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# Policy Brief

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Physician Sovereignty:  
The Dangerous Persistence  
of an Obsolete Idea

*David Lawrence*

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# Policy Brief

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## Physician Sovereignty: The Dangerous Persistence of an Obsolete Idea

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To a large extent, my career has involved working with others to change health care institutions. It's like running a marathon in a tar pit. To this day I am struck by how difficult it is to change the way we have practiced medicine throughout most of the 20th century. Let me give you some examples.

In a 2004 interview, John Wennberg, a Lourie Lecturer, and the force behind the small area variation analysis, observed that little has changed in the wide variations in physician practices from community to community during the 30 years his group has been studying variation.<sup>1</sup>

In the RAND study of electronic medical records and information technology diffusion in health care in 2006, the team reported that fewer than 5% of physicians had fully developed electronic medical records (EMRs). Moreover, without significant incentives it will take another 15 to 20 years before the majority of physicians have EMRs that enable them to practice modern medicine.<sup>2</sup>

Since the publication of the landmark Institute of Medicine studies in 1999 and 2001 that called for care integration, better organization of care, team-based care, and implementation of best practices for safety, my impression is that, if anything, safety has deteriorated because the pace of scientific and technological innovation has outstripped the ability of institutions to keep pace.<sup>3</sup> More and more powerful tools are invented every day—

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therapeutics, diagnostics, surgical interventions—but the systems to incorporate them safely remain primitive.

Another example. In 2003, a RAND-UCLA study reported that patients get scientifically appropriate care just over 50% of the time in ambulatory settings.<sup>4</sup> Why? Why is the system so resistant to change? Why do innovations diffuse so slowly and unevenly into the care system? This is the question I'd like to address today.

At the outset, I'd offer two caveats. First, I'm a former (my wife would say a "recovering") CEO, and now an olive grower, decades removed from my stint as an academic and researcher. Instead of data I speak with anecdotes carefully chosen to support my position. This talk, then, is largely a data-free zone. If you're looking for quantitative analyses of the sort that my colleagues do beautifully, you will be disappointed. I make no apologies; it is, one might say, a privilege of age.

Second, I normally use PowerPoint. The subject of this lecture is more suited to a conversation, however, so you won't see tables, graphs, clever cartoons or Microsoft-inspired animation today.

### **The Sovereign Physician Model**

The heart of the matter is this: to quote Pogo, "We have met the enemy and it is us." We doctors are the problem, not because we are venal or self-serving or insulated from reality. Far from it. Most of us are hard-working, dedicated professionals. We are the problem, though, because of the way our profession developed in the 20th century. This model is no longer appropriate for what lies ahead.

I've entitled this talk "The Sovereign Physician: The Dangerous Persistence of an Obsolete Idea." The notion of the sovereign physician comes from Paul Starr's (1982) work, *The Social Transformation of American Medicine: The Rise of a Sovereign*

*Profession and the Making of a Vast Industry.*<sup>5</sup> Starr argues that the rise of the sovereign profession we know today was neither inevitable nor foreordained. It was instead the result of a long struggle to establish the modern medical profession in the face of other competitors and forces. Sovereignty is neither good nor bad in and of itself. It is its manifestations in medical practice, and its suitability for the future, that is of concern.

### *Manifestations of Physician Sovereignty*

The first consequence of sovereignty is that it placed our profession in control of payment and of the definition of the scope of practice, and it put us in the driver's seat with regard to regulation and the medical hierarchy. It also, not directly perhaps but certainly indirectly, reinforced the idea of the physician as an independent entrepreneur, a craftsman. Finally, it underscored the notion that the physician, each physician, acts independently on behalf of his or her patients.

Think about this. When only one doctor treats a patient, this can work. But when a patient with a chronic disease or complex clinical problem has multiple doctors, each acting independently, each making decisions that reflect his or her view of what's best for the patient, the result is often confusion and poor care.

In my view, this organizing model fosters fragmentation and duplication, slows the diffusion of new science and technology, and stifles innovation in care delivery by forcing potential innovations to conform to the traditional autonomous physician model and depend on the willingness of each physician to change.

The sovereign model is also a major contributor to medical cost inflation because it encourages variation in clinical practice; poor organization of care; mis-use, over-use, and under-use of diagnostic and therapeutic tools; and errors one of every 10 times we do something.<sup>6</sup> The result is waste: the costs of poor quality,

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that may be as high as 30 to 50 cents of every dollar spent on health care.<sup>7</sup>

Contrary to popular political rhetoric about profligate insurance companies or lack of focus on prevention, or weak incentives for consumers to use the system properly, the core problem today is the way the care system operates: a delivery model built on the principle of physician sovereignty.

