

Health System Transformation Lecture

Blue Sky Health Initiative

Lecture

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Thanks very much, Brad. Thanks for the kind introduction. It's great to be back here at the CDC. Last CDC-wide talk I gave was in 1996, I think. Looked a little different then. So, it's great to be here.

I'm going to be talking about the Blue Sky Health Initiative, and this is our new logo that's going to be on our new website that's going to be part of a bunch of stuff that we're rolling out. And as you see, the tagline here—"Reinventing the way America thinks about, organizes, and finances health and healthcare systems." What the Blue Sky Initiative is trying to do is create a blueprint and policy for long-range health-system improvement.

We're thinking long term—not one or two years, but how do we really transform the health system over time? We have a somewhat new diagnosis of what ails the US healthcare system—what is typically discussed when people talk about healthcare reform. We're trying to develop an evidence-based premises to guide redesign, because what we see this as is a re-engineering and redesign process. And so, what you need evidence for is to build a premise that you can go about this redesign process. We've developed a transformational framework so that we could actually guide what a transformation would look like. We hear a lot of talk about transformation, but how do you actually go about and do that? We're in the process of developing a number of research projects to inform our transformation goals. We're trying to apply the transformation framework to specific health and healthcare problems, and we're trying to develop a communication, networking, and messaging process. So, it's a small agenda, as you can see, and there's not—we don't have the CDC behind us. It's a smaller group than that. So... I'm pushing things, but nothing's happening. Okay.

This is a little bit about the development of the Blue Sky process. This began four or five years ago. This is a group here at UCLA. And it really was the brainchild of a bunch of us that began to think about healthcare reform, and thinking about that healthcare reform is largely a discussion about health-insurance reform. And if we were going to move beyond talking just about health insurance, we needed to broaden the discussion, because what usually happens when we talk about health insurance is we say, "Well, how much money do we have?" And then, "What are the politics?" And we end up in a very small box to have the health-reform discussion. So, we wanted to broaden out and say, "What are our values here in America? What does our science tell us about what we can do to produce the health of the population or optimize the health of the population? What do we know about from evidence that allow that to happen? And then let's figure out the economics and politics to do that." And this is what this group started to do. You can see the guy in the blue shirt is former Vice President Al Gore. The guy down at the end is Bob Brook that heads the Rand Health program. Woody Myers, as some of you might know. Tom Rice, Lester Breslow, Hal Holman, and various others who actually were part of the original brain trust with us that helped us develop this. We had this initial steering committee.

We had a number of expert/doer symposia bringing people together to start to brainstorm with us. We had a state-based symposium that we did with some of the NNPHI members from Kansas, Arkansas, Colorado, Ohio, and Oklahoma and the National Academy of State Health Policy. We had a whole seminar series. We did a series on organization and finance of the healthcare system. We had a number of symposia. We're writing and doing various articles. We're working on a collaborative innovation network. We're working on several public-opinion surveys right now and other focus-group work and doing some communication work with GMMB. And we'll have a Blue Sky website that will be up. And I just wanted to lay this out so you get some sense of what went into what I'm going to be discussing now so that the ideas just didn't come from me sort of sitting at my desk or a few people sitting around, but it's really been a process over the last three years really trying to struggle with this other kind of discussion about health reform.

So, what I'm going to do is I'm going to talk about the momentum and direction of the health system and why it's going to transform in one way or another and how do we direct the transformation that's going to take place. I'm going to talk about our core premises that guide the Blue Sky Health Initiative and our transformation approach. I'm going to show you the framework that we're using. I'm going to use an application to early childhood so you can see that this isn't just all theory, but actually how do you apply it to a specific population. I'm going to talk a little bit about the role of collaborative innovation. And the last thing I'm going to do is talk about our agenda so that we can go through and you can understand where we're headed. I'm going to do this all in an hour. So, where have we been, where are we at, and where do we need to go? How do we think about where the whole health system is at? And we don't normally think about this.

One framework that I have found very useful is the framework that Lester Breslow talks about, and it's about the three eras of healthcare and how healthcare has gone through three eras. We're now in the second era and we're on the verge or the cusp of a third era, and you'll see—I'll talk about these in a second as 1.0, 2.0, 3.0, using our metaphor of our information age to try to give, you know, a new code to this. But what do I mean by the three eras?

Well, the first era of modern healthcare, if we go back to the 1750s or so, it really came into being through a whole set of scientific and cultural and social changes that took place. But if we go back to 1900, the life expectancy of people in the United States was 47 years. Between 1900 and 1950, life expectancy increases by 21 years, which is really miraculous in terms of what happened in a rather short period of time. Our definition of health during this first era is really health is the absence of disease. Our mechanism is really the biomedical model. We understand disease causation through infectious-disease models and contact and single-causal models. And it's really the biomedical paradigm that really is born during this era. Our approach—we develop medical treatments during this time. And public health is really around safety issues. It's really about keeping populations safe from infections and other kinds of harms that can happen. Our finance that we create during this time is we create insurance and financing insurance as a loss for some kind of catastrophic process. Most of our public health is through program grants during this time period. Our delivery mode is really the clinic and medical practice and the hospital and the Public Health Department. We invent those during these time periods. And our goal is about reducing deaths.

