain classes of people as disreputable, or to characterize some individual attributes as shameful. Legislating or enforcing changes in attitudes and behaviors toward the stigma-vulnerable is difficult and costly, and striving to change the individual motivations and behaviors that result in these practices may be of limited utility. For example, efforts to use scientific data to educate people to the fact that the mentally ill are generally non-violent may be rendered moot by a single item in a local nightly news report.

On the other hand, reducing stigma's negative effects may be more achievable, since much of the damage from stigma arises from secondary deviance, which may be more easily addressed. In HIV/AIDS, for example, some health care organizations have been highly successful at reaching out to AIDS-vulnerable populations and implementing programs to slow the spread of disease. How well organizations recognize, prevent, and combat secondary deviance helps explain their success in intervening in HIV/AIDS.

Some organizations ameliorate stigma and others exacerbate it. Ongoing research by Dan Dohan and colleagues at the University of California, San Francisco and elsewhere has identified a number of factors that influence how stigma unfolds within organizations, and has begun to suggest strategies for organizations to reduce secondary deviance and the damage of social stigma in health care and social service settings.

Numbers Matter

For example, one project compared health care organizations that see a lot of stigma-vulnerable patients with those that see relatively few. In general, patients who are stigma-vulnerable (the poor and uninsured, those with substance abuse problems, and those with mental illnesses) are treated better in settings where they are more numerous.

At one clinic where many stigma-vulnerable patients received care, mental illness was dealt with in a matter-of-fact fashion as a co-morbidity similar to heart disease or diabetes. Clinicians simply asked patients about their psychosis or substance abuse problems, determined whether they used prescription or illicit drugs, and adjusted pain medications and other treatments appropriately.

In contrast, at another clinic, stigma-vulnerable patients are exceptions to the rule. Most patients in that clinic are higher income, well insured, and white. The occasional patient with a mental health problem—even something as common and treatable as an anxiety disorder or depression—attracted substantial attention from clinic staff. Patients who did not speak fluent English also risked stigmatization in this clinic. Staff often labeled them "difficult" or "demanding"—a sharp contrast to the first clinic where many of the staff spoke multiple languages.

Context Matters

Other research highlights how the broader context in which clients and providers interact in health care and other organizations shape stigma.

Trust is crucial. Trust between clients and providers establishes a firm foundation for providing services to stigma-vulnerable populations. Conversely, lack of trust hampers providers' ability to provide services. Lack of trust can hamper their ability even to identify which clients might benefit from substance abuse treatment because, as one worker put it, if clients "feel that we are pointing fingers or making accusations, then they're going to put up a wall immediately." Lack of trust has also been identified as one of the crucial barriers to quick diagnosis and appropriate follow–up among low-income patients with chronic disease such as cancer.

Context can facilitate or impede interactions with stigma-vulnerable clients and populations. Client-provider interactions are affected by factors such as size of caseload, division of labor, referral systems, and professional training. Secondary deviance can flourish if large caseloads force brief client-provider interactions or if a strict division of labor means that stigma-vulnerable clients' concerns are "bracketed" out of conversations. Stigma may also increase if appropriate referral mechanisms—for example to mental health providers—are

unavailable or if professionals do not receive the kind of training that gives them the tools to explore the possibility that clients may have stigmatizing conditions.

foresight

Health care and other firms can encourage workplace routines that ameliorate stigma inside the organization and in delivery of services to clients. This can prove advantageous in numerous ways. In competition with other firms, organizations that lessen stigma will have an advantage in securing the business of stigma-vulnerable customers. In this way, firms can gain access to markets that might otherwise be hard to reach.

Health care and other firms can encourage workplace routines that ameliorate stigma inside the organization and in delivery of services to clients.

The future benefits of developing the capacity to provide socially sensitive care may be substantial. New genetic technologies have the potential to give rise to widespread new forms of stigma. Organizations that know how to neutralize secondary deviance, monitor employees for enacted stigma, and ameliorate the effects of stigma among customers and clients will be in an advantageous position to grapple with the social challenges of these technologies.

The costs of building and maintaining a stigma-ameliorating organization are difficult to predict. An organizational culture that values diversity and tolerance need not be expensive to develop and sustain. But addressing the structural features that allow workers to act on their better intentions may be. Providing time for the one-on-one interactions that allow workers and customers or providers and clients to get to know each other as individuals is a crucial way to ameliorate stigma, but it is not cheap. Because the culture of health care provider organizations is a powerful tool for addressing stigma, they should be aware of how numbers, policy, and context impact stigmatization.

While many current sources of stigma disproportionately impact the disadvantaged, many of the new sources of stigma on the horizon (e.g., revealed by genetic testing) may cross class lines and be more "democratic," although they may not be as visible as skin color, obesity, or verbal ability. New stigma will arise despite genetic privacy or nondiscrimination laws; some of these will generate grass-roots advocacy groups that work to change norms, analogous to "Act Up"

and "Breast Cancer Walk," while others will remain in the shadows and unorganized.

insight

In shunning the stigmatized, we can miss opportunity—the essential question here is, "How does an organization or business market to people who belong to a group but don't particularly want to be known as members of that group?" Pharmaceutical companies have demonstrated that it's possible to be quite successful marketing to stigmatized groups—for example, people with depression or erectile dysfunction. And stigma can certainly motivate customers to "improve," as has been amply demonstrated by products related to diet and weight management.

To be sure, there are potential political and economic risks for organizations that ameliorate stigma and thus build trusting relationships with customers and develop positive reputations in stigma-prone communities. On the other hand, organizations that exacerbate stigma may motivate clients and employees with bad outcomes or experiences to pursue litigation or public "name, shame, and blame" campaigns—fighting stigma with stigma. In these cases, "doing good" by reaching out to stigmatized groups can lead directly to "doing well."