### **Why Is Physician Sovereignty Wrong for the Future?**

More important than its contribution to the current problems, the sovereign physician model is wrong for the future. Let me cite several challenges that lie ahead, and in each case identify why the model is not appropriate for what we face.

#### *The Growing Chronic Disease Burden*

Over the next decades, we can anticipate a dramatic increase in the frequency of chronic illness driven by demography, socioeconomic status, and discoveries in health care. According to CDC estimates, approximately 75% of the total U.S. expenditure for health care is for chronic disease care. That is with 12% of the population over 65. By 2025, more than 20% of the population will be 65 years of age or older, driving the rate of chronic illness and total expenditures on chronic disease up further as well. This is not just a U.S. problem. China, Japan, Singapore, and most countries of Western Europe face even more rapidly aging populations than we do.

Why does this matter, the sovereign physician idea, the single physician advocating for his or her patient? Chronic care management is best done by a team that may include several physician specialists (depending on the complexity of the illness) and the support of other professionals who bring other elements



of the rapidly emerging and broadening science that impacts on chronic disease outcomes. For example:

#### Children with Asthma

At Kaiser Permanente, several pediatricians have instituted a program in which an asthma specialist-pediatrician worked with a pharmacist, nurse educator, nurse visitor, social worker, etc., to take care of asthmatic children and their families.<sup>8</sup> The frequency with which the children needed the emergency room (ER) and required hospitalization after joining this team-based approach dropped to nearly zero. The team was able to help the family intervene quickly when problems arose, do home visits, provide patient education, and help the family become the primary care providers of their asthma care. The approach was cost-effective, improved clinical outcomes, and significantly improved the quality of life for the patients and families alike.

#### Chronic Renal Dialysis

Let's take another example: patients on chronic renal dialysis. A natural experiment occurred in northern California when we were able to compare the clinical outcomes for patients on renal dialysis cared for by a team of professionals within Kaiser Permanente with care provided by nephrologists practicing alone outside of Kaiser Permanente. The Kaiser Permanente team included a nephrologist, social worker, nutritionist, and pharmacist. The private nephrologists provided the care themselves without the support of a team. The frequency with which patients came to the ER with complications of their dialysis was significantly lower for patients cared for by the integrated team. As with renal dialysis, Dr. Edward Wagner and his colleagues have repeatedly documented that team-based care for other chronic illness produces better care and better outcomes.<sup>9</sup>

We also know what impacts utilization patterns, morbidity and mortality, quality of life, and independence for people with chronic

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illness in addition to appropriate medical treatment per se. Social support, good nutrition, connections with family and friends, ability to manage one's treatments, all influence what happens. The point is this: the medical science and patient support systems required to deliver competent and effective chronic disease care are different from what the sovereign physician model is designed to do. And what we face going forward is chronic disease at levels we have never experienced before.

### *Cultural and Ethnic Diversity*

The second issue that we face is unprecedented population diversity. In the Los Angeles county school system, I am told, between 125 and 140 different languages and dialects are spoken. Try taking care of somebody whose first language is not English.

When I taught at the University of Washington, I took medical students to a clinic in Whatcom County, north of Seattle, for Mexican migrant workers and their families. The students were asked to obtain a medical history from their patients in English, then through a translator. Finally, one of us would do a history in Spanish. As you might expect, we heard three distinct stories.

Why is this important? As U.S. public policy for more than a century, immigration has been encouraged; diversity in cultures, religions, and languages is the result. Providing culturally competent and sensitive medical care is not just a moral issue, it influences quality of life, medical expenditures, and workforce productivity because it determines whether or not patients and populations receive the care needed to maximize their health and wellbeing. Remember you and I need that diverse workforce to pay for our Medicare and Social Security benefits. We have a personal interest in assuring that the country's working population stays healthy, both today and in the future.

Delivering culturally competent care will be even more challenging in the 21st century than it has been in the 20th. Simply stated, we can't train enough doctors with the language and cultural skills to communicate effectively with the changing U.S. population. One physician leader estimated that Kaiser Permanente would have to hire every Spanish-speaking doctor training in the United States *every year* to meet the needs of Spanish-speaking Kaiser Permanente members in California alone. So, how do we do it? We have to use the skills and backgrounds of other health care professionals drawn from the diverse populations of the country. Relying on doctors to meet the needs is not only unnecessary, but too slow, too expensive, and increasingly challenging to finance given the economic constraints facing both the federal and state governments.