When we go into the second era, starting in 1950, life expectancy is about 67 years, and during the second era, we've come up from 67 to 78 years. It's not quite as big an increase in life expectancy, but still rather significant. We now define health as not the absence of disease, but of disability and dysfunction. So, we have a change in how we understand what health is. The mechanism changes rather dramatically during this time period because of the epidemiologic studies like the Framingham study and the Alameda County study and others. What we start to understand is that health is really caused not by single causes but by multiple risk factors, and cardiovascular disease becomes the paramount model in which we understand the cumulative risk of certain kinds of behaviors lead to certain kinds of disease.

And it's during this time period that we move from a strict biomedical model to a biopsychosocial model, and I'm not seeing a biopsychosocial 'cause we're not there yet. We talk about it, but it's really a biopsychosocial model around both medical and behavioral issues. The approach that we take is more chronic-disease management, disease prevention, and more community-care chronic disease. We develop prepaid health benefits during this time period because we start to understand more about the development of disease, so we're willing to pay for things like screening for PSAs and pap smears and breast mammograms and the like, because we build those into our payment system as we move towards health maintenance. The delivery mode becomes the Health Maintenance Organization.

There are the innovations that take place in our organizational structure. And the goal becomes one of prolonging life. If we look at what we accomplished during these first two eras, if we look at—and I'm going to show you this trajectory over again. What this trajectory is all about is we develop our health capacity early in life. It plateaus during the middle part of life, and then we start to go down. Some of us are actually feeling what it feels like to be on that other side of the curve as you start to lose function over time. But what's remarkable is that this life span is increased dramatically. That curve has been stretched dramatically during this last century. But what has also happened is the health span has increased, so what has happened is that people are living not only longer, but healthier, and disability rates have dropped at 2% a year as mortality rates have dropped at 1% a year. So, we're seeing the squaring of this curve, right? What Jim Fries at Stanford likes us to believe is that at some point, this will be a square curve, and I think it's the kind of notion that we'll all live to be 90 years of age and play two rounds of golf, have lunch with your kids and great grandkids, make love to your spouse, and then just check out. You know, sort of perfect function, and then check out. And, in fact, most of the money we're spending in the healthcare system is at that point in time. It's about pushing that curve out at that point. The other thing that's happened also that's important to notice is that the performance span has increased. The I.Q. of the population has increased 15 points over the last 100 years. We have Mike Phelps getting eight, you know, gold medals. So, performance has increased in a whole variety of ways.

So, what's the third era going to look like? Well, life expectancy is going to go to what, 85, 90, 100 years? Health is now defined not as the absence of something, but it's an acid-based definition towards positive capacity to achieve life's goals. Our mechanisms are much different. It's no longer a single-causal model or even multiple-causal model—multiple risk factors, but we're really looking at developmental processes, social networks, psychosocial relationships,

gene-environment transactions across the entire life span. It's a much more complicated, different way of understanding the development of health and the development of disease. We start to understand disparities in a different way. Disparities just don't happen, they develop and they're programmed and they're about cumulative and programming pathways that develop over time. We understand that in order to approach things, we need to think about life-course health management and health promotion so that this whole life-course notion gets introduced in this period. Our financing system has to change dramatically so that we're able to invest in health capital of the population. We don't have a fiscal vehicle. We haven't invented this yet. But this is the way that we need to go, and people like Jeanne Lambrew and others have been talking about developing wellness trust or other fiscal vehicles that allow us to invest differently. And the delivery mode potentially is going to move from health-maintenance organizations to health-development organizations run by community health outcome trusts in which we create a new health commons that actually moves in a way that I think the healthiest nation is trying to move. And the goal becomes one of health for all.

And so, this vision of this third era is really important because what it begins to tell us about is about the transitions that we've gone through, from this first-era focus on acute diseases to the second era of where we're at now, to the third era of where we could be. And it's really a transition of the health system that's going from 1.0 to 2.0 to 3.0.

Now, I've gone through this in some detail because this is not inevitable. It wasn't inevitable that we would go from an acute- to a chronic-disease era or health for all, but we have all this new technology that's leading in this direction. Our GIS mapping and social networking technology is moving us towards connection us all up in ways that we can look at population and social factors and understand the social implications of health and the social production of health, just the same way that there was technology that moved us from the first era to the second era and the technology that created the first era. So, we're on a path, and there is a momentum. It's not that it's historically determined in some way, but we are moving.

