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Better Health, Lower Cost: Can Innovation Save Health Reform
Center for Health Policy/Center for Primary Care and Outcomes Research
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[START RECORDING]

MATT MILLER: All right, I think we have a sufficient level of folks in their seats and others close enough to them that we'll begin our next panel. If there's anyone still out in the hallway, please bring your coffee or drinks or snacks in, and we'll begin our next panel, which is on Imperatives for U.S. Health Reform in the Next Four Years. Obviously a matter of vital interest in the presidential campaign, a vital interest to the folks in this room and of major consequence in terms of the trajectory of the stakes for innovation and healthcare improvement that we've been talking about all day.

To address all these we have a great roster of folks, who are going to come at this from slightly different angles. Let me introduce them briefly again. You can find more material on them in your books at your seats, then we'll again hear about seven or eight minutes of opening perspectives on where the U.S. needs to go over the next several years, a little bit of discussion amongst them and then ample time for Q&A with this group.

But I will say just in teeing it up, one concern I have in terms of where health reform is headed, and folks can think about this or react to it if you want in your remarks or as we discuss afterward, but the financial tumult and the agenda that's going to leave for the next president in terms of financial institutions' reform and regulatory change, as well as the energy and climate agenda that has become so important,

I worry as someone who wants healthcare to happen in a meaningful way systemically in the next four years that the new president's agenda, whoever he is, is going to be so crowded that that's going to place lots of pressures on this agenda in ways that bears some thinking about. But with that is just a thought.

Let me briefly introduce Stirling Bryan, who is nearest to me. He has just become Professor of Health Economics at the University of British Columbia in Vancouver after a previous stint at Birmingham and he has been, well, he didn't invent NICE in the U.K. but he practically invented it. He's studied a lot and has a lot to say about the lessons in terms of how one uses comparative effectiveness in a system of care against the objectives we've been talking about today.

Next to him in the middle is Arnold Milstein, who is the Medical Director of the Pacific Business Group on Health, and the Chief Physician at Mercer Health & Benefits. As many of you know, PBGH is the largest employer of healthcare purchasing coalition in the United States.

And then finally, at the end of the table but never last in our hearts in the healthcare debate is Mark Smith, who is the President and CEO of the California HealthCare Foundation, an independent philanthropy with assets of 800 million, headquartered in Oakland and dedicated to improving the health of the people of California through a range of

excellent programs and innovations. Let me without further ado, first welcome Stirling Bryan to come up and share his thoughts.

STIRLING BRYAN, PH.D.: Thank you very much and it's a pleasure to be back at Stanford. Thank you very much for this invitation and I should say at the outset that it really is wrong to suggest that I had anything to do with establishing NICE, I have got some experience of the Institute but I don't want that message to go out.

So the topic area of my talk is the challenge posed by high cost healthcare interventions and what I am going to focus on is policy decisions by healthcare organizations to reimburse or cover such interventions. Now I think there are some key questions we need to answer at the outset and I'm not going to ask you to raise your hand if you agree or disagree with this comment, but the first question I think we have to address is, are we willing to set limits on available treatments. So is limit setting on the agenda or not?

Now if limit setting is not on the agenda then I'm not sure what I've got to say is going to be of limited interest, I'm afraid. If limit setting is on the agenda then we are in business and for me, the next step is to decide the criteria. So what is the basis upon which we are going to make judgments about setting such limits and I'm going to talk about cost effectiveness analysis as one route.

Now what I am going to recount is basically a story, which is the story of what has been happening in the U.K. over recent years, strictly speaking what has been happening in England over recent years, and if you want to know why it is not U.K., then I can talk to you afterwards, but the vast majority of the British population, of course, live in England, so it is of utmost relevant so what is happening in England. Okay, but I don't want to be quoted on that.

So NICE, and what is NICE and what does it do? NICE is a special health authority. It's part of the National Health Service and it's the body that makes coverage decisions, makes reimbursement decisions in relation to new and existing healthcare technologies in England. Its focus is on selected new and existing healthcare products primarily drugs, but not exclusively drugs. It's entirely funded by the Department of Health, but it's at arm's length from government and I'll come back to that issue towards the end of what I've got to say.

The budget for NICE is some 35 million British Pounds and it has got a staff of about 300 people. NICE essentially determines whether selected technologies are available as part of routine care in the British National Health Service. So is technology appraisal decision a mandatory? It doesn't merely issue advice; it makes policy. It's an obligation that if NICE says yes to a product, that product is available through the

NHS and if NICE says no then it is mandatory that, that technology is not available.

But NICE can say yes to technologies and often does. NICE can say no to technologies and infrequently does. It's a myth that NICE says no on many occasions and there are actually only a handful of occasions when NICE has actually said no entirely to a technology. What NICE is much more commonly in the business of saying is yes, but with restrictions. So it's in the business of trying to identify subgroups of patients for whom the technology represents real value.

