

A Congressional Forum Sponsored by the Alliance for Aging Research

Redesigning Healthcare for an Aging Nation



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Introduction

On March 17, 2003, a Public Policy Forum was held on Capitol Hill in Washington, D.C., to consider how our society's healthcare needs have changed as people are living longer, and how technological innovation is helping to meet these needs. The program explored ways public policy can support the development of a healthcare system that adequately serves an aging population while creating a favorable environment to continue accelerated scientific research.

The forum was hosted and sponsored by the Alliance for Aging Research, a not-for-profit organization that focuses on the needs of an increasingly larger older population. The Alliance seeks to raise awareness and understanding among policy shapers of innovative ways to enable older Americans to remain independent, and to reduce the period of time they are likely to be incapacitated and dependent on social services.



So often, the politics of healthcare are focused on who pays, and how much. The forum asked the questions: What are we currently buying with government dollars? And what is the effect on the population that we are trying to serve? The Alliance for Aging Research believes it is possible to bring about a greater number of people that live well into their 70s, 80s, 90s, and beyond, with a higher degree of connectedness and physical, mental, and social capacity than we've known before.

We see this as not only a great boon to ourselves as individuals, but something that is increasingly imperative for the United States and for its older population. If people age in the century ahead with the same high risks of disabling, chronic, long-term health problems as the very old have suffered in the past, we will face not only a social and human catastrophe, but also an economic impact that could be significantly negative for our society.

At the beginning of the 20th century, when the average life expectancy in the United States was only 45 years, society didn't worry about Alzheimer's disease, osteoporosis, hip fractures, or late-onset diabetes. That has changed. We now face challenges not from the immediate, one-time encounters with the healthcare system, but from the need to carry on while coping with the management of as many as five, six, seven or more chronic diseases.

The costs of all of this are very large indeed. It is worth pointing out that today 13 percent of the American population is age 65 and over. Yet, more than a third of our national healthcare budget, which is well over a trillion dollars, goes to that 13 percent of the population. And in the next 20 years, when virtually every member of the giant Baby Boomer generation is on Medicare rolls, 50 percent of all healthcare encounters will involve older Americans, and the cost of that care will be enormous.

Emerging technologies and scientific research are helping to bridge this gap between the acute care model of yesterday and the new chronic care reality. Research is also making great strides toward shortening the amount of time older people spend with multiple chronic illnesses and lengthening the span of time during which they enjoy robust health and independence.

This report, based on the transcripts of the March 17 forum, is intended to reach an audience beyond the Congressional staff, representatives from nonprofit and research organizations, journalists, and others interested in policy surrounding aging and healthcare. We hope that the insights shared by the panelists will bring to light some of the important future possibilities in chronic care and help to guide discussion around this very important public obligation.

Daniel Perry
Executive Director
Alliance for Aging Research
Washington, DC

Preparing America's Healthcare System Today for Chronic Care Needs Tomorrow

James Marks, M.D., M.P.H.

Director, National Center for Chronic Disease Prevention & Health Promotion Center for Disease Control



In an effort to examine the burden of illness in this country, a report from the 1990's identifies heart disease, cancer, stroke, and chronic lung disease as the four leading causes of death. The first three account for about two-thirds of all deaths in the U.S. Statistics indicate that 35 to 40 percent of adults will have cancer at some point in their lives. Clearly, if we're not working on these diseases, we're only working on the margins of our health-care problems.

In regards to the causes of these diseases, tobacco was identified as the number one cause, followed by diet and exercise issues—such as physical inactivity, poor nutrition, and obesity—at number two. Other factors ranked far behind these two.

I will come back to these underlying causes, and the implications of that knowledge for an aging population. I also want to mention the leading cause of disability—arthritis and rheumatism. These diseases are growing rapidly, as the population ages. They cause almost no deaths, but contribute significantly to healthcare costs and to the inability of people to perform their daily activities. While we pay attention to death rates when we think of an aging population, we also need to consider quality of life issues. Arthritis is a real paradigm for those discussions.

Heart disease and stroke have been two of the real success stories in health, but our

progress has slowed. We've learned how to control some of these conditions, but we've stagnated in our actual application of that control. We didn't make much progress in controlling blood pressure, cholesterol, and tobacco use in the last decade and obesity and diabetes are increasing rapidly.

The Obesity Epidemic

We don't usually talk about epidemics of chronic disease, but obesity is one of the fundamental epidemics of our time. According to recent studies, there has been a 60-percent increase in obesity in one decade.

I want to note a key point: the human genome has not changed. There's a lot of excitement about genetics. And there is a tremendous up side to what we're learning about genetics and the drugs related to obesity that might be available as a result of genetic research. But we have to recognize that it is still a promise without certainty.

We also have to remember that while genetics do affect weight, this trend is all about what's happening in our society and what individuals are doing. We've systematically engineered out activity, and we've systematically engineered more and more food into our diets.

Like night follows day, diabetes follows obesity and inactivity. We also see an increase in diabetes over the past decade; again, about 60 percent. We've seen an even faster increase in the youngest populations, adults in their 30s and 40s, and in the racial and ethnic minorities.

People are struggling to maintain their weight. The fastest growing segment of supermarket sales encompasses foods such as "Healthy Choice" and "Weight Watchers." People are trying to scale back how much they are eating relative to their activity level. This effort is actually having some success in reducing cholesterol levels.

In a recent study, researchers found that people at high risk for developing diabetes could reduce that risk by 60 percent if they walked 30 minutes a day, and if they lost ten to 15 pounds. Physical activity and nutrition intervention has proved more effective than medication.

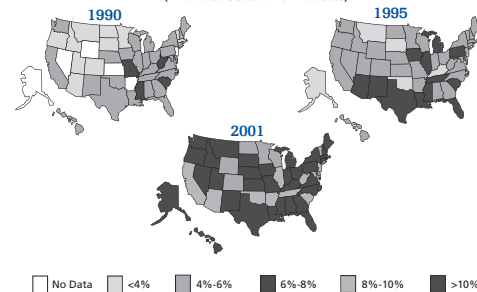
The Cost of the Baby Boomer Generation

In about 2011, the first wave of the "Baby Boomer" generation hits 65. By 2030, they'll all be 65 or older. Our society has struggled to rein in healthcare costs and find out how we can keep the proportion of our gross domestic product that we spend on health-care from increasing, considering the fact that we already spend much more than other countries. All of that debate, discussion, policy work, has occurred before this generation reaches 65. What's it going to be like as our society gets older?

Diabetes Trends* Among U.S. Adults

1990, 1995, 2001

(*Includes Gestational Diabetes)



Source: Mokdad et al., Diabetes Care 2000;23:1278-83; J Am Med Assoc. 2001;286:10.

“Our challenge is to make sure that all of our technology and innovation is put into practice... We must shorten the time period between when the science is done and when it’s fully applied to fill this big gap in our healthcare system.”

When you compare the health care costs per capita by age, you discover that a 65-year-old costs the health care system four times the amount a 45-year-old costs. Thus, in roughly 30 years, these 45-year old Boomers will be four times as costly as they are now.

National health expenditures are projected to reach \$2.8 trillion by 2011, with \$237 billion going to nursing home or home healthcare costs. This number represents 17 percent of the gross domestic product.

We cannot sustain the healthcare system we have now. We have to have a fundamentally different way of doing business as a society.

The Future Lies in Prevention

How can we go forward from here? One study researched the likelihood of a 50-year-old man making it to age 65 free of coronary heart disease, stroke, or diabetes. Researchers found that, among non-smokers who are of normal weight and active, only 11 percent will have developed one of those diseases by age 65. Among smokers who are heavy and inactive, 58 percent will develop one by 65. This is a 5.5 ratio, a 550-percent difference. If we thought we had a drug that could reduce the likelihood of getting these diseases by 550 percent at age 50, we’d put it in the water!

The effects of these lifestyle changes go beyond preventing chronic disease to quality of life issues. In a study of University of Pennsylvania alumni, the subjects were men who graduated in 1939 and 1940, followed up into their late 70s. They were asked to indicate when they were starting to have trouble with daily activities, such as bathing and dressing themselves.

High-risk people—those who smoked, were inactive and overweight—first started having trouble in their mid-60s. People who didn’t smoke, maintained their weight, and were active first started to have their trouble in

their mid-70s. This is a seven- to ten-year difference—seven to ten years of good quality of life linked to those three risk factors.