So the question becomes how do we engineer a move in the direction that we need to move and make this happen? So, the Blue Sky process began with three core premises. One, the goal of health reform should be about optimizing the health status of the population, not just about buying more insurance for people. The second—that health status is a function of multiple determinants, most of which are probably outside of the medical-care system. And the third, that life course matters, that risk and protective factors early in life affect health status later in life, and early in life can be 50 if you're 80 or 60 if you're 90, but everything is building and interacting and feeding forward. So, this first premise about the optimal health is the goal that we're currently stuck in the debate right now, and we talk about access, cost, quality, and disparities as if these are all separate problems, and if you read "Health Affairs" every month, it's on one of these topics. You know, topic du jour this week is cost. Next month, it's on access. And we rotate around this.

Each one of these groups has different constituencies moving it. And our point is that these are all symptoms. The access problem, cost problem, quality problem are all symptoms of a system problem underlying. These are just symptoms. The actual process that we need to cure has to do with how our system is actually organized and functioning, and it cannot be solved individually

and misses the big picture that optimal health is achieved with the most effect allocation of resources, and we need a different way of allocating resources. The second major premise is that we have multiple factors that produce health. This is nothing new to you all, but we know that what produces health are four different sectors, where it's produced by the medical healthcare sector, by traditional public-health activities. We've broken out population-health activities. I know public-health people like to say anything that's not medical cures public health. And we've done this purposely because workplace health promotion, other kinds of things that aren't run by public health departments we consider in this population-health area. And the population-health area is growing in different ways.

And then there's the civic sector and the social determinants. And what we understand is at least for our 2.0 system—and all of you have seen this—is that when we start to look at the contribution to premature mortality, what we know is healthcare is about 10% of this, and what we think, at least—at least, that's 2.0 healthcare is about 10%.

We don't know what 3.0 healthcare is going to do. And it might actually contribute more to the health equation than it does now. But we know that behavioral, social, and environmental factors are more important. We also know that what we're doing right now is that our expenditures are highly misaligned from what we actually know are the causes—that most of our money goes into the purchase of medical care and access to medical care, and we put very little money focused on the issues that really are causing our health problems.

This comes from some work by Bob Kaplan and, I think, Darwin Labarthe, who's here at the CDC, that was looking at cardiovascular disease, and, again, this is like bringing... but it's just showing here at the bottom, looking at the total target population for cardiovascular disease with the 525,000 people that end up having it—and we know what the present reality is in terms of unfavorable social condition, adverse behaviors, multiple risk factors that lead in this direction. We also know that a vision for the future would have one in which we would change this causal pathway and move things in a very different direction. We actually know what we would do to do that, right? We have, really, strategies all along the way that could actually leverage and move this forward, but we also know that we spend 95 percent of our dollars on that part of the pathway and only 5 percent on this side. So, we have a system that's very much out of balance, and this is one of the key issues if, in fact, we're going to move forward in a very different way. So, the way that we start to think of these multiple sectors is we think about what happens in medical care, public health, population health, and the civic sector.

And if we drew these to scale, the medical-care sector, vis-à-vis public health, medical care would be as big as this whole building, civic sector would even be bigger than this, and public health and population health would probably be about the same size. Because we spend an enormous amount of money in the medical-care sector. Over time, what we need to do is rebalance this picture so that medical care actually shrinks and that we expand public-health and population-health services over time, and that this is really one of the design goals and policy goals of moving forward.

How we achieve that and how we integrate this so that we actually have all four of these producing sectors integrating and moving forward is part of what we're trying to do with the

Blue Sky process. So, we're not just working in the medical-care box. We're not just working the public-health box. But we're trying to think about everything that produces health and how do we get the maximum value? Now, I told you that one of the things that was important is life span and thinking about how we optimize the life-course-health-development health over the life span. And what we know also is that what we're doing presently is spending almost all of our resources at the end of life or towards the end of life and trying to expand and square that curve. And that's probably not a very good strategy, and it's probably not good on the ROI for a variety of reasons.

One is that if we look at where our current spending is going and moving in the future, you see Social Security, Medicare, and Medicaid, and most of this is for Medicare and Medicaid, and you see the extraordinary upswing that's going to take place in expenditures from these CBO projections. And what's scary about this is that all other federal spending, including lots of other health and public-health things is all going to go down as more and more of the budget is sucked up. And if you've been reading in the *Wall Street Journal*, if you've happened to notice that the economy seems to be melting down at present, one of the things they're talking about is that we can't fix the economy in the United States until we rebalance things, and we can't do that until we fix Medicare. And we're not going to fix that until we actually begin to shift all of this in a very different direction, so that maybe our time has come to come forward with some different kinds of solutions to these long-term cost issues.