8. PERVERSE INCENTIVES

definition & magnitude

Even a quick look at our current health care system reveals quirks that raise questions about why we seem to have a bias toward:

- Acute care rather than prevention, integrated chronic care, or palliative care, even when these modalities may be more cost-effective
- Surgical interventions rather than medical treatment, which in turn is valued more than talking to the patient, counseling, and cognitive tasks such as making medical decisions
- The greatest good for the individual rather than greatest public health utility

- Persistent delivery of non-evidence-based care rather than investing in the research required to establish evidence-based practice guidelines
- Foot-dragging on providing at least a basic package of universal health insurance, even when it seems likely that overall costs and quality would improve as a result

Other examples abound. Providers sometimes prefer not to be known as experts in treating complex or high risk patients because they end up losing money as more of these patients flock to them—yet, by not supporting these expert providers, society incurs a high cost when those patients get suboptimal treatment elsewhere. Employers and health plans are often reluctant to invest heavily in promoting healthy behavior and preventive health measures among employees/enrollees because many of those people switch to other employers or health plans before these investments pay off in terms of lower health care utilization—yet prevention could dramatically lower overall health costs.

Some of the oddities of our health and health care system can be better understood if we assume that "all behavior, no matter how bizarre, makes sense from the standpoint of the actor." Thus, decisions and actions on the part of consumers, providers, employers, and other stakeholders that seem to discourage rather than encourage better overall health outcomes can often be explained once their structural, economic, cultural, or other determinants are uncovered. In a business context, financial incentives carry great weight, but health and health care also involve hefty non-economic incentives as well.

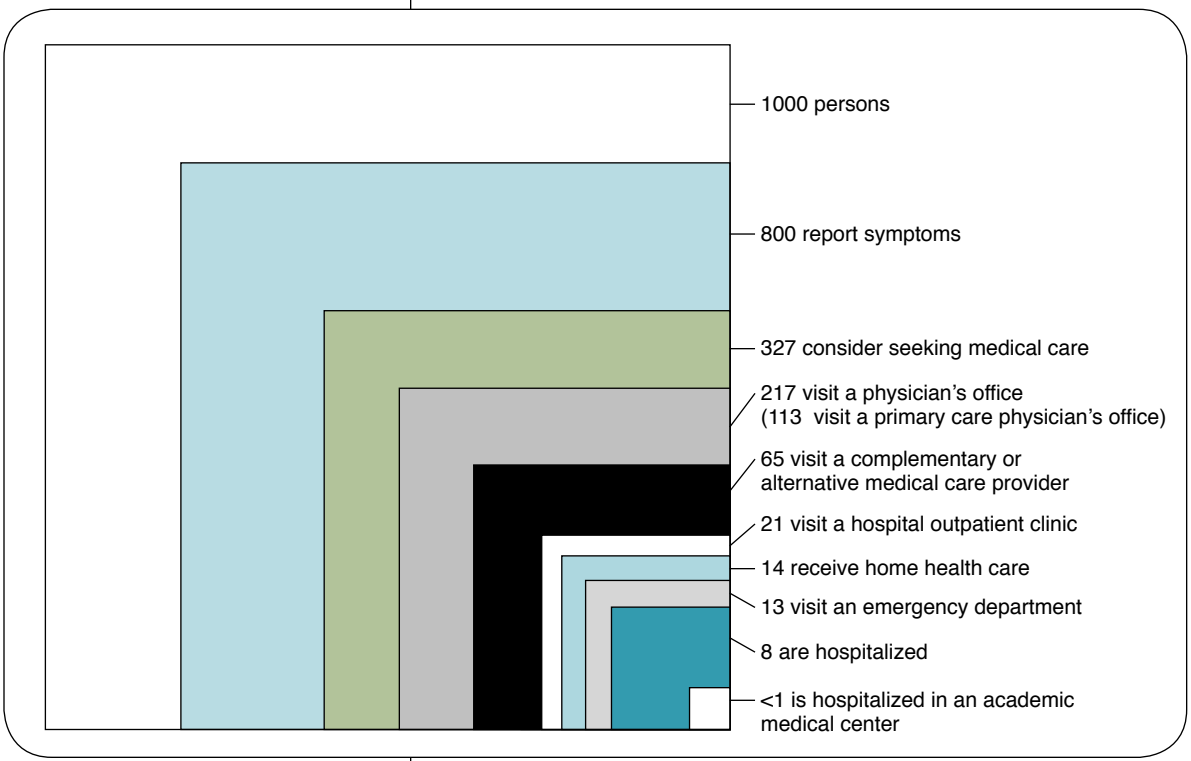
Some apparent inconsistencies are due to inherent dilemmas in health care and its financing—for example, patients and providers demand more resources for health services, while employers, health plans, the government, and the very same patients and providers when they're taxpayers, demand less. And as is well known, health-related services are rife with paradoxes related to moral hazard, the tragedy of the commons, and free-rider issues.

Other oddities are due to disconnects when people who save the system money don't necessarily get rewarded for doing so (Kolata 2004). Yet others are due to disproportionate focus on certain parts of the health care system; for example, a recent analysis of the ecology of health care reminds us that only a very small fraction of the

population is hospitalized at any particular time, and that interventions at earlier stages of the progression from initial symptoms to actual admission to the hospital might reduce this fraction even further (see Figure 3–1). Yet the focus and funding of medical care is largely centered on hospitalized patients.