There are a couple of reasons we haven’t focused on the potential impact of prevention for reducing the burden of chronic disease and improving quality of life. One is the fact that our payment system does not support that kind of care.

Another factor is that physicians feel particularly poorly trained in prevention, and they don’t have much time. Physicians also might feel a sense of failure around prevention, because they see a relatively small proportion of their patients actually making the recommended changes.

We also don’t have much time to get there, because we can’t sustain the direction we’re going now. We have to recognize that, even as we have increased the quality of treatments, we have under-invested in the ability to prevent these conditions.

We know that, nationally, healthcare costs are something we must address. Each state must address them as well. The Medicaid costs that the states face are breaking their bank. The largest costs for Medicaid are the long-term care costs.

Older people will need to work to maintain their standard of living. Many of them are going to want to work, because this gives them a sense of fulfillment. They may want to work as a volunteer or on a job, or they may want to take care of grandkids while the parents work. They can only work if they’re healthy.

At CDC, we asked an advisory group to suggest what we could do, as public health has not been very active in the health issues of aging in the past. They gave us the following suggestions.

- Provide high-quality information.
- Support healthcare providers in promoting prevention.
- Integrate public health and the aging networks that are often found around social services, such as “Meals on Wheels.”
- Make sure that prevention gets out in widespread practice. Frankly, that applies to a lot of what we have learned from our scientific research. We’ve been slow to put the research into practice for all those in need.
- Monitor the changes in practice and results.

Public/Private Partnerships at Work

CDC has started to work with some applied kinds of research. We’re seeing examples of programs that work through managed care groups, or cases in which a public health system can coordinate individual care providers.

For instance, a prevention research center in Seattle focuses on health promotion and disease management for an older population. Program participants had a 72 percent reduction in hospital days and a reduced use of psychiatric medications, were more physically active, and reported improved functional status.

Our challenge is to make sure all of our technology and innovation is put into practice. If we wait too long—if there’s too great a period of time between when the technology is ready and when it’s actually widely applied—it calls our research enterprise into question. We must shorten the time period between when the science is done and when it’s fully applied to fill this big gap in our healthcare system.

We need a sense of urgency around aging, like we would have around any epidemic we would otherwise face as a society. We are quickly falling behind.

Jane Horvath

Deputy Director
Partnership for Solutions



Having worked on the issue of chronic care now for a couple of years, I see that chronic care means something different to everyone. I'll start by defining what it means to me in the context of this discussion.

Ideally, chronic care creates a nexus between the acute and long-term care systems, to achieve better outcomes and, probably most importantly, coordination of care between the two systems. People who are chronically ill also tend to have functional limitations that require long-term care. There's very little interaction between those two systems, to the detriment of people who have chronic illnesses and chronic conditions.

There's also another way to think about chronic care. I will jump back and forth between the two perspectives today. The other way to view chronic care is within the acute care medical system itself. There is much we can do in the acute care medical system itself to create better chronic care, while we're reaching for the ideal of creating this system that links together acute and long-term care.

The Rise of Multiple Chronic Conditions

Forty-five percent of the population had a chronic condition in the year 2000. Between 20 and 25 percent of the population had multiple chronic conditions.

The prevalence of chronic conditions increases with age, which obviously affects how we think about the issue. While the prevalence of multiple chronic conditions is significant in all age populations, it is most significant in the elderly population.

Among the working-age population, which comprises 18-to-64-year-olds, we can use arthritis as an example. Only 20 percent of people with arthritis have just arthritis.

With the senior population, it's even more startling. For instance, among those who have hypertension—the most prevalent chronic condition in 65 years of age and older population—more than 80 percent

have multiple chronic illnesses. Only a little over 10 percent have just hypertension.

Per capita spending increases as the number of chronic conditions increases. Among the people with four and five chronic conditions, healthcare spending takes a leap. Their healthcare spending represents 25 percent of the total healthcare spending, even though they are five percent of the population. This has implications for policy and implications for finding ways to answer the question of what to do about chronic conditions.

People with multiple chronic conditions are also at higher risk for hospitalization and take a higher number of prescriptions. According to one of our surveys at Johns Hopkins, 17 percent of people with serious chronic conditions are seeing five or more physicians. That's a lot of doctors. Medicare beneficiaries with five or more chronic conditions are seeing 14 unique providers in a year.

We then asked doctors how easy it is for them to coordinate with other doctors. And it's not terribly easy. For instance, a third of doctors say it's really difficult to coordinate with non-hospital institutions—nursing

homes and home health organizations. This leads to lots of issues of transition. What is happening as people go from hospital to nursing home to home health?

This is not good for consumers. We talked to people with chronic illness and with serious chronic illness about their experience in the health care system. We also talked to caregivers, who I view as proxies for people with serious chronic illness. More than half of the seriously chronically ill received information about an adverse drug interaction. More than 60 percent of caregivers reported receiving conflicting information from providers at least once in the year prior to the survey. We also had reports of receiving different diagnoses from different providers for the same set of symptoms.

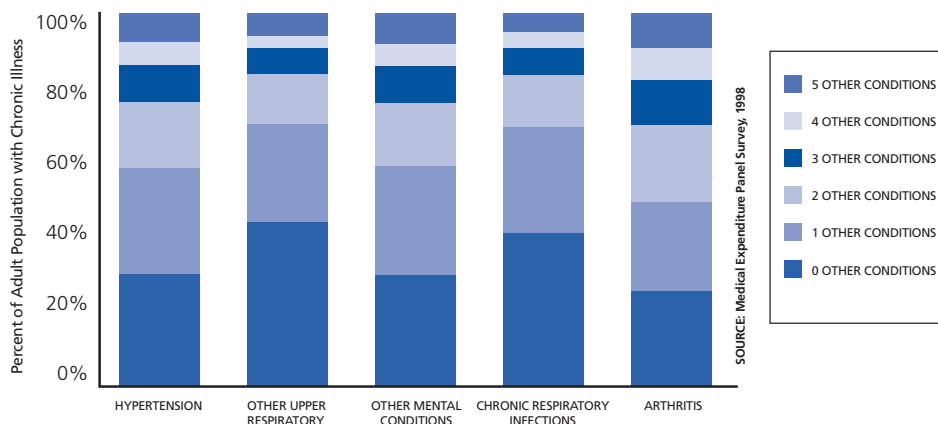
There is a problem here. At a minimum, it's waste, or inappropriate or even possibly unnecessary use of services, if you consider duplicate testing procedures. At its worst, these are dangerous interactions with the healthcare system.

Linking Acute and Long-Term Care

Let's get back to where I started, which is thinking about the nexus between the acute and the long-term care systems. There are efforts out there to improve that coordination through a number of very different programs.

The Georgia Source program is interesting, in that it is a Medicaid program. It uses the concept of primary care case management,

Commodities in Adults



“Forty-five percent of the population had a chronic condition in the year 2000. **Between 20 and 25 percent of the population had multiple chronic conditions.**”

which is an acute care concept in Medicaid. It puts the cases in the long-term care system, and uses the long-term system to reach back and make the connection and coordinate with the medical care system. I think it's very innovative.

It's going to be hard to implement new programs like this, because it takes a lot of creativity, brain power, and administrative resources. States are cutting those resources to the quick. So it's going to be difficult to find the staff to conceptualize and deal with the administrative requirements.

Unless we start doing some serious thinking about how we handle people who are dually eligible in Medicare and Medicaid, all of these programs are going to remain boutique programs. What we need is not boutique programs. We need solutions that are replicable, broad-based, and implementable.

So I would encourage us to find new ways of thinking about the dually eligible people, and this chasm between the Medicaid and the Medicare systems that exists for many valid reasons. There's nothing invalid about the barriers between the programs, but we really have to think about breaking down those barriers and creating a new paradigm.

These are not optimal solutions, but they're a place to get started, because I think that reach between acute and long-term care is so very difficult, and there is a demonstrated need within the medical care system.

Finding New Financial Models

How can we realign incentives in the healthcare system? Again, looking at the acute care model, you have many choices. You can operate at different levels in the healthcare system.