As we know, we have other things like the obesity epidemic that's on the rise and the extraordinary costs that they are going to have. This comes from the Milken Institute. They're looking at the cost of long-term—of chronic illness and looking at the burden, and what was interesting about their analysis was that they not only looked at the medical cost over time for treatment expenditures, but they looked at the externalities in terms of what the long-term lost economic output is because of chronic disease, and they look at that in terms of lost economic output both in direct and indirect expenditures. And I think what people from the business community are starting to understand is that that Medicare projection and these kind of projections in terms of what this means to our country—the burden of chronic disease and the burden of obesity, potentially—is kind of a wake-up call to begin to think about things in a much different way.

So, if we think about this in terms of what our current model is, they're sort of looking at symptoms, this is looking at cost across the life span, and what we do now—we know as symptoms increase, costs increase. Our current practice is to wait till people are symptomatic and treat them there. We have the current capability to do all kinds of prevention much earlier on, and we're very soon going to have the future capacity to work here.

And in a sense, this is a little bit what our 1.0., 2.0., 3.0 system is about from a prevention standpoint. If, in fact, we work in the 1.0, we're still just—all we're doing is treatment. Move back to this other part of time where we're working on behavior, risk prevention. We move here, we're changing the social conditions completely in which children and individuals develop so that they enter and head out on a very different pathway. And what this presupposes is an understanding that health is actually a developmental process, that health develops across the life span. And this is very different. It's really important, because all of our health-related quality-of-

life measures are based on the fact that everybody's born with perfect health and then it declines over time. All right? And this is a different kind of notion.

If we start to think of health as a developmental process, we know that health development can be represented by health trajectories, that there are critical and sensitive periods in which health is influenced, that the gene-environment interactions are happening during these critical periods during development. And we're learning an enormous amount about these gene-environment interactions in terms of what they do at critical points in a person's life in terms of leading to different kinds of risk pathways. And when we look at this, when we start to understand the life-course issues, we start to understand that if we're looking at the contributors to an individual's health, when we look early on at age 5, what we see—it's not much individual behavior that's determining a person's health, but it's the family, school, and daycare. But when we move out to 40- and 50-year-olds, the whole profile, the distribution of risk factors change dramatically. And as you get out towards the end of life, the things that are important change again, so the family becomes more important as you become dependant.

The important thing here is that as we make our slices in terms of understanding across the life course what we're trying to manipulate—we're trying to manipulate different sets of risks that are at work over time. And then this leads us to a life-course model in which we look at one trajectory that's low, another trajectory that's high, and what we really want to do from a health-policy standpoint is how do we optimize trajectories for the whole population? What determines those trajectories and leads to people being symptomatic? Now, I could show you this trajectory for the forced-expiratory volume of the lung. I could show you for various endocrine function, for various neurologic function, and it's basically the same for almost any organ system. The important issue is that whatever the organ system is, we become symptomatic one way or another or become more vulnerable at the end of life, and that vulnerability is either going to be pushed out or it's going to be at 60 or 65 years of age or 80 years of age. And depending on what we do early in the life and what we do to reduce risk that push down on these trajectories and the protective factors that push up on these trajectories has a lot to do with what happens at the end of life. So, that, if, in fact, we're going to shift our paradigm, if we're going to put a new chip into the system that's going to operate this 3.0 system, it has to deal with these life-course-development issues. It has to deal with how do we optimize protective factors for individuals and communities and populations? How do we build systems that reduce risk and get us into the highest trajectory, which you're going to save money down at the end of time? And it shifts our whole focus from spending money at one point in the life span to moving it early on.

So, there's three basic mechanisms here. I'm not going to go into this in great detail, but it's the basic cumulative mechanism—that we know the cumulative risk factors influence and produce health. But there's lots of programming that's going on, and these are time-specific influences and stimuluses and insults that happened during certain times in a person's life that end up being really important. And when those time periods are often during transitions and turning points in someone's life. The reason why this ends up being important is that if you don't use a life-course-development model and you use a life-stage model, the life-stage model misses the transitions, 'cause you start cutting it off, and it's those transitions that actually lots of stuff happens and lots of vulnerability happens. So, when you go from being a kid to an adult or you go from being, you know, from preschool into school or, you know, from school into the work force, it's those

transitions that are the major challenges for people and people's health. So, I know the CDC has adopted a life-stage kind of approach for looking at things, and I'm just arguing that maybe you need to evolve that more towards a life-course model.

And what we understand also is not only do we have cumulative and programming mechanisms, but we have these pathway mechanisms in which we construct certain scaffolding that leads people's health and development in certain ways. And that's mostly what our social epidemiology is about these days. It's really understanding these socially, ecologically constructed pathways that determine risk in population over time. So, what we begin to understand is how early environments basically cascade through these cumulative programming and pathway mechanisms towards leading towards poor health.