There is another problem that, as physicians, we often are reluctant to admit: *social distance*. If a Ph.D. in agronomy tries to work with farmers, he will have less impact than when a fellow farmer is given the skills and sent to do the job. The same is true in treating alcohol and drug addiction. Peer counseling or "near-peer" counseling is often more effective than when the social distance between patient and counselor is wide as a result of education, social status, and the like. Doctors are often particularly "distant" from their patients as a result of years of professional training and deeply held societal and professional expectations. It is difficult for us to communicate with our patients and their families under the best of circumstances as a result; adding diversity and linguistic and cultural barriers to the mix makes effective communication and education even more challenging.

### *The Scope and Pace of Scientific Discovery*

The third major issue ahead is the accelerating pace and scope of innovation and discovery in medical science and technology. We are in the midst of a discovery tsunami. Dr. Ralph Snyderman, the former chancellor of Duke University Medical Center, estimates

that between 1950 and 2000 approximately \$1 trillion was invested in the United States alone for research and development in medical science and technology.<sup>10</sup> I calculate that since the year 2000, we have spent approximately \$100 billion annually on R&D for medical science and technology.<sup>11</sup> In this decade alone, then, we will invest on R&D what the country invested between 1950 and 2000. This investment doesn't necessarily translate into big discoveries, of course. It does mean, however, that the advances in medicine keep coming faster and faster. It is beyond the ability of any single professional to comprehend, let alone stay current with this.

Molecular diagnostics and therapeutics are among the newest and most significant of the advances. We are moving steadily to an era of medicine in which molecular disturbances and characteristics will be the basis on which we determine the presence of disease and suitability for treatment. How far away is that? It depends on whom you listen to. One leader in the field, Lee Hood, in Seattle, says it's right around the corner! Well, the corner for Dr. Hood may be a decade or more.<sup>12</sup>

Dr. Larry Gold ([www.somallogic.com](http://www.somallogic.com)), and his team have developed a cost-effective method for identifying large numbers of circulating proteins thought to reflect disturbances in the body at the molecular level before overt clinical signs and symptoms have appeared. These so-called "protein signatures" will enable more precise diagnoses and treatments than we currently have. Protein signature identification today is limited by how many can be studied at a time. The SomaLogic team has developed a library of 700-800 active binding sites for distinct proteins that can be put on a chip, promising a rapid acceleration in protein signature discovery.

What happens when we are able to screen large populations for pre-clinical disease using these protein signatures techniques?  
What happens when we have protein signatures for different

clinical conditions and protein or genetic signatures for which patients will respond to what illnesses? This isn't science fiction. Gold estimates that his team is 3-5 years from these solutions. It's already happening here and there: certain cancers, for example. SomaLogic is just one of many companies working in this field. Who knows when it will come? But it's coming.

Think about where this science takes us. We are achieving greater predictability or certainty in our ability to recognize some diseases and predict others. As my colleague Richard Bohmer, a physician at the Harvard Business School, points out, we have a growing split in medicine. On the one hand are conditions that are relatively predictable in terms of their diagnostic characteristics and appropriate therapies, and growing in step with scientific advances. On the other are conditions for which there remains diagnostic and therapeutic uncertainty.<sup>13</sup>

In any other industry, the most expensive and specialized human resources are reserved for the difficult problems, the most ambiguous situations. In medicine, though, the doctor, the most expensive, specialized, *and scarce* professional in the mix, traditionally has cared for both predictable and unpredictable situations. Ideally, in the future, we would use doctors only where their education, skills and experience are irreplaceable. As the science unfolds and there is greater capacity to predict, we have the opportunity to move responsibilities to qualified providers other than doctors, potentially reducing overall costs without compromising quality. If we continue with the sovereign physician model, however, it will be difficult to make these changes.

### *Global Market for Health Care Providers*

The last point to make about health care in the 21st century is that there aren't enough doctors or nurses to respond to projected increases in demand.<sup>14</sup> This isn't a new problem. For the past two decades we have relied increasingly on foreign medical graduates

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to fill primary care residencies and provide primary care, especially in rural and underserved areas. We have responded to shortages of nurses in part by actively recruiting nurses from Canada, Latin America, Europe, and the Philippines.