Your payment basis will depend on what you want to accomplish. I'm going to focus on payment based on the number of diagnoses for enrollees or beneficiaries, as opposed to functional status. You also have to decide on your payment goals. What do you want to achieve? These may be reduced utilization, outcomes, or clinical coordination. I'm focusing on improving outcomes, improving clinical coordination, and changing provider behavior.

As a place to start, let us look at different payment systems for people who have four or five or more chronic conditions, and people who have difficulty self-managing their care. In terms of payment, you always have to make a case that your solution is cost effective. When you look at the use of services, you can make an argument that there is something terribly wrong for people who have four and five chronic conditions. A lot of resources are being spent there, and perhaps we should think about other ways to spend those resources.

Two things have potential for changing provider behavior. One is a concept that we've come to call the “complex clinical care management fee.” This is an administrative fee provided to doctors who are willing to take on a clinical care coordination role for this particular group of beneficiaries.

These providers would be required to meet new chronic care practitioner standards, in order to receive the payment. They would be obligated to do certain things in the course of a month for particular beneficiaries. You could institute a whole series of outcome measures, giving feedback to providers on how they're doing. This is giving the providers something they don't have now, which is an incentive—or even an ability—to do this work.

There are a variety of solutions already being developed, especially within the field of infor-

mation technology and developing data and information exchange between medical professionals. Information systems technology is key. But you have to operate at a higher plane. You have to concentrate on how your payment plan incites people to find solutions. If you align your payment policy, you will get results, without necessarily having to worry about what those results are.

Another way to approach it is to look at a sub-set of providers, the people who are in a large clinical group practice. Thinking about risk mechanisms is very important in the healthcare system today. Even though the number of providers who are actually receiving risk payment basis is declining, another potential option might be to think about sharing risks with large group practices who could handle the risks for the costs of chronic care. Again, measure them against in-patient hospitalization and other outcome measures.

Another level would be the question of how you pay health plans. This is if you're coming at this from the perspective of a purchaser, an employer, or someone else purchasing health plan services. The purchaser community is thinking about paying for quality, and that's top on their agenda. When you think about chronic conditions, you have to think about quality in new ways.

We have to think creatively. When you start thinking about chronic conditions, the world looks different. It can be very confusing, in terms of considering the current structures and how to shift them. You need to think about what issues are most important to address first and start there.

Then you must begin to act, even though you may not have the whole solution. We really need to start. This is something that's affecting us now, and is only going to get more acute in the very near future.

Investing in Medical Innovations for Aging Americans

Betsy McCaughey, Ph.D.

Senior Fellow
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Two years ago, the New York Times ran a front-page story announcing that Medicare spending per patient had declined for the first time since the program was founded in 1967. The Times called the change surprising and temporary, but the good news is that it was neither surprising nor temporary.

Medical breakthroughs in the pipeline now will protect the elderly from age-related diseases such as cardiovascular disease, stroke, diabetes, osteoporosis, and Alzheimer's disease until much later in their lives. They will also reduce the cost and suffering from these diseases. It's never going to be as good as in the movie "Cocoon," but growing old will be different and better in the future from what it's been in the past.

After all, until now, growing old almost inevitably meant fracturing a hip because of osteoporosis, losing your speech because of a stroke, or wasting away with dementia. But in the future, people will have a longer health span and experience a much briefer period of acute illness at the end of life. It's what doctors call "compression of morbidity."

The good news is that it's already happening. In the 1990s, older people were 15 percent less likely to be disabled, and 19 percent less likely to be in a nursing home or other institution, than they were just one decade earlier.

Those findings are from the work of a demographer, Kenneth Manton, who began identifying a stunning decrease in disability

among the elderly back in 1989. He also argues that, if the trend continues, by 2028 there will be 40 percent fewer disabled elderly than if that trend were not occurring.

The impact on cost is obvious. Although there will be many more elderly people in future decades, they will not be the chronically ill, high-cost users of care.

Medicare will reap some of the savings. And Medicaid, the state-federal partnership that takes care of long-term care for many elderly people, will also reap savings. It's all taxpayers' dollars.

Even more important is what this trend will mean to quality of life for the elderly. Many policy makers in Washington have virtually ignored the impact of future medical innovation on Medicare's finances, as well as on the health status of the elderly. Often, in Washington, they take today's cost of caring for one elderly person and multiply it by the number of elderly people we'll have in the future. Then they add an inflation factor, like 4 percent, and predict dire financial straits.

That would be like policy makers in the 1950s counting the number of iron lungs in use and predicting how many more iron lungs we'll need in the future. The answer is: None.

While Washington politicians are debating how to save Medicare by cutting benefits, raising the eligibility age, asking seniors to pay more out of pocket, and imposing strict price controls, the scientists are engaged in a far more promising endeavor: Lowering the human and monetary costs of age-related disease. They are using science and innovation to conquer this problem.

This year is the first year that spending on hospitals increased at all as a percentage of the healthcare pie. Every other year during the 1990s, spending on hospitals shrank as spending on drugs increased. So you can see that long-term acute-care hospitalization—both the length of hospital stays and the number of patients who go into the hospital—has been shrinking. This is in part because of managed care, and in part because of pharmaceutical products that prevent the need for overnight hospital stays.

Healthcare spending in the 1990s, the decade that just ended, increased much more slowly than in the 1970s and the 1980s. So we have developed ways to control healthcare spending.

"Medicare pays infection-ridden hospitals and hospitals with low infection rates exactly the same. It pays top dollar for dirt. Medicare pays hospitals with high error rates the same as hospitals with very low error rates."

Managed care may have exhausted much of its influence on healthcare costs already. There may be a limit to what it is able to do in the future. But the impact of medical innovation on controlling healthcare spending is just beginning.

Advances Against Cardiovascular Disease

Let me begin with a brief survey of some of the most stunning victories over one disease: cardiovascular disease. This is where some of the most exciting research is being done. Now, of course, every doctor will tell you that the first priority in fighting cardiovascular disease is attention to nutrition and fitness. But looking beyond that, researchers have been focusing on chemical compounds that can keep the artery walls open and unobstructed. The new statin drugs—such as the familiar name Lipitor—have succeeded in markedly decreasing “bad” cholesterol and preventing the arteries that feed the heart from becoming clogged.

Next to statin drugs, the biggest breakthrough in coronary artery care is drug-coated stents. At least three companies are already producing these stents. To clean out clogged arteries, doctors use a catheter. They clean out the artery and install coils, or stents, to keep the artery walls open. Almost a million Americans undergo this procedure every year. Unfortunately, about 25 percent of the time scar tissue grows around the coil and clogs it up again. This setback is called “restenosis” and it lands about 250,000 people back in the hospital for another procedure within a year. A new type of stent coated with medication prevents restenosis virtually 100 percent of the time.

This breakthrough has been vitally important for diabetics, who are especially prone to restenosis. They are so prone that doctors frequently have steered them away from angioplasty to higher-risk bypass surgery.

Scientists are also making tremendous breakthroughs for victims of congestive heart failure. Heart failure occurs when the muscle is so weakened by disease or age or repeated heart attacks that it can't pump enough blood supply to the rest of the body.

You've seen people with congestive heart failure. They can't walk; they can't climb up stairs; they can't make it to the office; they lose their breath. They spend long periods of time in the hospital.

This disease is breaking Medicare's bank, or has been in the past. For most major illnesses, even if you have major surgery, you spend only two or three days in the hospital. The average congestive heart failure patient goes into the hospital several times a year, for an average of nine days at a time.

But now there is an effective treatment for almost half of congestive heart failure patients. It's an implantable device about the size of a half-dollar. It works by sending an electrical signal between the two lower chambers of the heart to keep them beating in synch, making the overall pumping action of the heart stronger. It's called a “biventricular resynchronization device.”

The device and the surgery cost about \$15,000. The savings for Medicare are potentially enormous. In clinical trials, patients who have received this device spend 81 percent fewer days in the hospital after receiving the device than before.

The Genetics of a Long Health Span

Let me say something about genetics, because the most promising discoveries in medicine are going to be genetic. The completion of the Human Genome Project is producing an avalanche of new information, an explosion of new cures.

Tom Perls, a gerontologist at Harvard Medical School, has written a book titled *Living to One Hundred*. He has studied 38 centenarians, people who've made it to one hundred or more. What was remarkable is not simply that they lived to that ripe old age, but that they made it to that age without ever really getting sick. Eighty-eight percent were still living on their own at age 92. They had survived to this exceptional age by avoiding age-related disease altogether.