Finally, health problems are generally viewed as medical in nature and individual in scope, rather than social in nature and public in scope. Individual stakeholders seeking to maximize their own returns may be behaving entirely rationally from an economic point of view, but may be rendering invisible the indirect and shifted health and economic costs associated with their behavior. Changing this mindset will be fundamental to reducing perverse incentives in our health care system.

Figure 3–1
The Ecology of Health Care
(Each box represents a subgroup of the largest box, which comprises 1,000 persons of all ages)



Source: Green, L.A. et al. "The ecology of medical care revisited," *New England Journal of Medicine*, 344(26): 2021–2025, 2001.

impact

Incentives matter, and to be sure, well-designed incentive plans can improve health and health care. Some examples of successful quality improvement through incentives include efforts by General Electric's Bridges to Excellence program to redesign clinical care, California's Integrated Health care Association pay-for-performance initiative, and New Hampshire's Anthem Blue Cross and Blue Shield plan to increase preventive care linked to Health Plan Employer Data and Information Set (HEDIS) measures (Epstein 2004).

The overall effects of other incentive programs are more equivocal. For example, introducing tiered drug benefits and increasing co-pays can dramatically reduce utilization of expensive drugs—but they can also cause some patients to stop taking the drugs altogether (Huskamp 2003). Understanding and avoiding these unintended effects requires both careful policy design and vigilant post-policy monitoring.

Finally, perverse incentives fostered by poorly designed reimbursement policies can lead to unnecessary or even contraindicated interventions, which in turn can lead to a cascade of additional—and avoidable—complications (Deyo 2002). At best, this results in wasted time, effort and resources; at worst, patient harm and even death may result. Indeed, it could be argued that wasted time, effort and resources all carry opportunity costs that translate to harm to patients who could otherwise be treated. Physicians are understandably uncomfortable discussing the potential for financial incentives to be in conflict with optimal patient care and even when asked by patients, many tend to be vague about the issue (Pearson 2002). But since they are said to control roughly 90% of health care expenditures, their motivations and behavior should be key targets for incentive reform.

foresight

Incentives are often difficult to change, because they are determined by contentious political and social debates. However, growing concerns about unsustainable rises in health care costs and persistent unevenness of quality will almost certainly eventually motivate stakeholders to set aside differences. Because Medicare and Medicaid play

Health problems are generally viewed as medical in nature and individual in scope, rather than social in nature and public in scope.

such a large role in reimbursement for health care in the United States, they will serve as a useful focus for attempts to better align incentives. However, when compared to other developed countries, the United States also has an unusually large fraction of health care costs paid for by private insurance, which introduces potential conflicts between policies designed to maximize shareholder value for those companies and those aimed at maximizing public health.

As "P4P" (pay for performance) initiatives emerge from the pilot stage and begin to accrue evidence for effectiveness and return on investment, at least some perverse incentives will evaporate as providers' clinical and financial goals align. As consumers increasingly bear more cost and responsibility for their own health care, their incentives and that of employers and government payers (Medicare and Medicaid) will converge. And as connective technologies such as the Internet reduce information asymmetry and foster transparency, perverse incentives may not disappear, but at least the reasons for their existence will become more evident.

Because the health care ecology is complex and interdependent, redesign of incentives will require a similarly holistic approach. For example, simply setting higher provider reimbursement rates for medical decision making or patient counseling may not result in a higher physician threshold for performing expensive procedures or dispensing medications unless other elements such as patient education, supporting infrastructure, effective utilization review, and outcomes monitoring are bundled with reimbursement reform. Granting stronger patent protections for pharmaceuticals may encourage higher risk research, but only if stock price volatility based on misperceptions of routine disappointments in clinical trials can be tamed. Reducing moral hazard by shifting more risk and responsibility to consumers will be most effective only if consumers are also given the tools and data needed to make informed choices. And although incentives can be less blunt instruments than government regulatory regimes, a combination of the two will likely be necessary to effect major change in our health care system.

Next, we turn to some of the consequences of perverse incentives from the point of view of consumers—unhealthy behavior.

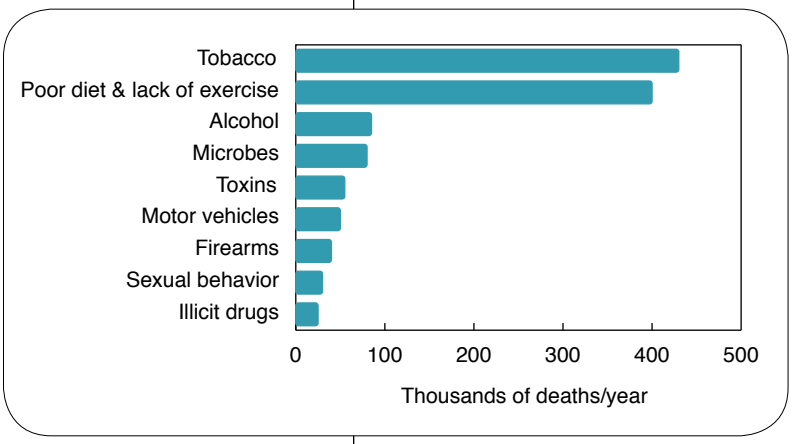
9. UNHEALTHY BEHAVIOR

definition & magnitude

While disability and death obviously cannot be postponed indefinitely, the Centers for Disease Control and Prevention (CDC) estimates that 50% of deaths in the United States are actually caused by factors potentially modifiable through behavior, including smoking, poor diet and lack of exercise, alcohol and other drug abuse, reckless driving and firearms, and unsafe sex (see Figure 3–2) (Mokdad 2004).