The example that is often quoted is the example of patients with Alzheimer's disease. NICE was very heavily criticized for its judgments in relation to donepezil and other similar products for patients with Alzheimer disease. But actually NICE said yes. It said yes to patients with Alzheimer's disease of moderate severity but said no to patients with mild severity.

Now the criteria that NICE uses are in essence cost effectiveness analysis. Cost effectiveness is a key driver of national reimbursement policy in the U.K. through this institute and that's generally accepted. No one really doubts that is the case, there is research evidence both quantitative and qualitative that bears that out but also the Secretary of State's directive when NICE was established in 1999, stated explicitly that the institute was to consider both the broad

balance of clinical benefits and costs. So no one can be in any doubt that that's what NICE has expected to do and that's what it is doing.

So how does this play out politically? NICE has the support of all three major political parties in the U.K. and so there's no realistic prospect that NICE will fold in the near future. So the emphasis is on how can we strengthen the institute? But it's wrong to suggest that there are no critics.

NICE has got lots of critics both in the political world and elsewhere. An example is that the House of Commons Health Select Committee, which published its second inquiry into NICE earlier this year, highlighted concerns most notably around timeliness of guidance. So NICE is criticized for creating a situation of NICE blight, is the term that is used, that it delays the introduction of value technology.

So timeliness is the key issue and that was something that was reiterated by Lord D'Arcy in his review of the NHS this year, that timeliness was the main concern that the Health Minister Lord D'Arcy indicated as well.

So there's a challenge to address those weaknesses. So that's the story about what is happening in the U.K. in terms of this. Let me just give you one or two observations on the U.S. You probably know the situation better than I do. I was

here a couple of years ago and had conversations with a number of people.

It strikes me the cost effectiveness analysis is making some inroads in U.S. healthcare. People cite WellPoint as a high profile example of being explicit about cost effectiveness being used to inform pharmacy policy. Clearly there is much activity targeted in bringing cost effectiveness analysis to the decision making table. So the work of this very session has been central to that and Alan Garber's work, Peter Neumann and his Washington panel from a couple of years ago, and the efforts of Steve Pearson and his ICER initiative.

The Wall Street Journal slides, which will now appear, this was a piece in the Wall Street Journal that came when I was here at Stanford a couple of years ago. This speaks to me about some of the challenges that come from thinking about going down this road in the U.S. setting.

So it sums up that the path is going to be rocky if simply weighing cost against benefits causes an outcry. If you're not allowed to talk about costs in relation to benefits, if that causes an outcry, then there is going to be clearly some challenges ahead. Just as an aside, if economists are held in such low regard as is suggested in this piece, then I think that also raises some concerns.

Now for me, the heterogeneity and complexity of the healthcare system in the U.S. makes me doubt the wisdom of

simply trying to replicate NICE in a U.S. setting. Having said that, I think and I hope that there are some positive lessons and encouragements to be drawn from the U.K. experiment and for me, a key lesson is the importance of independence. NICE is seen as being an independent body but with effective engagement from key stakeholder groups. NICE is at arm's length from both government and industry and has voices from both the public and from patients. There is a patients' involvement unit and a citizens' council.

Just as a testament to the fact that NICE must be doing something right, it gets criticized for being too close to industry on one hand and for being anti-industry on the other. It gets criticized for being dominated by doctors on the one hand and for not listening to clinical opinions on the other. It gets criticized for being a rationing body on one hand and for being too liberal on the other. So if you're getting criticized from all of those quarters then I would argue that it must be doing something right. Okay, thank you.

MATT MILLER: Thanks very much, Stirling. We will hear now from Arnold Milstein.

ARNOLD MILSTEIN, M.D., M.P.H.: Thank you, I'm here to talk briefly about what employers who are leaders in pursuit of more cost effective healthcare are thinking, what their vision is for health tomorrow rather than in 10 years we might achieve

more cost effective care, and then finally what they're doing about it.

In making these comments, I'm in no way representing what the vast majority of employers are doing. I'm talking about the employers who are leading employers with leading edge. These are typically employers who either are in very low margin businesses. So healthcare, cost growth really can make the difference, or employers that have very low wage employees, many of whom can no longer afford their 25-percent of health insurance premiums.

I use this as my illustration for this first slide, a family on the left that have the dubious distinction of being in the front page of New York Times two years ago. Who remembers them? Not too many people.

This is basically one of those American families in the low middle-income part of the distribution. They make \$68,000. He is an air-conditioning technician. He was running out of gas in terms of paying his 25-percent share of his health insurance and his solution, which was certainly far away from finding more cost effective clinical care was to try to pick a thin health insurance policy and they were in the front page of the New York Times because that gamble did not pay off and the family is bankrupt and that house in the background, which was their total savings is now evaporated. They are renting.