Now, I've gone into this in some detail because this is really core in thinking about if we're going to shift the paradigm, we have to shift towards a life-course health-development model of understanding things. And so, we can move down to this number 3 era, 3 position, and really start to think about what and how we produce an optimized health. If we do this, we start to shift the paradigm from the 2.0 to 3.0. Here's the traditional medical record. Here's the medical record in the future. The medical record in the future is one in which we're looking at health-risk analysis, genetic and environmental lifestyle. We're creating one- and five-year health plans. We're doing life-span health-risk assessments on individuals and populations. We're doing lots of prevention and early intervention. We're shifting the whole dynamic of the healthcare system from that high symptom, high cost down in very specific ways. And so, what happens—and this is from Snyderman's work—we're working at things and decisions in the late chronic phase that we're moving towards a health-promotion plan and risk-modification efforts. And so, this is about redesign. This isn't about interventions, you know, or small policy changes. This is about how do we go through a redesign process that's going to take us towards this 3.0 system?

So, basically, what are the big change concepts in Blue Sky? One is that we have to move towards a third era. We need systems innovation and a new operating system. That new operating system needs to use this new logic model. We have to think about what healthcare 3.0 really is and how do we move upstream. We have to really think about how we reorganize primary healthcare because primary healthcare has to be reorganized and re-engineered. We have to think about vertical, horizontal, and longitudinal integration of health systems. We have to think about long-term funding and investment vehicles and very different time-horizon synchronizations. We're not talking about all short-term, but really long-term time horizons.

So, why transform? The health system is seriously underperforming. Incremental change undermines significant reform. The more incremental change we do, we just keep adding to a bad system that is going slower and slower. It's like taking and adding more application programs to your old computer with your 286 chip, and it just runs slower and slower and more inefficiently, and part of what we need to do is upgrade the whole system. And what's important to recognize, I think, also, politically, is prospects for reform are likely to diminish or the kind of reform we're going to get is going to be reflexive reform in its crisis rather than planned reform over time. And the reason why is that the silver tsunami that we're being hit with and the other increased demand for resources are going to become unbearable at some point, and someone's going to want to pull the trigger on something and it might not lead us to where we really want to

go. It might take us backwards. And that the cost-containment imperatives might become really important, especially during a fiscal meltdown—that people start going towards things that we don't really want to do in terms of solutions that don't really take us in the direction that we need to go.

That's why we need to be planning towards a transformative kind of change. We wrote a piece last year in "Health Affairs" about transforming the U.S. Child Health system that lays some of this out. Part of what we did in that "Health Affairs" article is we said, "Okay, here's our old operating logic. This is what the new operating logic is. This is the new chip." And so, we lay out the definition of health, the goals of the health system. We move from a client model that's individual to one that's about individuals, communities, and population. We go from a biomedical to a real biopsychosocial model. We use intervention approaches that emphasize disease prevention, health promotion, and the optimization of function as core components, not as peripheral, but as core operating-system principles, and we take a life span rather than an episodic approach.

What the Blue Sky framework has done is really tried to think about what's our current system like, what's our transformed system need to be like, and what's the change strategies? And I just gave you a taste of that in terms of what the logic model is, because that's what this thing is. This thing is the logic model. If we were to insert that into my next slide, it's really thinking about that. But we've been thinking about what is our current system, how is it organized, what's a transformed system, and what are the change strategies? How do we work with a medical-education healthcare work force? What's the market structure have to be? What's the funding? And the reason why we've done this is that it can be overwhelming to think about redesigning a whole health system, but someone has to do it. We have to be thinking about where do we need to get to, because unless we know where we want to end up, it's very hard to take the right step in the right direction. And this can't all be a front-engineering process. We have to back engineer some of this based on where we need to go.

So, part of what we've thought about—and let me just lead you through this. It's a little bit complicated. So, we went through what is the 1.0 system. How's the medical system organized? And so, what you see here—this is the patient who can go to the primary-care doctor, the specialist, then go to the general hospital, to the comprehensive medical sector. You see the civic sector on one side. You see a brick wall between public health and population health. And, basically, this is the indemnity-insurance system. This is still the old Medicare system where you could go anywhere with your health insurance that you'd want anytime. You know, if I thought I had a neurological problem, I could go see a neurosurgeon right off the bat and they would take care of me. And so, this is the system that we had in place in the 1.0 system. This is what Medicare still is.

We reinvented this with managed care, and we created a very vertically organized healthcare system. So, the patient had to go to the primary-care doctor. They went to the specialist, to the hospital. So we created a very vertically organized system for the 2.0 healthcare system. And that was what HMOs did. We still have a hybrid system, right? Because we still have some people in indemnity insurance or various forms of Medicare, and we have lots of people in HMOs. And, in fact, it's very complicated, because we have all these different models that are out there.