For example, despite decades of public awareness campaigns, nearly 20% of Americans still smoke, 60% of Americans do little or no regular exercise, nearly one-third of adult Americans have a body mass index (BMI) greater than 30 (the cutoff for obesity), one of every 13 adult Americans abuses alcohol, and roughly one-fourth of drivers and passengers still don't wear seat belts. While the reasons for these behaviors and their persistence despite people "knowing better" may be complex, the consequences for health outcomes are straightforward and negative.

Figure 3–2
Behavior Related to Many Causes of Death
(Number of preventable deaths, annually)



Source: Adapted from Mokdad, A.H. et al. "Acutal causes of death in the United States," *JAMA* 29(10), 2004.

impact

The human and economic toll of these unhealthy behaviors is staggering. Smoking alone accounts for roughly 435,000 deaths a year in the United States (about 18% of total deaths) (Mokdad 2004), and is associated with a 21% increase in inpatient and outpatient spending and a 28% increase in medications (Sturm 2002). A study done in 1999 estimated the total costs attributable to smoking in the United States to be roughly $138 billion (Rice 1999); a more recent study on the costs of smoking in California found that the total costs of smoking amounted to $475 dollars per resident, and $3,331 per smoker. Just over half the costs were directly related to health care, about one-third were from indirect costs due to premature deaths, and the rest were

due to lost productivity from illness. There were more than 40,000 deaths attributed to smoking, representing a total of 535,000 years of life lost (Max 2004).

Food-related medical costs are also huge. Medical spending related to obesity and being overweight account for over 9% of national health expenditures, roughly $78 billion in 1998 (Finkelstein 2003). Obesity has roughly the same association with chronic health conditions as does 20 years of aging and is associated with a 36% increase in inpatient and outpatient spending and a 77% increase in medications (Sturm 2002). One prominent research group estimates that 30% of new cases of obesity and 43% of new cases of diabetes could be prevented by adopting a relatively active lifestyle—watching less than ten hours of TV a week and briskly walking for 30 minutes a day, for example (Hu 2003).

Alcohol and other drug abuse also create huge burdens on society. In 1995, costs attributable to alcohol abuse and drug abuse were on the order of $180 billion and $114 billion a year, respectively (Rice 1999).

Meanwhile, motor vehicles are the number one cause of injury death in America; the National Highway Safety Administration reports that traffic accidents account for an injury every nine seconds and a death every 13 minutes, and cost employers almost $22,000 per crash and $110,000 per injury, for a total of over $14 billion a year (NHTSA 2004). Medical treatment costs are 50% higher for unbuckled victims, and since most of the cost of medical care for those injured while not wearing seat belts falls on society rather than on the individual involved, everyone who wears a seat belt effectively pays about $40 a year to support the care of those who don't.

Motorcycle helmet use is another example of the tension between individual freedoms and societal burdens. In the year after Florida allowed motorcycle and moped riders with $10,000 of insurance not to wear helmets, motorcycle-related deaths went up by 48% (Muller 2004), with additional, often long-term health care costs for those suffering closed head injuries or other trauma.

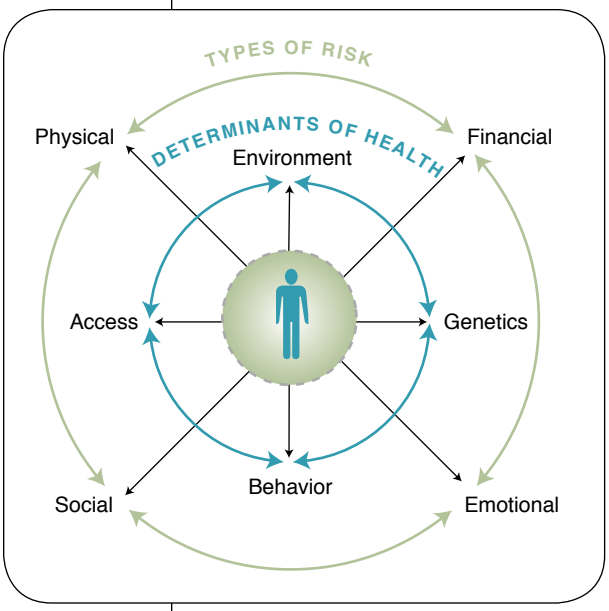
foresight

With increased recognition of the role of behavior in determining health outcomes, we can expect the emergence of new pressures to be healthy. As we've suggested elsewhere, employers concerned about the rising costs of health benefits will become new health advocates, if only out of self-interest. A recent study suggests that medical costs for overweight and obese employees is 4–5 times higher (Bungum 2003), and we've already seen signs of more workplace peer pressure directed against overweight colleagues or smokers as fellow employees begin to understand the potential links to their own health benefits premiums (Cole 2003) (Aeppel 2004).

With a broader definition of health, there will be more ways to be unhealthy. A twist on this is when "healthy" is defined by social norms, and reinforced by the media, as being thin, resulting in an epidemic of resultant eating disorders (Becker 1999). Human "augmentation" may further shift what's considered normal; if cosmetic surgery (PakistanDailyTimes 2004) or human growth hormone (Word 2003) become the norm in conferring competitive advantage on oneself or one's children, or if anabolic steroids and performance-enhancing drugs or gene doping become the norm in athletes, could having wrinkles or crooked teeth or merely average looks or cardiovascular stamina be considered "unhealthy"?