Compression of morbidity—avoiding long-term sickness—is something that centenarians do naturally. Research into their genes will

hold one of the keys to enabling the rest of us, the more ordinary folk, to extend our health spans so that they more or less coincide with our natural life span. In other words, the goal is not necessarily to lengthen our life span, but to ensure that we live 90 to 95 percent of those years in good health.

Although researchers are focused on eliminating disease, rather than adding years, the proportion of the population that will live beyond 85 is undoubtedly greater. And that's not a problem for Medicare. Medicare's cost records already show that a 100-year-old consumes only about a third as much health-care in the last two years of life as a 70-year-old does. What's the lesson of that? Living to a ripe old age is a good value.

What is expensive is when an otherwise healthy adult succumbs to one chronic disabling illness after another, such as osteoporosis, congestive heart failure, or diabetes. That's why the research I've described is so important for quality of life for the elderly, and for the future solvency of Medicare.

Public Policy Implications

Following are some of the implications of budding technological advances for the development of public policy.

1. Drugs vs. Acute Care

We've got to think outside the box. Drugs, which now account for 12 percent of the healthcare budget, will probably account for 30 percent in a few years. That's good news. Who wouldn't rather take a pill than go in for surgery or a long stay in the hospital?

You read the familiar lament all the time in the newspaper: Drug spending is going up faster than the rest of healthcare spending. That's actually a very positive development, so long as it's helping to control the rest of healthcare spending. And clearly, the evidence proves that it is.

2. National Drug Benefit

A federal drug benefit will save, not sink, Medicare's finances. It's vitally important that we ensure that all seniors, whether they have low incomes or very high drug needs because of chronic illness, have access to the medications they need.

“Medicare’s cost records already show that a 100-year-old consumes only about a third as much healthcare in the last two years of life as a 70-year-old does. What’s the lesson of that? **Living to a ripe old age is a good value.**”

For example, in 1981, New Hampshire had a drug program for its seniors. The New Hampshire legislature became very impatient with how much the program was costing. They passed a bill that said that seniors could only fill three prescriptions a month. Eleven months later, they realized how foolish that was.

In 11 months, drug spending declined 35 percent. Enrollment in nursing homes in New Hampshire shot up 60 percent. It’s quite obvious that limiting senior access to the drugs they need will simply push other government-funded healthcare spending far higher.

How are we going to fund this drug benefit? I would like to offer a new source of funds:

3. Hospital Quality Accountability

Hospital infections kill more than 100,000 people a year. People go into the hospital without an infection, and they get one at the hospital. Medical errors—operating on the wrong part of a patient’s body, giving them the wrong medication or the wrong dose, or transplanting the wrong organ—kill thousands more. Many more people are treated, especially for heart disease or stroke, with substandard practice instead of the way they really should be treated according to the latest clinical evidence.

The costs of these errors, substandard practices, and infections are huge. They are estimated to be \$30 billion a year. The Federal Government picks up 45 percent of that tab. What’s standing in the way of solving this very costly problem? Medicare.

Medicare pays infection-ridden hospitals and hospitals with low infection rates exactly the same. It pays top dollar for dirt. Medicare pays hospitals with high error rates the same as hospitals with very low error rates.

Some large private-sector employers and insurers are trying a new approach: holding hospitals accountable for their results. They pay hospitals a premium if they implement proven safety measures to prevent errors. They pay hospitals more for better results and refuse to do business with certain hospitals that have poor results. But their efforts cannot succeed when the biggest purchaser of healthcare, the federal government, pays without regard to quality. Medicare should draw the line and say it will not reimburse hospitals with an infection rate twice or triple the norm.

I’d like to see the Federal Government and the state governments insist on hospital report cards, so that before you go into the hospital, you know which hospital has a high infection rate. Why should you be in the dark about it? The Federal Government and almost all of the state governments collect information on hospital infection, but they won’t release it.

Medicare has a new hospital report card, but it’s voluntary. So only the hospitals that have good statistics are going to participate. When I was in school, my report card wasn’t voluntary. I would like to see the Federal Government and the state governments use their regulatory powers, and their market clout, to insist on safer care in hospitals and higher quality care.

Holding hospitals accountable for their outcomes will dramatically improve the quality of care. But to return to the original point, the savings from this new market approach will help pay for that senior drug benefit we so badly need.

4. Cost Effective Technology

Technology seldom increases costs. It usually saves money. I was stunned a couple of years

ago to read an article by Victor Fuchs in Health Affairs, in which he said the most effective way to control healthcare spending is to slow the development and diffusion of new technology. Can you imagine any industry surviving on that premise? Technology has the potential to control costs, and it does control costs in the healthcare sector. In fact, there’s much evidence that it reduces the cost per service delivered.

The key is to improve the timeliness of Medicare’s approval process for this new technology. On average, it takes 383 days for Medicare to improve and implement a coverage decision for new technology. That’s too long for somebody waiting for a new breakthrough to save his life.

5. Generic Drugs

Let’s recognize the limitations of generic drugs. Insurance companies have spun a medical myth that generic drugs save money and are as good as brand-name drugs. Unfortunately, many lawmakers are falling for it. In almost all of the proposals in Congress now regarding Medicare plans, beneficiaries are given a big bonus for using generic drugs and suffer a penalty for taking brand-name drugs.

Generic drugs are by definition yesterday’s technology. Federal law allows generic drug companies to copy a brand-name drug once its patent expires. That’s usually after it’s been on the market 12 years. If your child needed a new laptop, would you go out and buy a 12-year-old model?

A study by Frank Lichtenberg of Columbia University showed that patients treated with the newer drugs had lower death rates and better recovery rates. Their medication costs were higher, but their overall healthcare spending was much lower than for patients

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limited to the older drugs. For example, patients who had access to the newer drugs had much shorter hospital stays. That’s important, because hospital stays account for 42 percent of total medical spending.

6. From Bench-to-Bedside

We’ve got to keep doctors in pace with science. An article in the *Journal of the American Medical Association* just a couple of months ago pointed out that 75 percent of seniors are now treated with best practices. They’re getting the treatment that our latest research would say is appropriate for their health condition. That’s a big improvement over a decade earlier.

The challenge is to ensure that the other 25 percent of patients also get what they should be getting. The problem is that busy doctors, weighed down with regulations, paperwork, and too many patients in the office, find it very difficult to keep up with medical research.

Fortunately, several new online databases will help doctors stay familiar with the latest findings in their field. When they’re presented with a patient who is in a very difficult situation, they can type in all the vital signs and see what the latest journal articles and clinical research tell them about that condition. That’s going to be vitally important in enabling our physicians, the people at the front line, to actually implement this very important scientific research.

7. Geriatric Training

We have to train doctors in geriatrics, and pay them adequately. Unfortunately, the Federal Government is currently sabotaging the quality of care for the elderly by paying doctors too little under Medicare. Many doctors are closing their doors to seniors.

The low rates are also discouraging doctors from studying geriatrics. Why would an intern or a resident decide to make that his or her field? Why spend all those years studying a field that won’t enable you to pay your bills?

Medicare also funds the training of doctors. It provides graduate medical education (GME) funding to fund the training of residents and interns in hospitals. But believe it or not, when they divide those funds among the different departments, they have made geriatrics a very low priority. Only three of the 126 medical schools in our nation have full-fledged geriatrics departments. And only 14 medical schools even require students to take a course in geriatrics.

It takes years to train a healthcare workforce. The Baby Boomers are reaching 65 in less than a decade. I know I’m riding that crest. This is our last chance to get doctors ready for us.

8. Do No Harm

This is the last, but in many ways the most important, policy implication for this audience. We must ask our lawmakers to take the same oath our doctors take, the Hippocratic Oath: “First, Do No Harm.”

Don’t hobble medical innovation with new regulations and price controls that will discourage the private sector from investing in medical breakthroughs.

Finally, let me just, in closing, put this in a global perspective. New medical knowledge, innovative drugs, miracle devices like the biventricular resynchronization device, all are transforming the experience of aging and eliminating many of the dreaded disabilities that previous generations thought were inevitable. We won’t have to experience those; certainly not to the extent that our parents and grandparents did.