So, we're running all these different models of healthcare and healthcare finance at present. And so, the question becomes what is the new system start to look like? What's the design of the new system? And so, we began to think about, well, if you had traditional public-health activities, the medical system, population-health activities, how would you restructure them? How would you link them up in a different way? How would you bring civic and noncivic kinds of activities together? What do you do with primary health services? How do you create a new primary health-service platform that's not necessarily part of the whole medical-care system in quite the way that it is now? How does it link to traditional public-health and population-health services? How do you potentially create a different kind of funding mechanism that funds the whole system, that funds the traditional public-health population and medical system and a primary-health-service system?

Now, I'm just showing you this. This is, you know—this is a sitting for several weeks or months, working through how do we reconnect things and restructure things through a design process? And how do we organize this in a way so that we can bring them funding into the system in a different way, using a healthcare trust rather than having all the money go individually to the medical-care system—separate money go. Because it's very hard to integrate and do things jointly if all the money's going in a different direction. And so that individual health can be determined by how this all gets restructured and reorganized.

SO, how do we get there? And that's—the point here is that we can't start to think about how you start to restructure and reorganize. You can bring it down to a more specific level. How do we adopt a new logic model that is consistent with the science of health development? How do we institute outcome-performance frameworks? And let me give you a child-health model very quickly to show you how this potentially works. So, if, in fact, we want to reorganize the delivery of individual care for children, part of what we have to do is deal with the epidemiology and the changing epidemiology. We have 4 percent to 6 percent of kids with severe disabilities, 12 percent to 16 percent of kids with special healthcare needs, and we have about 30 percent to 40 percent of children that have learning, behavioral, and mental-health problems in the United States. Problem is is that our health insurance only goes up to here in the United States. It doesn't cover anything for those learning, behavioral, mental-health problems, so we don't deal with them very much. And we have 50 percent to 60 percent of kids that are good enough. How many people have kids here? And when you look at your children in the morning, do you often say, "Oh, he's good enough today. We don't need to do anything"? And the issue is if we're really thinking about 3.0 health system, we want to know what percentage of children are thriving? 30 percent, 40 percent? How do we measure that? Not the number of kids with disabilities only, but the number of kids that are thriving.

So, how do we get there to have the maximum number of children that are thriving and how do we deal with this current epidemiologic distribution? Well, what we know is that we have to develop integrated-service platforms. We have to have a medical home. We have to do early care and education for young children. We need family support, parent education, mental health. We have to have a way of integrating all kinds of sectors and services. This is called horizontal integration. It's cross-sector integration to create different kinds of service-delivery platforms. It means the pediatric office has to look very different. And so that in addition to chronic and acute

and preventive care, we have to provide more developmental care, because we have 30 percent to 40 percent of children that have these problems that we're not dealing with. But the pediatrics office of the future has to be connected to a whole network of services that it's not connected to, and there's no connectivity and there's no USB ports at this present. So we have to redesign the pediatric offices so that it can be embedded in this community set of services. What does the 18-month pediatric visit look like? The 2.0 visit is really designed to look for disability in children. It's really screening for those 4 percent to 6 percent of children that have disability, has certain screening tools and pediatric offices that are connected to regional centers, and it can't deal with the 30 percent to 40 percent of children that have these problems. It wasn't designed to do this. So if we're going to optimize developmental health, we have to identify the 30 percent to 40 percent of children with these problems just like in our primary-care practices for adults or elderly.

There are all these people with all these problems that we're not dealing with because our systems aren't designed because they were designed for a different era. And so we need different screening pathways and tools, and the pediatric office has to be connected to a whole different set of services. It's not much different than the way that we've all connected up through the internet to all different kinds of things. So, how do we use that? So, what's that start to look like? What's the redesign start to look like? Well, at present, in most states, you have pediatric offices that are tied in for this 4 percent to 6 percent of children to some kind of regional disability center, and it's a pipeline that basically will carry very few children. It's not working right now. We have the state of North Carolina and Vermont that get about 6% of their children into the system. Most states get 1 percent of their children into it. California gets 1.2 percent of children into it. And if you're Latino, forget it.

So, this pipeline isn't working now at present, but if we're—and that's at the 2.0 era. But rather than sort of fiddle with it forever, we need to leapfrog and really think about how do we move this differently. Well, one of the things we need to do is we need to bring in different sectors. We need to bring childcare so that they're doing more surveillance and analysis of children, because they're with kids all day long. We need to have mid-level assessment centers that we don't have. We need to connect that up. We need to have other specialized services. We have to have a coordination center. And we create a different kind of re-engineered pathway of services. This is really restructuring various sectors of the children's health system.

Now, is this going on anywhere? Yeah, it is. State of Connecticut is doing all of this. They're moving all in this direction. Orange County is moving in this direction in California. Part of this is happening in North Carolina at present. So, this innovation is starting to happen. It's not being really facilitated by any national policy or any national vision at this point. It's being done out of necessity—that it has to be done. What is it really trying to do from this developmental standpoint? What it's trying to do—here are my two health trajectories. And I'll just show you this very quickly. What is the design here? Can you hear me if I go over here? I don't know if the people on the... What you see here is there's three different programs. This is the nurse home-visitation program, the David Olds program. There's family resource centers. ROR is "Reach Out and Read." We have the pediatric medical home family resource center, school readiness family. So what you see here are three different sectors.