This is not a bad practice. The problem is that there is a growing global market for foreign medical and nursing graduates. Singapore is aggressively recruiting and paying physicians and nurses from other parts of the world, China is doing the same, and so are several European countries. There is a competitive international market for foreign medical and nursing graduates that makes it increasingly unlikely that we can address our domestic shortages the way we have over the past quarter century.

As the science and technology increasingly permit it, pressures will grow for doctors to be used where they are appropriate and most essential, and to employ other professionals supported by emerging technologies in their stead.

## **Recent Innovations in Health Care Delivery Systems**

The news is not all bad. A number of changes in the delivery system appear to represent early indications of system change.

### *MinuteClinics*

MinuteClinics (<http://www.minuteclinic.com/en/USA/>) opened in Minneapolis-St. Paul in 2000. These retail health care centers are staffed by nurse practitioners and physician assistants, although a doctor is on call. The clinics are now a subsidiary of CVS Caremark Corporation, and many of them are located within CVS drugstores. Wal-Mart and Walgreen's offer similar solutions.

The clinics initially spread through 15 states in the Midwest. In each state the medical society tried to stop them, alleging that they violated the state's medical practice act. MinuteClinics won

every lawsuit; the medical profession lost each effort to protect its sovereignty.

What's important about the MinuteClinics is not whether they represent a successful business model. Rather it is that they provide some primary care accessibly and affordably to a target population looking for an alternative. Staffed by nurse practitioners, most are open seven days a week and don't require appointments. They provide preventative and therapeutic care for a limited number of common conditions and will say "no" if a patient falls outside these parameters. Like it or not, they are a powerful innovation, changing the conversation about the medical home and the way some hospitals are relating to the community.

### *Technology*

This spring I attended a conference in San Diego sponsored by Qualcomm and Johnson & Johnson called the "Wireless Health Conference." This is the third year of the conference. The first year there were 20 or 25 start-up and early-stage wireless health companies in attendance. Last year I'm told there were about 100. This year there were 200 or so and an equal number turned away because of lack of room. All of the attendees represented innovative start-up or early stage companies that promise to provide different health care solutions using wireless technologies.

For example, Proteus Biomedal scientists ([http://www.proteus.bz/proteus\\_technology.html](http://www.proteus.bz/proteus_technology.html)) have programmed micro-transistors on a silicon chip the size of a grain of sand to send basic biodynamic information by radio signal when the grain is swallowed in a pill and activated in the stomach or GI tract. The signal is sent to a smart Band-Aid receiver located on the body, where the information can be stored or downloaded into a wireless device and sent to a reader or a recorder. The reader can be a nurse, family member, doctor, or, for that matter, virtually anyone chosen by the patient. My understanding is that only 30%-40% of

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prescriptions are taken properly; imagine what this solution could do to improve that number.

An Israeli entrepreneur-computer scientist and his team have found that each person's electrocardiogram is unique, an electronic fingerprint if you will. The team has built a reader much like the security gates at an airport. In about 2-3 seconds it captures enough information to identify you. Not a bad alternative to putting bracelets on everybody in a hospital.

These wireless advances are being tested in homes, on, in, and around people. It's breathtaking. With Qualcomm's support, a wireless health entrepreneurial ecosystem has sprung up around San Diego similar to Silicon Valley for high tech measurement and computing, or the Bay Area for biotechnology.

Let me mention one other example. MedExpert, a care navigation service, is located in Redwood City, California (<http://www.medexpert.com>). Working with MIT's IT labs and Stanford's computer experts, the MedExpert team has developed a search engine that sifts through the available scientific literature, reviews best practices, and summarizes them in a form that the medical consumer can use. The information is reviewed with a nurse to help the patient make decisions needed to receive evidence-based care. An internal study completed last year (and being repeated with academic researchers) found that a population of about 100,000 people using MedExpert experienced a 15% reduction in health care costs, year on year, compared to a control population; users also reported higher levels of satisfaction with the care they received. Whether or not the study is valid, it is interesting that a service historically associated with the primary care physician, namely the navigator or care coordinator, is being performed satisfactorily with a combination of nurses supported by an advanced IT search engine.



Each of these examples demonstrates how care once the exclusive domain of the physician has been moved to other professionals, to nontraditional settings, using emerging technologies to produce solutions that generate significant patient satisfaction, improvements in care, at lower cost. They are what Clay Christensen calls “disruptive innovations.”<sup>15</sup> I believe they are significant, increasing in number, and changing our views about the sovereign physician model for care delivery.