Innovation will enable us to cope with the biggest challenge we’ve ever faced: a rapidly aging population. We’re not alone in this. Most of the developed nations of the world—Western Europe, Japan, Eastern Europe—are aging even more rapidly than we are. Medical innovations will be America’s most important export in this century. To the extent that we alone are inventing these products, this new knowledge will be our most important humanitarian foreign aid. It will be like a medical Marshall Plan for a desperately aging globe.



Rick Weissenstein

Vice President
Schwab Washington Research Group



Explaining why Wall Street acts the way it does is like trying to explain the dynamics between a group of kindergartners. Sometimes it's easy to tell why something happens: You serve candy at lunch; things get broken. On Wall Street, oil prices go up; the manufacturing sector goes down. The prices of crops go up; agriculture goes up. But usually it's not that easy or direct.

Wall Street's Effect on Public Policy

Before we address how Wall Street is affected by and affects public policy decisions on medical technology, there are a few things you should know about Wall Street.

1. Like a kindergarten class, Wall Street has market leaders and market followers. Of course, on Wall Street everyone thinks they're a leader, and everyone thinks they're the smartest kid in the class. I don't think anyone on Wall Street has ever made a losing stock pick. It has always been somebody else's fault.

2. Wall Street is also a lot like a kindergarten class in that it's generally in need of more adult supervision than it has. Wall Street analysts are typically young, and the practical effect is that Wall Street is often forced to reinvent the wheel over and over again.

3. There's never perfect information on Wall Street. For example, we recently saw a nice little rally that lasted about one hour when a rumor that Osama bin Laden had been captured hit the trading floor. I'm not sure what a bunch of traders on Wall Street thought they were going to do with Osama bin Laden, but it certainly spurred a short-lived rally.

It's kind of like that game of "Telephone" you used to play as kids. The teacher would whisper something to the first kid, who would whisper it to the next kid, and it would go all the way around. You would

start out with a statement such as, "School is out in 10 minutes," and by the end it was a statement such as, "The pool is full of peanuts."

4. Wall Street has an appalling lack of understanding regarding how Washington works. I often receive calls from Wall Street wanting to know something that a basic civics class would have taught you.

5. In a tough market like the one we have today, bad news of any sort is more believable and has a longer shelf-life than good news. This is something that seems odd to us here in Washington, where news cycles are now down to about five minutes.

So what does all this tell us? For one thing, Washington policy makers must be more sensitive to the effects of even the slightest offhand comments they make.

Second, real market-shaping changes—not just one-day trades or one-hour trade changes—take a long time to undo.

Charles Schwab has a brilliant market strategist by the name of John Mendelsohn, who believes in sector rotations. In other words, he thinks that different sectors will sort of move together. I think that's true, because I think the market is largely agnostic. It does not prefer one group over another. The market likes companies that can make money; whether they sell biotech drugs or beer, the market doesn't really care.

Take the biotech sector, for example. Since the "Clinton Care" era until about a year and a half to two years ago, the sector has basically trailed the market. It took the better part of a decade for the industry to come back after capital began to flow out of it.

During Clinton Care, for the first time, the specter of price controls was brought up. Capital immediately flowed out of the sector and it began significantly under-performing the general market.

Investors ask why they should invest in an industry that has a low success rate and a high cash burn rate. If you do happen to pick a winner, the government might step in and control the price. The biotech sector no longer seemed like a good strategy for making money.

It took the biotech industry years to recover. The promise of the Human Genome Project and other apparent breakthroughs, as well as a general technology boom, finally helped to bring capital back to the sector.

Near the end of 2001, however, we started to hear concerns that the FDA was slowing the pace of drug approvals and had in fact become much more risk-averse and conservative in their approach. Those concerns came on the heels of a number of recalls and some very high-profile failures. There was a definite perception on Wall Street that things were getting worse for the biotech industry.

"Most Wall Street people would argue that the government should stay out of regulating the safety and quality of health care and leave that to the private sector. The fact is, we know that's not the case. The private sector actually benefits from more public sector involvement. It gives people a better sense of assurance that some sort of quality control is actually happening."

Regulatory Pitfalls

Now that's actually beginning to change again. Mark McClelland, the new FDA Commissioner, has been saying that he wants to make the process more efficient. While no FDA Commissioner ever comes out in support of less efficiency, McClelland actually has some real ideas, such as changing the end points needed for approvals and allowing companies to do more post-marketing studies, rather than performing all the studies up front.

It's a question that goes to the soul of the FDA: Is the FDA there to ensure that drugs are safe and then let the market worry about whether they're really completely effective? Or is the FDA there to make sure that they're safe and to ensure that they really work on a certain percentage of people, or that a particular response rate or a survival end point is met in a certain percentage of people?

Most Wall Street people would argue that the government should stay out of regulating the safety and quality of health care and leave that to the private sector. The fact is, we know that's not the case. The private sector actually benefits from more public sector involvement. It gives people a better sense of assurance that some sort of quality control is actually happening.

I also don't think the private sector could be trusted to oversee drug safety completely. The government has to play a role in that. Wall Street benefits from a belief that the market is safe and fair. Any feeling of a kind of lawlessness that allows bad or counterfeit drugs onto the market doesn't benefit anyone.

In some cases, drugs have missed their end points in trials, but have been supported by personal experience. So eventually the FDA approved them, saying that while they don't know why it works and there are still studies to be done, the administration wants to get the drug out to the public and let the market take care of it.

That may take a while for Wall Street to believe. As I said earlier, bad news travels much more quickly than good news. But they will eventually believe. The group will eventually rally again, as it becomes clear that the FDA leans more towards the belief that its role is to ensure safety, not necessarily always to prove effectiveness.

Third, Wall Street likes predictability. From a healthcare perspective, a year is too long for someone waiting for a life-saving technology. From a Wall Street perspective, it's also too long to wait for a company to start making money.

Payment issues for Medicare are often the most obvious intersection of Wall Street and public policy. For example, Wall Street's great hope is that a drug benefit would be very positive for the drug industry and the biotech industry, at least in the short term, because utilization would go up. Studies show that seniors who don't have any insurance use significantly fewer prescriptions than those who do have insurance.

Public Policy's Effect on Wall Street

Then the question becomes: At what point do we so exceed the estimated costs to provide drugs to Medicare patients that we have to enact price controls? That is a fear for Wall Street because as I said, people do not want to invest in companies whose revenues are limited. Wall Street analysts, would probably say that a drug benefit is positive in the short term, but negative in the long-term.

The effect of public policy on the flow of capital is greater today than it's ever been, because of the increasing flow of information and the general tenor of the market.

It also has never been more important for public policy makers to consider the business effects of their actions, whether they be small off-the-cuff remarks, or significant swings in the direction of a major agency.

Capital flows more easily today from one sector to another, or from one market to another, than it ever has in the past. Because we are in a tough time, it is difficult for investors to make a case for taking significant risk, especially because their portfolios likely do not have enough winners to offset any losses.

An environment that makes the process of drug approval and reimbursement more predictable is vital to a strong capital market for the biotech and medical device industries. Without it, it's easy to park your money in bonds or find some nice, safe consumer staples to invest in.

“The effect of public policy on the flow of capital is greater today than it's ever been, because of the increasing flow of information and the general tenor of the market. It also **has never been more important for public policy makers to consider the business effects of their actions, whether they be small off-the-cuff remarks, or significant swings in the direction of a major agency.”**

Preparing for New Trends and Technologies for Aging Americans

Robin A. Felder, PhD

Director
Medical Automation Research Center
University of Virginia



The innovative new technologies that are coming our way are not always drugs. They're not always CAT-scanners and MRIs. Sometimes there are some other alternatives, even low-cost alternatives, to really revolutionize the way we deliver healthcare in the future. So we're going to aim at personalized medicine enabled by technology.

What is the Medical Automation Research Center? First, it's a product development and consulting organization providing medical and industrial clients with innovative automated solutions. Automation has revolutionized factories—now why shouldn't automation revolutionize medicine?

Our group has expertise in smart technologies, low-cost home monitoring technologies and assistive technologies for the elderly. We automate clinical, drug discovery, genomics, and healthcare delivery processes. And we have collaborative, multidisciplinary product development—the key is multidisciplinary. We're bringing engineers and biochemists together under the same roof to solve these complex medical problems.