You can use the mouse as a pointer.

Okay. Oh, I got it. So what you see here is three different sectors that are linked. Now, what we show here is we're horizontally linking them. And what we're doing here is longitudinally linking, so that you have not just continuity, but you have data systems that connect information that you have—information and stuff that's built around this. And let me suggest what we're doing around here. What we're doing here—what I've just done around that upper trajectory is built a scaffolding around that trajectory. And what that scaffolding is like is like the building codes that we have for our buildings, at least in California, because we have earthquakes that run through. And we build our buildings with building codes because we don't want them to be knocked down during the assaults and risks and shakes that happen during an earthquake. And what I contend is that there are 30% to 40% of children in the United States that live in communities that have earthquakes going through them on a constant basis. And we don't have the scaffolding in place to sort of maintain their trajectories. And the same issues that I'm talking about for young children are the same for middle childhood, for older children, for adolescence.

We need to be thinking about what do we do in place to link multiple sectors to create the developmental, sustaining kinds of scaffolding that lead to optimal health status? And I'm not going to show this, 'cause I'm running out of time, but there's a whole sort of innovation strategy that we've been working on, so that how do you use this life-course trajectory model—the outcomes you wanted? See, you have the family support, child-health services, and early care and education program. These are three different sectors. Right now, they don't connect. We have these yellow arrows, but there's no way of connecting them. If I'm a pediatric provider and I want to connect with the early care and education sector, I have to take my written notes and basically walk it over to them and hand it to them or mail it to them and hope that I hear something back in our internet age. And in each of these sectors, we have all this innovation going on. But none of it is connected up with each other at present, because no one has a grand design for how do we move with this forward?

We don't have a national early-childhood health-system prevention and promotion agenda in this country. But we could begin to think about how we take this system, this 2.0 system, and how do we re-engineer it? I have people in my office that want to work for Disney but work for me. [Laughter] So we restructure all this so that we create our surveillance, screening, and assessment pathways. We collocate, virtually link, and we create a very different kind of organized system. And the point here is if we sit down and think about how to redesign this stuff, we can redesign it in a way that's functionally moving towards what I call this 3.0 system.

One other point: If we're going to move from early childhood 1.0 to 2.0 or 2.0 to 3.0, whatever the model is, the way we normally think about things is we come up with the incremental pathway that's going to take us there. All right? And then we think about the drip, drip, drip of policy—drip, drip, drip, drip, drip—and that's going to sort of miraculously, you know, we'll just drip it like sand castles—you drip, drip, drip—and that's going to get us to this next level. It doesn't happen that way. Part of why it doesn't happen is we run into predictable barriers. So one of the reasons we can't go from one to the other—and this doesn't have to do with early childhood. It has to do with any community intervention that you're going to do. You have to be

able to share data, and people can't share data. So, if we're going to go from the 1.0 to 2.0, 2.0 to 3.0, do the social networking, you have to be able to share data.

And we need to have an innovation around that in order to come through that. So is it some kind of early-childhood-in-development virtual private network? Possible innovation. That takes us over that barrier. We move along, we come to another thing called "categorical funding," which is basically been the bugaboo of any kind of coordinated program. Can we get past that? Because we're never going to get to that 2.0 goal if we can't do that. And again, we need some innovation. It could be through something that the state of New York has been using called a master contract. There are other kinds of innovations that are out there.

The point is is that if we know where we want to get to, and we sort of design around what our barriers are, we can start to collaboratively invent, through our own ingenuity, the kind of innovations that we need to have to overcome these things. And we actually know what these things are. There's just a huge amount of cognitive dissonance that exists in both the health and public-health community in which we would rather launch an initiative, get to this point on our graph, hit the data-sharing problem, plant our flag and declare victory, and that's as far as we're going to go. And that's typically what happens, because we haven't been able to figure out collectively how we move this process forward so that we can really move the innovations in the way that we need to.

And part of what we've been working on are collaborative—the whole concept of collaborative-innovation models. I'm not going to—just to show you that the way that collaborative innovations work is that you have some kind of innovation network. And I'm just showing you from Linux. This is how Linux was developed. It was a group of innovators that came together and created a whole new operating system. There was a whole learning network around that, and an interest network. And what we're in the process of doing right now is trying to create a national collaborative innovation network around early childhood. We would like to see a collaborative innovation network around redefining primary care, collaborative innovation network around community-based obesity initiatives. But we—in each of these areas, we're never going to move from whatever the—where we're at now to the new design unless we do it in a collective way using these collaborative tools so that we can scale and spread the innovations that we're doing.