With more information available to consumers, health illiteracy has attracted more attention, and with a shift toward consumers bearing more risk and responsibility for their health decisions, we might expect a growing need for more effective consumer education and interventions (see Figure 3–3). There will be an increased need (translate: business opportunity) for better systems to gather and analyze data related to health risks and to convey those risks to consumers in an actionable form. Strategies to address this issue will need to include savvy media use, such as using radio in developing countries to spread health messages (Adam 1999). On the other hand, incessant media and public attention to health threats may result

Figure 3–3
Health Is Multidimensional



Source: Institute for the Future

in "risk fatigue" or information overload, causing some to disengage, especially without access to an educator or trusted information source.

What will increased pressures toward healthy behaviors mean for various stakeholders in the health arena? Consumers are already bearing more responsibility for their own health decisions, and we'll continue to move from a "compliance" model that frames the patient as passively "following doctor's orders" to one of "adherence" that recognizes a more active role for the patient (Lutfey 1999). Providers may find a more receptive audience for health advice as consumers feel more of a stake in managing their own health, and may be able to adapt lessons from consumer-oriented businesses that understand and communicate with diverse markets along the healthy/unhealthy behavioral spectrum. Health plans and employers will likewise be looking for "break out" stories to combat risk fatigue among consumers (e.g., the re-energizing of the issue of weight loss when low carbohydrate diets became wildly popular).

DRIVERS OF UNHEALTHY BEHAVIOR

Unhealthy behavior doesn't exist in a vacuum; a number of structural factors and drivers often contribute. Income is perhaps the strongest factor, explaining most or all of the effect of education and accounting for a two- to three-fold increased risk of dying among low income Americans (Lantz 1998). It takes a certain luxury of time and money to eat healthy food, exercise regularly, avoid stress, and to afford high quality healthcare.

Psychological drivers of behavior are clearly important beyond the obvious cases of addiction to drugs or alcohol; we all recognize from personal experience that simply knowing, for example, that we should eat less and exercise more is not the same as actually doing it. People famously tend to overestimate their own adherence to diet, exercise, and other health regimens, and peer pressure as well as moral hazard (of the economic kind) can encourage smoking, drinking, and risky sex, among other unhealthy behaviors.

Factors in the individual's environment can also play an important role. Living in a dangerous neighborhood makes it harder to engage in regular exercise. Office work and media-related entertainment (e.g., TV or Internet) promote sedentary lifestyles. Advertising and the temptations of tasty, convenient, and affordable packaged and restaurant foods has led to the super-sizing of many Americans. Indeed, there's a chain leading from structural enablers to exposure to a health message to actually changing behaviors in response to that message that can be interrupted or thwarted at any stage.

10. IDEOLOGY

definition & magnitude

"Ideology" is a shorthand for a complex impediment to better health and health care—health related cultural beliefs, often invested with deep emotional value.

At first glance, health and health care may seem to be removed from ideology—after all, humans are quite similar genetically and physiologically, and doctors, nurses, and hospitals have historically been regarded as ideologically neutral and "above politics." A moment's reflection, however, quickly yields several well-known examples of how ideological beliefs can affect health care and outcomes:

- Refusal of blood transfusions by religious groups such as Jehovah's Witnesses
- Opposition to abortion and stem cell research on moral grounds
- Denial of the existence of HIV in South Africa and other countries leading to delays in effective prevention and treatment
- Although there have been 13 new contraceptive technologies for women developed since WWII, none have been developed for men

In recent years, new anthropological and sociological approaches for understanding culture, technology, and health have emerged. Below we'll apply some of these approaches in a variety of transnational contexts to provide insights into how a better understanding of the role of ideology, culture, and ways of imagining users of technologies can help both health and organizations with an interest in delivering health related goods and services.

Frequently, failures of health care delivery are cast as a problem of access to technology, non-adherence to prescribed treatment regimens, poverty, or ignorance—and indeed as noted in other chapters of this report, these can be powerful impediments to better health and health care.

"Ideology" is a shorthand for a complex impediment to better health and health care—health related cultural beliefs, often invested with deep emotional value.

As Paul Farmer has demonstrated in cases of non-adherence to drug regimens for HIV and tuberculosis, however, there's more to it than that. It's not that patients don't want to take medicines to get better—rather, structural factors such as violence and poverty are often the culprit, and by directly addressing these factors through comprehensive community-building, Farmer has developed innovative mechanisms for bringing anti-retroviral drugs to low-income communities in Haiti while providing a model that can be applied in other settings.

On the other hand, even relatively wealthy and well-educated patients living in physical security don't "follow doctors' orders" all the time, and understanding why requires political, religious, cultural, and scientific knowledge. Many innovative social service programs in the global health arena (such as the Grameen Bank in Bangladesh or the enlistment of drug addicts to develop policies and interventions for drug users in Switzerland) have succeeded through insights from careful attention to issues around "culture."

The impact of cultural ideology on health and health care takes several forms.

Resistance to Health Interventions by Consumers

Consumers' cultural beliefs have decided effects on their health decisions and behaviors. A particularly interesting case is that of polio vaccinations in Nigeria. In the last few years, there has been widespread resistance to government polio immunization programs in Northern Nigeria. Islamic leaders have claimed this is a conspiracy led by U.S. agents to sterilize Muslims. While this may seem irrational to us, an anthropological approach seeks to understand the historical and political basis for such accusations.

As it turns out, the northern Kano state, where resistance to the oral polio vaccine is greatest, is the site of recent ethnic and religious clashes, and trust in the state has plummeted. Refusal of polio vaccination can be understood as a rejection of the authority of the Nigerian state that has undermined *sharia* or Islamic jurisprudence in other domains. It is as much political protest as a health care issue. But the result is a re-emerging risk of polio in Northern Africa and, quite recently, spread to Indonesia.