It is unlikely that the traditional role of the physician will change in the hospital, in intensive care settings or emergency rooms. Having a captain is critical, someone leading the team and directing the care. But consider chronic disease care, as mentioned earlier. Or think of end of life care where the changes have already happened. Hospice is a nurse and counselor-based solution in which the physician-role is somewhat incidental if not absent entirely. Think also about prevention or many aspects of traditional primary care. One sees the emergence of what Bohmer and I describe as “care platforms,” an integrated chronic disease approach, or an end of life approach, etc., which use professionals differently based on competence and cost, supported with specialized technologies.<sup>16</sup>

What this means for the doctor, except perhaps in the acute life-threatening setting, is that our role changes from the sovereign to the collaborative professional. Much of the care of the 21st century is too complex for one doctor to manage. Being a competent, independent physician, then, is a starting place, but only that. The core condition for excellence and for meeting one’s ethical responsibilities as a physician is collaboration and teamwork. If the sovereign model is applied to the realities and challenges of the 21st century, care is likely to be poorer and more expensive than it is today, harming patients in the process, and as a consequence, violating our fundamental obligation to those we serve.

## What Does This Say about Health Reform?

Most reform discussions ignore the core problem that the delivery system, built around the physician-as-sovereign model, is obsolete. This is not a new observation. The first criticism of the independent physician model came in the early 1930's.<sup>17</sup> The problems won't be fixed by rewarding individual doctors with pay for performance programs; this is a system, not an individual physician, problem.

Universal coverage that promises greater access to care will be a cruel hoax if we fail to build alternative primary care models, navigator models, and chronic disease models, and address the failing clinical infrastructures in our nation's cities: the overloaded ERs, failing safety net hospitals, and so on. Similarly, placing greater responsibility for choosing among insurance alternatives on the shoulders of the consumer, the so-called "consumer choice" health plan idea, is in my view a cynical way for insurance carriers to gain power. The consumer *already* lacks the tools and the information and the resources to make his or her way through the maze of modern care and the blizzard of insurance choices. Giving more choices and placing more risk on the individuals and their families isn't the way to address this.

Effective reform must include restructured financial incentives for collective care; accountability for quality and safety placed with institutions and groups in addition to the individual physician; and support for aggressive research and development into how to organize and deliver care to achieve the best outcomes at the lowest cost. Permit me a digression.

Does anyone know what today's budget is for NIH per year? Nearly \$30 billion. The budget for the only agency of government charged with examining the quality and safety of care and the efficiency of care, AHRQ, is \$300 million annually. \$300 million per year to deal with bringing the delivery system up to date and \$30 billion per year to fund new science and new technologies to

shove onto a delivery system that's already struggling to deliver what it knows today!

Carolyn Clancy, Director of AHRQ, was on a panel recently with the head of NIH, who was describing the wonderful new discoveries coming out of NIH. When her turn came, Carolyn remarked, "All of that's really exciting, but we can't deliver it."

Health reform has to include an independent body, similar in concept to the Federal Reserve Board, that can assess the evidence and direct Medicare, Medicaid, and other federally funded health programs as to what will be covered and how it should be provided. Ideally this new body would include private sector payers and providers so that the decisions would have impact throughout the entire system.

Reform also must include tax incentives for, and a pool of venture money to promote, innovation in care delivery and diffusion of best practices. Reform should also include regulations and incentives to encourage the formation of large insurance pools that eliminate competition around underwriting and insurance products. This expensive and misplaced focus diverts attention from the core question of how to encourage health care *delivery* systems that compete on the basis of efficiency, effectiveness, safety, and consumer responsiveness.

Finally, reform must include a major effort to stimulate changes in the nation's medical schools and health professions education institutions, with incentives to implement team-based education and problem solving, and innovative team-based care models, especially for the chronically ill.

Again a digression. Agilent Technologies is a global life sciences and electronics measurement company spun out of Hewlett Packard. In nearly 15 years on that board and the board of Hewlett Packard before that, I am hard-pressed to recall a single operational

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decision made by one person. A team of people working collaboratively makes decisions like this. This is the way business is done.

How wonderful it would be if this were the norm in medical care. We could avoid the situation described by a colleague about a CEO in her city. The CEO was upset with the care his aging mother was receiving from four specialists: different medications, diagnoses, treatment recommendations, and prognoses. He called each doctor and said, "I'm going to buy an hour of your time. I expect you at my office at such and such a day and time." Of course the physicians argued that they didn't work that way. When he reminded them that he was a large employer who funnels a significant amount of business to them, they agreed to join him as requested. The CEO began by asking the physicians to describe what they were doing for the CEO's mother. As each doctor talked, the other three were dumbstruck. The CEO told them that he was leaving the office, locking the door behind him, and would return in 30 minutes expecting the doctors to have created an integrated care plan for his mother. The plan was waiting for him when he returned.