So what is medical automation? It's a rather new term. Medical automation reduces costs. It reduces errors. It increases efficiency and increases throughput. It optimizes processes and improves documentation—exactly what's been going on in factories for the last 30 years.

How does medical automation accomplish these goals?

Automation will revolutionize medicine using standard automation tools, robotics, process control, self-regulating systems, machine intel-

ligence, and machine vision to supervise what medical personnel are doing.

We also create local businesses, which is quite unusual for a university group. We don't just do research; we understand that people need to use these products. So we develop user requirements, needs assessments, and capture intellectual property. We use research funding to rationally and systematically develop technology. We identify and support a product champion, who will eventually take this idea off-campus. Then we launch a small business using federal funds.

We've had a string of successes:

- Medical Automation Systems, which is about a \$20 million medical informatics company that supplies Hoffman-LaRoche with bedside glucose connectivity.
- BIOPHILE, Inc. has created an automated sample management process to cataloguing all of the samples that fall out of the Human Genome Project.
- Hypogen, Inc. is a small pharmaceutical company that focuses on the diagnosis and therapeutics for high blood pressure and salt sensitivity.
- Home Guardian, Inc. is a company I'll describe in more detail today, because that aims directly at how to improve healthcare for the elderly.

Low-Cost Technology and Elder Care

Low-cost health technology is our focus, because the misconception we've heard most is that technologies cost more money.

With healthcare needs, the burden of care is increasing. The role of the informal caregiver is increasing, because of changes in Medicare. We've heard that over and over again. I will talk about the influence of the aging population on the person who takes care of that aging individual (the formal and informal caregiver).

There are increased physical and emotional demands placed on caregivers. Elders prefer to lead independent lives, with minimal intervention from caregivers. So we're trying to develop technologies that allow independence as long as possible.

Why focus on elder care? Because of the increasing family share of caregiving over the past 20 years. Seventy-five percent of community-dwelling elders receive only family care. Allowing people be taken care of in their home is an enormous saving off the healthcare bill. We're all heading in that direction, so let's get there in a hurry in terms of the care.

We've performed surveys, particularly amongst the elderly in southwest Virginia. We find that they indicate a great acceptance of technology, if they learn what it's going to mean to them in terms of either cost savings or improved quality of life. The elderly quickly get out of touch with people. Growing old can be a lonesome existence. They find that technologies allow them to connect with people, so they embrace it quite readily.

We've always talked about wellness. How can technologies allow us to finally deliver

“Medical automation reduces costs. It reduces errors. It increases efficiency and increases throughput. It optimizes processes and improves documentation—exactly what’s been going on in factories for the last 30 years.”

wellness? We use passive monitoring. Technology shouldn’t need an instruction manual. Furthermore, it shouldn’t be used, it should observe quietly in the background. It should be intuitive. Passive monitoring follows with data interpretation to personal health improvement and final health intervention only when necessary.

Let’s look at passive versus active health assessment tools. An “active” tool could be a glucose meter, or a respirometer, or a coagulation meter, or a sphygmomanometer. A passive tool is a device that monitors daily activity patterns. “Activities for Daily Living” (ADL) is the more official term. The passive Home Guardian system provides nutrition information, gait characteristics, weight, body fat index, without the user having to do anything.

Let’s look at one example of an active process in the home and the impact it has on medical care costs. A respirometer is used to find out whether an asthmatic needs medical attention. Many asthmatics go to the emergency room when they’re having trouble breathing. Using a home monitor for asthma reduced the number of emergency room visits in one case from 84 to one, the number of hospital days from 144 to three. The costs went from \$2,600 to \$32, and hospital charges went from \$4,380 to \$120. We will see even more dramatic savings with passive monitoring.

Passive Home Technology

Home technology is adaptive. It retrofits easily into existing homes. It also has a data mining component that yields unique information

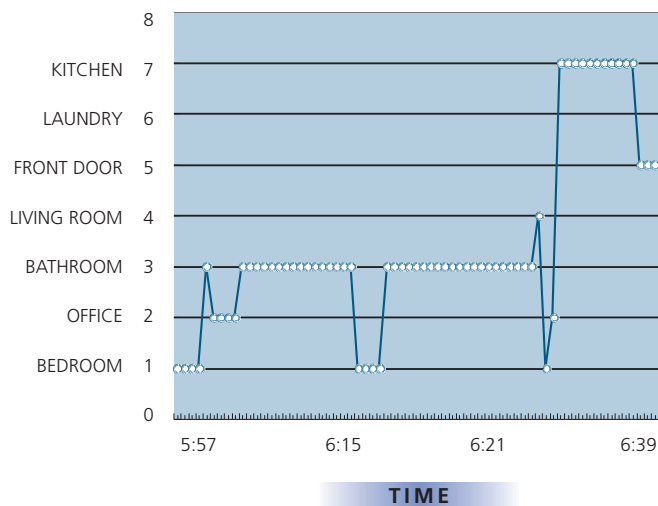
for the caregiver, the occupant, and the medical advisors in either early or later phases of health decline.

Some technology examples of passive technologies are:

- Our “Smart House Suite” proximity and motion sensing, which measures where you are in the house.
- A sleep monitor that helps with sleep and vital sign assessment, taken in a standard bed. The bed itself becomes the health tool.
- Nutritional support that provides a mobile robot platform. This is a way of delivering meals to an elderly person. It also includes meal preparation and storage.
- Mobility assistive technologies and an adaptive walker.

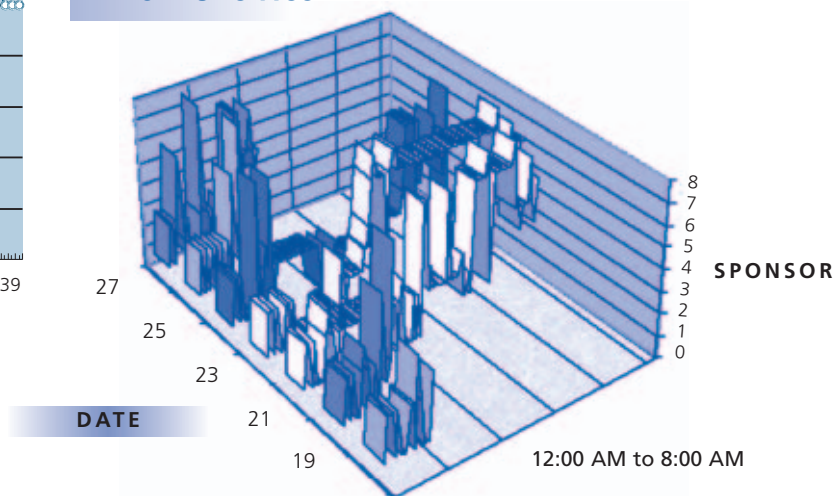
Motion Data: Reveals Activity

Sensor Firing (5:57 – 6:39 am)



A single day (left) can be examined with other days and pattern activity analyzed (below)

Morning Sensor Activity from One Week



Technology can improve outcomes. Improved quality of life, the target we are aiming for, relies on extended healthy, active, and dignified life; increased independence; delayed admittance to a nursing home; availability to all income levels; and reduced physical and emotional burden on the family members.

The Smart House

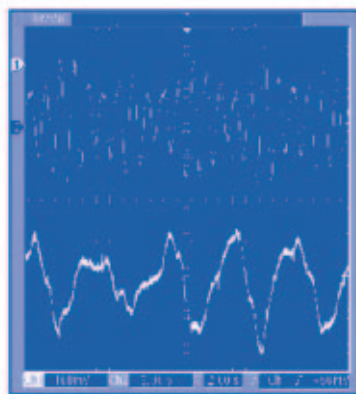
We have installed our "Smart House" project in a home just off campus. We have a living laboratory. The system is adaptive, modular, low-cost, and non-invasive. It also has an integrative data management system that is linked to the Internet.

The Smart House is installed in a typical middle-income home with only one bedroom, a kitchen, a living room, and eight sensors. This is our entry-level system.