Influence on Health Professionals

Of course, consumers are not alone in being influenced by cultural factors. As anthropologists in the field of science and technology have noted for decades, scientists, physicians, and other health care professionals are no different from any other "tribe" in having a set of cultural beliefs, values, and rituals, and we gain important new insights by realizing that Western allopathic medicine and biomedical knowledge contain many cultural assumptions. A striking example of this is how long it took physicians to accept that gastric ulcers were often caused by infection with the *Helicobacter* bacterium rather than dietary factors or "stress" that was the dominant cultural paradigm. The scientists who initially proposed this hypothesis endured years of ridicule and dismissal before their research findings were finally vindicated.

Another way in which "experts" express their own cultural beliefs occurs when scientists and developers create technologies with certain users in mind. Users are understood by those who create technologies as being individuals or communities with particular values, beliefs, and attitudes. Laboratory scientists, health policymakers, activists, and patients can all have different understandings of who the users of a technology are; getting this "right" can mean the difference between success and failure in the workplace, clinic, or marketplace.

But the process can be tricky. In the realm of health care, technology developers and health policy advocates are frequently located in very different social contexts from the users of technologies and health care services. Yet, we still see many examples of the "I" paradigm of technology development—if I would like this or that feature then the consumer will certainly like it as well. Others may also claim to speak on behalf of users. For example, women's health advocates may claim to represent women in the Third World, or patient groups for disorders may speak for all those afflicted with specific diseases (e.g., American Cancer Society, Huntington's disease patient groups, and so on). This occasionally creates tensions among different members of the scientific profession, industry, health advocates, and a variety of end users. As Margaret Akrich notes, both users and innovators of technologies exist in different sociocultural contexts, and users do not represent a single entity.

To return to our example of vaccines, the diversity of users includes governments, health care providers, parents and families of those vacci-

nated, and/or patients. Each of these segments can be broken down even further: for example, the CDC may approach vaccination as primarily a public health issue, while the White House may use a smallpox vaccination program to mitigate political risks in the wake of bioterrorism threats. Likewise, some health workers may embrace smallpox vaccination while others may decline based on their own risk–benefit calculations and political opinions about the federal government.

details

Vaccines, due to their involvement with the immune system, are particularly interesting politically. In Emily Martin's study of the immune system in American cultural life, she studied the metaphors used by immunologists and the biomedical profession to explain the working of the immune system. Within this language she found many examples of military metaphors that those of us trained in the sciences take for granted. "Killer cells" and other aspects of the immune system are all explained through a discourse filled with military imagery and metaphors. However, an alternative language of the immune system also exists, and in fact, many of the biomedical scientists that Martin interviewed found the military language lacking and feared the effects among patients, noting that alternative health practices frequently opt for different imagery.

For example, another way of understanding the immune system and vaccines is through the language of "learning"—vaccines "teach" the immune system how to rid the body of invaders. Interestingly, Martin found that in many communities where large numbers of people resisted vaccination, the population was highly educated, but chose to resist "public" education of the immune system and opted for 'home schooling." Wary of the role of government in the regulation of their own bodies, these educated professionals actually resisted vaccination and a wide range of public goods. In other words, they actively resisted being "good citizens" as a kind of political stance. Informed consent and the right to *not* be vaccinated have become important issues in some communities. This illustrates how users are not always passive recipients.

What all of this demonstrates is that technologies are embedded in cultural and social meanings, assemblages of the old and new, histo-

ries of violence and humanitarianism, politics of the local and global. Risks and technologies are frequently reinterpreted and translated in light of these meanings. How do we explain how Portugal, with a higher prevalence of mad cow disease than England, has had little public outcry, whereas Spain, with far fewer cases than England, has experienced tremendous public debates over food safety? This points to the need for more sophisticated ways of understanding sociocultural process in technology appropriation, risk, and the meanings of health.

Closer to Home

The issue of ideology getting in the way of better health and health care isn't limited to exotic locales across the globe. Here in the United States, cultural beliefs also affect attitudes toward health care, and we do not need to look farther than the Tuskegee syphilis experiments to see how history has created suspicion of the health care system among African-American communities. What may appear to be ignorance or noncompliance with medical advice looks quite different when viewed through the lens of a lived experience of racism, marginalization, and exclusion from the medical system.

This history has made the conduct of clinical trials with various ethnic communities complex—marking particular racial groups as necessary inclusions in trials may work to reinforce biological notions of race, yet the neglect of phenotypic difference in trials could worsen marginalization in health outcomes. Genomics may show that we are all much more alike biologically than we think, but the effects of genomics and social constructions of race have a long way to go to being resolved in clinical practice.

A brief scan of Web sites concerned with vaccines, for example, will reveal that all parts of the political spectrum contest the safety of vaccines for one reason or another. This resistance is a very different matter from noncompliance, and is bound up with the emergence of empowered consumers. But ironically a rise in this type of community resistance can lead to a fall in the other kind of community resistance, that to dangerous epidemics. Pharmacogenomics may someday tell us that some subpopulations will react negatively to particular vaccines; on the one hand, this will improve vaccine safety, but on the other hand, it will lead to segmentation of a market already considered unprofitable, at least when overall societal benefits aren't taken into account.