Health reform is a tall order. Whether it's done incrementally or all at once, we need a clear roadmap to assess whether or not reform efforts move us in the right direction. Whatever else it must do, reform must address the underlying problems created by the way doctors have been prepared, socialized, and expected to practice for most of the past century. We who have been in practice a long time rarely practice in teams; it runs counter to the way we've been trained and socialized. Learning to solve complex problems together must start in medical schools and health profession schools. Even now few professionals-in-training receive this preparation.

Fortunately major forces in health care *are* provoking changes. Innovations *are* occurring. Changes in the way we practice *are*

beginning. Those forces are also bringing a new definition of the role of the physician as a highly educated, clinically competent professional who is irreplaceable when used properly, but whose skills are misused if there are others who can do them equally well.

The battle that lies ahead won't be easy. Let me tell you one final anecdote about Dr. Paul Uhlig, a cardiothoracic surgeon.<sup>18</sup> I had the opportunity to observe him and his team with some of his patients in Concord Hospital, in New Hampshire. The first thing that was unique about that was walking into the room of a patient who was one day post-op after four-vessel bypass surgery, and who was joking. I don't know about you, but the patients I've seen who are one or two days post-op are, the term we use is "gorked out"—they *hurt*. But these guys were laughing, they were joking. The family was also relaxed.

The lead nurse started by asking the patients and their families these questions:

- What was our plan for yesterday? Did those things happen?
- Was there anything that we forgot to do?
- Was there anything we did that bothered you? We need to know!
- What questions do you have?
- What are your goals?

And only after those questions were answered did the health care providers—the pharmacist, nurse, health educator, and physician—do what they had to do specific to their task in that team. At the end of the meeting, which took about ten minutes, the lead nurse summarized the tasks that all people had agreed to, in front of the patient, and asked, "Are we in agreement with the

patient and the family, did we capture it all?” Then they walked out with their marching orders for the day.

What happened next? The team that I observed, led by Dr. Uhlig, decreased an already outstanding complication and death rate by half. They had exceptionally high patient satisfaction and exceptionally high satisfaction reported by team members. Nurses and health educators were scrambling to be on the team. Yet, despite these achievements, and despite receiving the Eisenberg Patient Safety Award for System Innovation from the Joint Commission, Dr. Uhlig was not reappointed.

It was incredibly sad, because this exceptional leader was speaking at the National Patient Safety Foundation, and all over the country, as an expert in applying aviation safety principles to health care, getting those kinds of outcomes, and I’m sure it’s more complicated than I’m making it. But the point is, this is not easy, this transition is hard because these new ways of thinking—which are *better* ways—greatly disrupt the status quo. That sense of hierarchy and entitlement that is deeply embedded in us as physicians is extremely difficult to change. Thank goodness it is changing, because it’s better for our profession, not to mention our patients. Thank you very much.

Disclosure: The author is a paid advisor to two companies mentioned in this presentation: SomaLogic and MedExpert.

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14. This is a controversial assertion. Several global studies predict shortages worldwide, as do studies in the U.S. If physician-staffing patterns found at integrated systems (e.g., Mayo, Kaiser Permanente, Group Health Cooperative) are used, the shortages are less dramatic.
15. Hwang, Jason, and Clayton M. Christensen. 2008. "Disruptive Innovation in Health Care Delivery: A Framework for Business-Model Innovation." *Health Affairs* 27 (5) (September/October): 1329-1335.
16. Bohmer, Richard M. J., and David M. Lawrence. 2008. "Care Platforms: A Basic Building Block for Care Delivery." *Health Affairs* 27 (5) (September/October): 1336-1340.



17. Committee on the Cost of Medical Care, and New York Academy of Medicine. 1932. "Medical Care for the American People: The Final Report of the Committee on the Costs of Medical Care, Adopted October 31, 1932." Publication No. 28. Chicago, IL: University of Chicago Press.
18. A detailed description of Dr. Uhlig's work in Concord can be found in "Case Study : Addressing Patient Safety During Multidisciplinary Collaborative Rounds at Concord Hospital" posted in September 2008 on the Commonwealth Fund website at [http://www.commonwealthfund.org/innovations/innovations\\_show.htm?doc\\_id=707660](http://www.commonwealthfund.org/innovations/innovations_show.htm?doc_id=707660).





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