So, where's Blue Sky going? Let me just end with these four things that we're working on:

Research. The value of prevention across the life span. Right now, we're working at blending the analytic and research expertise of UCLA, Rand, and the Milken Institute, and what we're in the process of attempting to do is to create a synthetic cohort that will basically be from birth to death across the life span that builds on the work that Dana Goldman and others did at Rand, creating the future elderly cohort and the work that Milken did looking at the externalities of health expenditures. And what we want to do is model the entire life course so that that delta that I was showing you between the high and low trajectory, we can actually put a monetary value on it and understand that when you manipulate things at age 2, at age 16, at age 28, what's the delta that you get over time? And manipulate it either through clinical preventive services, through community preventive services, through civic-policy changes. 'Cause we have no way of actually

doing this. There's a lot of belief in what prevention does, and we have some models that show this, but we actually don't have a robust simulation model that actually can show what that would do. And we think it's possible to create this, and we think it would be a very valuable tool in really sort of driving this life-course-development strategy and being able to rationalize why we need to shift our money from the end of the life span further upstream.

The second thing that we're working on is really looking at how do we create HIT 3.0. A lot of what is happening around the whole HIT initiative or health-information systems is really about billing, charting, and prescription writing. It's really about 1.0 medical care. It's really thinking about really the basics. There's some work being done about chronic-disease management systems, but when we think about using the Web 2.0 or using all the social-networking thing, and you think about linking population-health measurements in communities to other kinds of health data so you can actually measure health trajectories in populations—we have the capacity to do that. There are other countries doing that. And so, we really need to be thinking in the design of what our HIT system is, not just so that it will run Kaiser health plan a little bit better than it's running now, but really thinking about how do we use the HIT process to really drive a transformation process? And so, we're looking at how Web 2.0 could lead to healthcare 3.0. There's a number of federal initiatives that are ripe for leveraging off of this. There's a whole child-health HIT road-map action taking. And we're working with a group of 16 national organizations through the what are called the MCHB AIM initiatives—NCSL, NGA...around them all looking at this in relationship to kids at this point. We're also, in addition, working on a system redesign. We're doing a series of symposiums the next year on system redesign. One is around prevention and upstream. The purpose is to improve the capacity of the health system to address upstream determinants of health. There's lots of innovation going on out there in various health systems about moving upstream. None of this is being shared or organized in any way as far as we can tell. We want to harvest these innovations about upstream determinants and prevention and promotion, optimization strategies and figure out how they can be used to actually build the 3.0 health system and move that forward. What we hope will come out of this is a collaborative innovation process that brings people from Mayo Clinic and Kaiser and different health departments together to think about, "Okay, how do we move forward with creating an upstream determinants-of-health tool kit and process that we move forward?"

Third area that we're going to be working on over the next year is redesigning primary health care. We know that, again, there's a harvesting process. There's lots of 3.0 health stuff being done in pediatrics and OB and geriatrics and the like. We want to pull that stuff together, pull the different folks together that are working on this and really begin to design what the 3.0 health system for pediatrics, for OB, for family medicine, geriatrics, and internal medicine would be and begin to launch collaborative innovation networks so that it can start spreading that so you don't just have one very cool practice in Rochester, New York, or one cool practice or clinic in, you know, Chapel Hill, but you actually start to drive these innovation models towards what the new models of primary-health platforms would be.

And then lastly, we're working on policy development. We have a national prevention agenda that we're working on. Part of this is very similar to what people are working on here. Part of it is a 2020 redesign, not just to update healthy people 2020, but how do you upgrade 2020 so it actually—it's putting the chip in the prevention system that's the 3.0 system? How do we create a

real capacity-building tool kit that really allows us to work cross sectors? We have all these new tools. We have measurement tools, monitoring tools, GIS tools. We have new financing tools. We have health-impact assessments. We have all this stuff that are basically the tool kit that we need to do cross-sector horizontal integration of the community and at the systems level. No one's put it together in a software suite that, basically, communities can use. The third is a prevention innovation network that we're proposing to really link up a lot of the prevention entrepreneurs that are out there and the different initiatives so that we actually drive innovation and bring it to scale. A fourth is a primary-health-enhancement initiative—so, taking what we know needs to happen in primary healthcare and really creating a new platform within the health system to do prevention. To do an early-childhood comprehensive-systems initiative, because we think early childhood is low-hanging fruit where the ROI is very clear, and there's lots of momentum at this point and it's the easiest place to get into the health system and make a big impact and change. And lastly would be an obesity-prevention initiative. We think that this is something that a new administration could come in and actually use to drive a new prevention agenda that wouldn't cost all that much to do and would start to set the nation on a course towards building the kind of 3.0 capacity and infrastructure we need.

Let me stop here and click on one more. I guess it's not going off. But let me stop and thank you for your attention. I'm sorry it went over. And I'm happy to take questions.

For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-INFO, 24/7.