Another example of ideology affecting research and health outcomes is the current debate over stem cell research. U.S. leadership in exploring the potential of stem cells to treat or even cure important diseases has eroded as our more restrictive policies have driven leading researchers to the United Kingdom, Singapore, and other countries. It remains to be seen if individual state initiatives such as California's Proposition 71 to encourage stem cell research will be able to reverse this tide.

foresight

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Ideology will become more important as we see more diversity in notions of body, health, and illness. The Western biomedical model that has dominated health care in the United States for much of the last century has already been challenged by various forms of complementary and alternative medicine, and increasing immigration and cultural diversity in the United States will continue to inject new notions of wellness and illness into the medical discourse. A more medically pluralistic universe where multiple and complex notions of the body, citizenship, and health is emerging and will include new forms of power and health politics, such as "biological citizenship" in groups defined by disease rather than by geopolitical boundaries. New forms of biosociality (as Paul Rabinow calls it) or technosociality (Oudshoorn) may germinate an entirely different form of health politics that health policy experts have yet to address. Likewise, branding and franchising will need to take into account these new communities and the political economies of hype and hope around new therapies.

Globalization will not necessarily mean homogenization, and attempts to harmonize regulatory regimes will come up against diverse histories of medical professions, public health, and patient groups in different geographical contexts. Partly due to this increased cultural pluralism, trust will become more important, both in forging the therapeutic alliance between patients and providers, and in finding reliable sources of information. Food scares, counterfeit drugs, and dodgy or conflicting clinical trials will heighten this need, as will fights over intellectual property and privacy sparked by advances in genomics. Some companies are already beginning to build ethical claims into their products (e.g., regarding testing in animals or how stem cells are obtained), and this will likely increase as consumers raise the bar on corporate social responsibility.

What we have tried to demonstrate is that culture plays a large role in explaining why particular technologies work (or don't), are disseminated (or not), or are used (or not). Past political history, ethical failures in clinical trials, public health interventions, or media representations of products, risks, and policies have had profound effects on the success or failure of current products and policies. There is no "universal user," and how policymakers, companies, and designers of products and services construct users is important—often it's "our" culture, not "theirs," that gets in the way.

This has important applications for technology development, health policies, and the ways in which products are marketed. Do the values that go into the rationale for developing a technology encompass the range of values and meanings that users (in whatever form they are imagined) might hold? Have past technologies that failed or succeeded worked the way we think they have?

Another set of lessons comes from international comparisons. When technologies move across different national contexts, they can be interpreted differently from the way the original developers understood them; what values do they acquire as they move and what histories inform these values? Differences in health care systems internationally not only reflect different histories and political circumstances but also include a concerted effort by populations and political constituencies to be different from other nations, as in the case of the United States and Canada. Communities may co-opt and customize technologies. Ultimately, businesses that pay attention to language, history and culture around technology, expect consumers to be armed with knowledge, engage with fears and risks in an open manner, and find ways to engage with differences creatively will gain advantage.

Another lesson is that nontraditional markets can be profitable. A host of hybrid for-profit/non-profit ventures in developing countries, for example, have shown that the poor do have purchasing power and demand access to health technologies and technologies from outside the health arena that can improve their health. Programs and companies such as Grameen Telcom and Unilever have many lessons for firms in how to shift their own mentalities to serve people who are less affluent, yet have aspirations not very different from the rest of us.

Industry could play an important role in helping to build hybrid institutions where science, social science, and advocacy strategies can address barriers to health care delivery and lack of access to technologies, but this will require a re-examination of many assumptions about consumers, and a willingness to allow alternative voices to be heard from all along the spectrum. Scientific literacy and public understanding of science is all too often constructed in terms of an "ignorant public." This stance has proven to be incorrect—alternative rationalities exist and are not simply the result of lack of information. This makes the issue of stakeholder forums a more process-oriented and multidirectional phenomenon. While the media are a critical arbiter of risk perceptions, consumers have sophisticated views on how the private sector may try to downplay risks—the politics of risk management will require more transparent and more ethical engagements with the public around risky health and technology issues.

Conclusion: It's Going to Take a Cultural Shift 4

Only when we understand the cultural constructs beneath the health care impediments we've discussed in this report can we work to align incentives up and down the continuum of care, and move on to address the practical economic and scientific fixes that will bring the visible improvements we've sought in the health care system for so long—lower costs, better care, and universal access.

The stigma of uninsurance; the perverse incentives that create maldistribution of nurses, doctors, and pharmacists; the structural reasons for tremendous administrative waste; the blame-the-user attitudes of IT approaches; the individual psychological and group ideologies that are slowing the adoption of EBM; the litigious culture that currently makes the system want to hide medical errors rather than bring them to light; the larger structural problems and human nature that keeps us all doing things we know are bad for us; the historical anomaly that has given us the employer-sponsored health insurance system rather than universal health insurance—solving all of these problems will require a real shift of perspective, a giving up of some deeply held cultural beliefs and an embracing of others.

Here is our list of the top ten challenges to our current ways of thinking, matched with each of the impediments we've discussed in this report:

- Everyone in the United States must have access to health care by means of some form of universal health insurance.
- Medical workforce shortages must be reduced throughout the pipeline to keep our systems working and to keep from draining the medical talent from the rest of the world.
- Byzantine administrative redundancies must be eliminated.
- IT systems must be made truly interoperable and medical records must be brought online.
- The money and societal will must be found to support the clinical studies that underpin and enable evidence-based medicine.
- Sensible medical tort reform must be undertaken, or the practice of defensive medicine will continue to undermine the health care system at its core.
- Health care organizations as well as the society at large must learn how to deal with stigmatized populations, both to lessen that stigma and to treat these populations.
- The perverse incentives of the American system that encourage inefficiencies, decrease quality, and increase costs must be rationalized.
- The role of individual health behaviors must be better understood and harnessed to improve outcomes.
- The different ideologies that drive the U.S. system must be acknowledged, understood, and changed where needed.