The system also has a sleep monitor. Sixty-eight million Americans have sleep apnea, which is defined as 10 seconds when breathing is interrupted. There is also quite a bit of sub-clinical sleep apnea, where breathing stops for shorter periods, maybe 5 seconds. Our sleep monitor essentially monitors, using very sensitive vibration, heart rate, breathing, even gastric sounds, of the person lying in bed. It has a body temperature sensor, and we can also assess the blood pressure of the individual through the bed



Vibration Sensor



Vibration Sensor Output: Chest

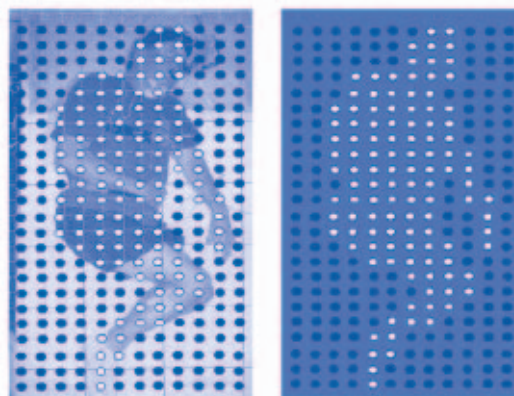
- Two signals separated through filtering
- Blue waveform shows a pulse of approximately 66 BRM
- Yellow waveform shows a breathing rate of approximately 15 BPM

The device is about the size of a 50-cent piece. You lift your bed up and place one leg on top of the device, which is about \$50 worth of hardware. It connects to the Internet wirelessly, and allows the bed to be the home monitor.

We also have a passive, unobtrusive, gait monitor. It's a device that would be about the size of a hockey puck, and it screws onto your baseboard. It will indicate whether you have normal gait. This can predict the onset of osteoarthritis. It will tell if you're healing normally following hip joint or knee joint replacement. It even works to a point of predicting mood and depression, because you walk differently if you're depressed than if you're happy. The graphic shows an individual approaching the monitor, and then going away from it.

We can also use this device to find out if someone has fallen and hasn't gotten up. We get a different signal from a person falling than somebody dropping even something as heavy as a sack of flour. We can measure step count and estimate average pace, and distinguish between limping and shuffling. Shuffling is really the first sign of hip joint breakage. Somebody shuffles, and

Sleep Profile



Courtesy of Newsweek (7/8/02) Dots Added

then they trip. We can detect falls, changes in pace and mode over time. And it's low-cost and unobtrusive.

The data can be fed back to the individual in a self-assessment tool, which is available through the Internet. By doing a few simple exercises, such as deep-knee bends and leg extensions and rotations, and answering a few simple questions, you can get an assessment of knee joint health as good as one done by an orthopedic surgeon in his office. All this is done through the Internet, in your home.

The Future of Passive Technology

These technologies may seem futuristic. Let's take a glimpse even further in the future and what our lab is working on:

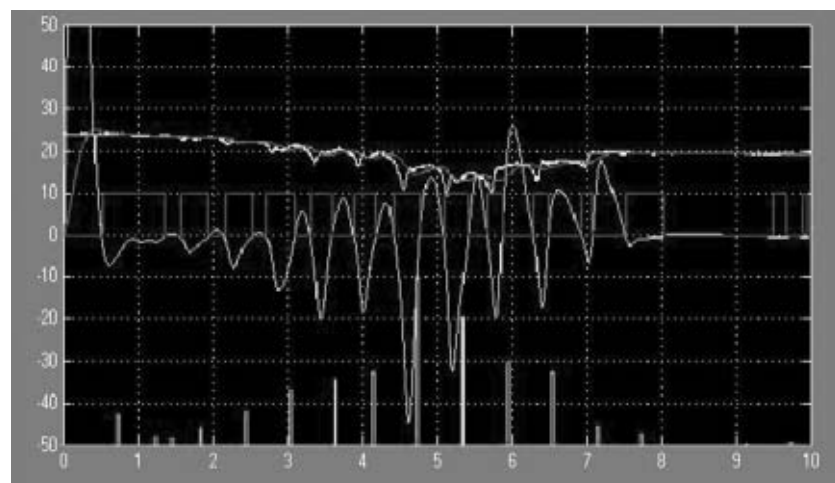
“In general, **technology increases independence and improves the quality of life.** You can use it to monitor daily activities, health conditions, health activity, and health patterns. It allows the opportunity for medical or family intervention before a crisis occurs, and delays the onset of need for costly healthcare. It provides peace of mind, and minimizes caregiver burdens and potentially delays the need for assisted living or admittance to a nursing home.”

- A bathroom scale that can take your blood pressure.
- The “e-nose” is an electronic nose that can be mounted much like a smoke detector. This would detect body odors. We could assess personal hygiene, common diseases that have an odor associated with them, and even social issues such as the overuse of perfume.
- The adaptive walker is a smart device that will guide the elderly as they walk through a complex environment. Alzheimer’s patients frequently bump into walls and then travel to the next collision point. This device would allow them a much longer time frame of moving independently.

We’ve talked today about the need for technology, and we’ve discussed genetics. Now we have to put the two together. We can use medical technology to do a genetic profile, detect genetic indicators for debilitating



Preliminary Results: Normal Gait



Steps Taken: 13

Peaks Counted: 14

Peak Amplitudes: Increasing toward sensor,
decreasing, decreasing away

diseases, and to provide genotypic and phenotypic stratification of our elders. Then we can take multidimensional statistical models that will combine these data. Then we can use this information to predict what’s going to happen when you get old.

In general, technology increases independence and improves the quality of life. You can use it to monitor daily activities, health conditions, health activity, and health patterns. It allows the opportunity for medical or family intervention before a crisis occurs, and delays the onset of need for costly healthcare. It provides peace of mind, and minimizes caregiver burdens and potentially delays the need for assisted living or admittance to a nursing home.

So in conclusion, technology offers low-cost alternatives to professional medical visits. It can help us predict the future health of individuals. We can predict what the problems are going to be long before they get there, and we can even anticipate and reduce the risk of errors. Technology can help us contain future healthcare delivery costs to a predictable, and lower, growth rate, or even dramatically reduce the cost of delivering medical care.

Peter Neumann, ScD

Associate Professor Of
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Harvard School Of Public Health



we do a lot more than we did ten or 20 years ago. We perform a lot more tests. And if we find something wrong, we do a lot more in terms of treatment.

We all would like to get value for our money when we pay for new drugs, devices, and procedures. How do we get there? What tools do we have to use, and what policy recommendations are available and advisable?

The idea of formally using economic evaluation to quantify the costs and benefits of health and medical interventions has been around for at least a couple of decades, but the pace of activity in the field has increased rapidly in recent years.

The field of economic evaluation of health and medical interventions has been an active area of research. It includes cost effectiveness analysis, cost/benefit analysis, and related techniques. The idea is that decisions about technologies shouldn't focus on their costs, but on broader economic and health benefits associated with their use.

Recently, analysts have actively explored ways to measure long-term and societal costs—not just the price of a drug, which really is the wrong focus, but the broader economic costs and benefits associated with its use. They have also explored ways to incorporate the values of the preferences that people place on different outcomes.

What evidence do we have that new medical technology offers value to the marketplace? There are many studies in the academic literature and the popular press that focus on the contribution of medical technology to costs. We often hear that costs have risen in the past year, and that medical technology is the culprit.

Overall, medical technology—defined broadly sometimes as “intensity of care,” that is, all the things we do to patients as they come into the hospital or physician office—has been increasing. You don't have to go much further than your average physician's office or operating room in a hospital to see that. When a patient comes in with a symptom,

This research says nothing, of course, about the benefit side of the equation. How much value does the medical technology actually provide? And that's the key question: not how much medical technology costs, but whether the investments in medical technology are worth the health gains produced.

On the one hand, several strands of research have contributed to a suspicion that much of high-tech medicine hasn't contributed the kind of high-impact gains that are sometimes associated with or expected of medical technology.

We heard earlier about the dramatic increases in life expectancy over the past century. And by any measure, they were dramatic: Up from 47 or so years at 1900 to 77-plus years, depending on factors such as gender, at the end of the century. Why did the life expectancy increase? One strand of research that questions technology says much of the increase was not due to medical care. It was the result of improvements in sanitation, diet, and other public health measures.

Another strand that questions the value of technology comes from cross-national comparisons. If you look at aggregate health statistics, such as infant mortality and life expectancy, the U.S. doesn't do much better than a lot of other countries that spend a lower percentage of their GDP. In some cases, it does worse. So how do we explain that?