Each of these is easy to say, of course, but much more difficult to do. We hope this report goes a small way toward highlighting the impediments to better health and health care in the United States today, and offers a step or two in the direction of addressing them. Understanding and shaping efforts to dismantle these impediments is one of the most important social policy missions of our time.

Appendix: The Selection Process

We began with a general Web search using tools such as Google and Grokker and terms such as "impediments" and "health care" to get an overall sense of the problem space and how it might be clustered. We then performed a literature search of the PubMed bibliographic database, which yielded several hundred articles, mostly from the health services research literature.

Our next step was to review recent reports from the Institute of Medicine (IOM), the Department of Health and Human Services (DHHS), and the National Institutes of Health (NIH). This produced landmark reports such as *To Err is Human* (IOM 2000), *Crossing the Quality Chasm* (IOM 2001), and *Confronting the New Health Care Crisis* (DHHS 2002).

Next, we scanned Web sites and reports from both government and nongovernmental organizations whose mission includes a major focus on health policy or quality of care—such as the Agency for Healthcare Research and Quality (AHRQ), the Institute for Healthcare Improvement (IHI), the Center for Studying Health System Change (HSC), the National Center for Quality Assurance (NCQA), the Leapfrog Group, and the National and Pacific Business Groups on Health (NBGH, PBGH). This yielded such resources as the extensive series of AHRQ research reports and "The State of Health Care Quality" (NCQA 2003).

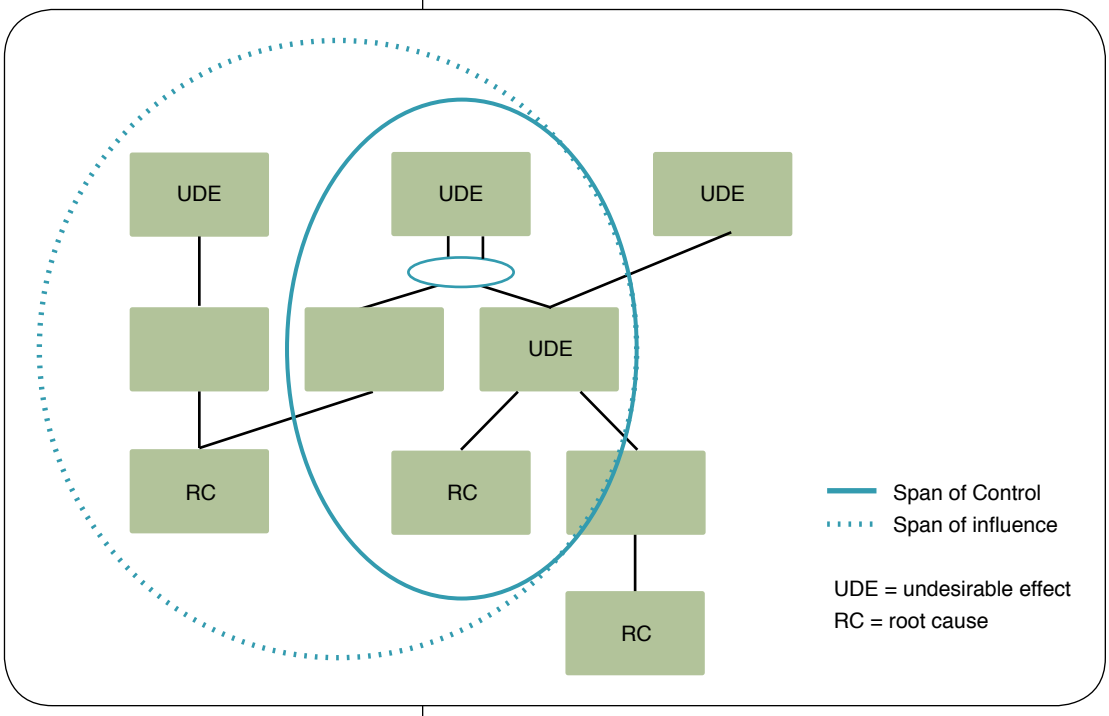
Finally, we assimilated insights from work with our clients, many of whom deal with these problems on the frontline every day, either as providers, payers, vendors, large employers, or other stakeholders.

SETTING BOUNDARIES

A key challenge in this endeavor is the "Goldilocks dilemma"—getting the right level of focus on impediments that are significant, yet tractable ("not too big, not too small, but just right"). On the one hand, we didn't want to dwell on issues that, while important, are too granular (e.g., lack of data and transactions standards for electronic medical records). On the other, we didn't want to tackle "facts of life" unlikely to be budged by anyone in the foreseeable future (e.g., world poverty, international strife).

Another way to look at this is to use Goldratt's "Current Reality Tree" framework (Dettmer 1997) (see Figure A–1 on page 60). In this type of diagram, undesirable effects (in our case, suboptimal health outcomes, high costs, wasted resources, health disparities, and so on) are seen as the result of root causes (impediments to better health and health care). Some of the undesirable effects and root causes are within the span of control of major health-related players (consumers, providers, payers, and so on), some are not in their span of control but are within their span of influence, and yet others are under neither the control nor influence of these actors. For the purposes of this report, the last group is less interesting since there's not much we can do about them.

Figure A–1
Goldratt's Current Reality Tree



Source: Dettmer, H., Goldratts' Theory of Constraints, 1997.

Used to diagram the root causes (RCs) of undesirable effects (UDEs), this framework also introduces the notion that some RCs and UDEs are within our span of control, others are within our span of influence but not control, and others yet are inside neither our control or influence. Our goal in this report was to find root causes that were significant yet plausibly within the span of control or influence of major health-related players.

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