The third strand suggests that, even where a new technology is clearly beneficial for particular patients, it often diffuses into populations for whom health gains are marginal at best. Expensive diagnostic equipment for patients with mild symptomatic disease is one example. Intensive interventions for the terminally ill is another.

Arguments in Support of Medical Technology

There is widespread agreement in the medical and public health communities that much of the gains in life expectancy in the first part of the 20th century came from basic public health measures. The latter part of the century, however, was notable for increases tied to medical technology: new drugs, devices, and medical procedures.

As for the cross-national comparisons, some research recently has suggested that, among 65-year-olds, the U.S. enjoys longer life expectancy than some of the Western European countries and older populations elsewhere.

What about the question of whether increases in medical technology are worthwhile? Some new research suggests that the answer seems to be “yes.” The large increase in post-heart-attack survival, for example, comes at a price of merely \$10,000 per case. Ten thousand dollars for a one-year increase in life expectancy, on average, is a pretty good buy for the price.

At the individual technology level, a number of economic evaluations published in medical literature have advanced the argument that medical technology may save money in some cases. Even where it doesn't save money, it may offer good value for the investment.

“Studies showing that medical technology drives both health spending and improved health outcomes should logically stimulate demand for formal assessments about the value of new technology.”

There's also the body of literature suggesting that Americans strongly support medical innovation and are willing to pay for the technology, a support that undoubtedly fuels rapid increases in NIH appropriations seen over the last decade or so.

While the public policy discussion still seems to focus on cost, perhaps for understandable reasons, the value message I think is beginning to be heard. But we need to make that argument more strongly and effectively.

Value and Decision-Making

Do payers and policy makers actually use information on value in their decision-making? Here I think have a paradox. Studies show that medical technology that drives both health spending and improved health outcomes should logically stimulate demand for formal assessments about the value of new technology.

In theory, cost effectiveness analysis should be used by managed care organizations, insurers, health departments, and state and federal policy makers. However, payers have displayed a noticeable reluctance to use formal tools of economic evaluation in health-care decisions. Indeed, this resistance to economic evidence in the U.S., in an era of evidence-based medicine, is one of the notable developments in recent years.

We have learned that public policy makers and the public at large don't want to use cost effectiveness as a blunt instrument to inform coverage decisions about the value of medical technologies.

Managed care plans in the U.S. haven't embraced cost effectiveness analysis. When asked in surveys, health plan officials state either that cost effectiveness does not play a role in decision-making, or that it's a minor, secondary consideration, even as they've embraced other cost-containment techniques.

But why? How do we explain this paradox? Is there something inherently problematic about using cost effectiveness as a tool to measure the value of technology?

Studies point to a couple of explanations. Some of them fault the methodology itself. But in fact, most people who use this methodology agree on the basic tenets. Instead, the opposition more likely relates to the hardened American distaste for explicit rationing. Industry and consumer groups have capitalized on this, and they have traditionally opposed attempts by Medicare and others to use cost effectiveness, arguing it would lead to rationing or denial of care. This is understandable, perhaps. But still, how do we get good value in face of this opposition?

In a curious way, as a society we may prefer that our rationing be done implicitly. Once a medical technology that might be effective is identified, we surrender an ability to withhold resources, even if those resources might be better used in other pursuits to improve health. In effect, this is now official Medicare policy.

Is it Rationing

In surveys, physicians don't admit to rationing. At the same time, you can get them to admit to sometimes considering costs. Sometimes they'll prescribe a cheaper first-line therapy, and then a more expensive therapy. They'll do all kinds of things that maybe take cost into account, but they don't admit to rationing.

Surveys of managed care plans reveal that the plan managers will not admit to rationing. However, they admit that they have to pay attention to their budgets.

Cost effectiveness and cost/benefit analysis, as terms, may be part of the problem. If you read some of the Medicare regulations on how they cover new technologies, you see this. They can say they want to compare a new treatment to an old treatment. They say they want to get good value. They can't say they're going to use cost effectiveness to deny or withhold a treatment. It smacks of rationing.

"Value analysis" or "comparability" may be terms that frame the issue in a positive or at least neutral way. It takes out the word "cost." These sorts of political changes may be as important as technical ones. How we package this information will take us at least part of the way there.



“There is widespread agreement in the medical and public health communities that much of the gains in life expectancy in the first part of the 20th century came from basic public health measures. The latter part of the century, however, was notable for **increases tied to medical technology: new drugs, devices, and medical procedures.**”

Recasting the Debate over Medical Technology

What does all this mean to the future? And how do we get around this paradox? In the aggregate, medical technology can offer wonderful opportunities and real benefits. At the same time, we must make wise, prudent decisions.

So how can the value of medical technologies be better measured? Part of the answer, I believe, lies in persisting in efforts to recast the debate over medical technology, which should never be about how much medical technology costs, but always about how much value it provides. And I think we can do a better job in the academic community of educating people.

Public policy changes are needed, as well. For example, one might imagine establishing rules at the federal and state level that would permit, or even require, government payers or private payers that serve enrollees in public programs to consider value considerations – and a societal perspective in coverage decisions. That is, they would take into account all of the costs and benefits, not just the narrow perspective of short-term costs.

Such a rule would be consistent with recommendations from the field, and would shift the field away from the price of a drug and technology, toward a broader view that accounts for potential downstream benefits and long-term health benefits. In this way, considerations of value would emerge, not as the Oregon Medicaid plan’s architects would have had it, but in more nuanced fashion, allowing for more flexibility.

There are some signs that this is happening. There are new formulary guidelines, for example, to help the pharmacy and therapeutic committees that consider new drugs

to look at evidence of value when making new decisions about drugs. This anticipates a Medicare drug benefit. And it’s something that Medicare should look at very seriously.

The problem with Medicare doing it is the idea of doing it at a central level. That needs to be thought through very carefully. Some of the resistance to cost effectiveness analysis is not a resistance to the methodology, but a resistance to bureaucratic, top-down decision-making.

But in the end, we need to find a way to get the incentives right in the system, and to have considerations of value incorporated to make better decisions about the new drugs, devices, and procedures in the future.



Conclusion



It's worth remembering that when Congress devised the Medicare program, it was the mid-1960s. The nation's largest health insurance program for the elderly was modeled on the health insurance programs that were in place for the working-age population.

Perhaps not surprisingly, we find ourselves 30 years later with a program that does not provide out-patient prescription drug coverage, long-term care, eyeglasses, or many obvious preventive services. It doesn't cover any of the services that you would think would be basic to a health insurance program for older Americans.

The focus of the March 17 policy briefing was on two mega-trends affecting this aging health care program: the demographic imperative—the aging of our population—and the technological innovations that have come from current and past investments in science and medical technology. How do we manage those two mega-trends? How do they play off one another?

The Alliance for Aging Research has tried to encourage policy makers to take advantage of the opportunity to look ahead as we get ready to modernize the Medicare system

From their varying perspectives, the panelists found themselves in general agreement that we have the opportunity to develop a health care system that addresses the wellness and chronic care needs of older Americans without stifling research and advancements. We looked at how public policy can support better healthcare delivery management and the use of newer technologies by providing financial incentives for their development as well as the expeditious implementation of new science. We also saw how, in addition to exciting medical breakthroughs, research is also developing low-cost solutions that help older people live independently at home longer.

Panelists pointed out that policy makers must look beyond the simple factor of cost to address the real value as well as the effectiveness of various health care interventions. Medical advancements were shown to have the potential to lower health care costs per patient, or per encounter with the health care system, even as the technology itself can be expensive when first launched into the marketplace.

Panelists envisioned a predictable system that oversees quality and safety without dictating complicated regulations. It would instead provide a framework of standards and incentives through which providers and payers are invited to innovate solutions that work in their communities to encourage preventive measures and bridge acute and long-term care.

In this forum, the Alliance for Aging Research has tried to encourage policy makers to take advantage of the opportunity to look ahead as we get ready to modernize the Medicare system and see what kind of patients and

clinical needs will exist in the future. And just as importantly, see what's on the horizon, everything from low-tech to very high-tech means, to address the real clinical needs of older Americans.

Grasping that opportunity, we believe, will help modernize Medicare, so that 30 years from now we'll find that we still have a program that's meeting the needs of older Americans.



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