First of all, the subject here is health reform so I should comment by saying that in general, the smart employers that are after a 60-mile-per-gallon healthcare system while improving quality, they are generally quite supportive of almost anything that seems possible with respect to federal health reform that might improve cost effectiveness, including but not limited to comparative effectiveness research. But by and large, they are not holding their breath for federal health reform.

Gail referred to voracious appetite. I would say voracious appetite on that part of healthcare providers to sustain incomes. So their feeling is fighting against fraud provider and industries. Health industries supply chain lobbies in Washington is a challenge and what they can best do is demonstrate in the private sector much more cost effective ways of delivering care and then hope that, that will help to influence the federal policy debate.

Lest you think that is crazy, that's exactly what happened with respect to the law passed a couple of years ago by Congress that said, Medicare will no longer pay hospitals for preventable complications. I had the dubious distinction of being the person to incubate that idea in the House Ways and Means Committee and steered it through, and saw very clearly what really sold it in the end was the fact that there was a

private sector health plan, health partners in Minneapolis that was making it work. That was the pivot.

Given that their primary path in pursuing healthcare reform is demonstrating a much more a cost effective care themselves, what are they thinking, what are they seeking to infringe, and how are they encouraging it. I will foreshadow this by saying that they are in general of the Hal Luft school of persuasion that initially until we get good cost comparative effectiveness research, the first place to focus is on clinicians, who burn a lot less insurance fuel and get higher quality. So what is their vision?

Here is what they are thinking. If the Dorsets, that was the name of the family that was on the front page of the New York Times, if you're going to be able to afford coverage for them and a continual inflow of the kind of medical miracles that Brook Byers was describing.

U.S. clinicians and they say the focus on U.S. Clinicians is because the employers have figured out that the way state laws are written is that physicians have, by far and away, the most influence on what care flows and does not flow, and they also happen to have the trust of the patients. Nobody is in a better position to leverage standing in quality in physicians, thus the initial have focus on clinicians.

They have to achieve two jobs and I really have to, credit Andy Groph [misspelled?] for helping me think this

through and this is natural thinking for corporate CEOs and HR managers, and frankly for progressive unions that are also struggling with health benefits costs.

Two things have to happen if we want to help the Dorsets out. First, we would have to vastly speed up translational efficiency in U.S. Healthcare delivery system, meaning the average length of time between a better cheaper way of delivering being discovered and what is universal between the industry.

George Halvorson referred to the fact that currently in U.S. healthcare system that interval is about two decades and George feels, and I agree with him that it would be possible to create an environment around physicians that might enable that to be 24 months rather than 20 years.

What would that enable? That would enable on a one-time basis the lowering of the spend rate by about 35-percent, at least that is what Peter Orszag and national panel of experts estimated to me the average rate of waste in U.S. healthcare system. Spending it if you go away without reducing health and by the way, that's exactly on the mark with the opening chapter of the Institute of Medicine's report on use of clinical reengineering to deliver better, cheaper care of 35-percent. No one knows what the input and number what really is in terms of waste but those are at least two reasonably educated guesses.

How would you do that? What you do is you would go to the Dartmouth areas that are already spending 30-percent less money and achieving very good quality than the other 90-percent of regions. In those areas you would look at the clinical teams that were distinguished on cost and quality even within those low-spending areas.

I think if you actually would run the math on that, the Dartmouth math and the math on opportunity for you to save money and improve quality in low-spending areas like Seattle, you also get to about 35-percent. We would have to speed up translational efficiency.

The same thing you have to do is you have to speed up knowledge turns in healthcare and not just knowledge turns with respective better clinical outcomes, which is what a number of speakers talked about, but also knowledge turns on how to deliver current levels of quality less expensively. That's something that remains graph vastly under attended to and underdeveloped in American healthcare system and I don't envy George Halvorson trying to sell that to his physicians. Obviously a lot easier to sell big reductions in preventable illness, harder to sell intensive focus on doing it less expensively.

As Gail mentioned, if you want to save the Dorsets, you would basically have to discover knowledge turns in efficiency sufficient to offset that two percentage point every year

annual rate by which healthcare spending is outpacing American GDP growth. Is that nuts? Well, why would I turn your jet blue?

Well if anyone would have walked into the United Airlines board about 20 years ago and said, United Airlines are going to come into being and deliver pretty much the acceptable customer service and safety at half the ticket prices, the United Airlines Board would have laughed Herb Kelleher out of the room, they obviously are not laughing now.

The second thing that large employers are doing is that, that is how they are thinking. What is their concept for what might make a difference? Well, they're not experts in healthcare but they hire people like me to go around and fundamentally ask empirical questions like, for healthcare delivery systems that are bringing a lot less of health insurance fuel and getting good quality scores, the upper quadrant, the most favorite part of the upper quadrant, what are they doing differently?

Courtesy of a number of employers and foundations like Marks and RMJ, I have had the chance to scout for such systems, checked with their payers to make sure that the lower health insurance firm is real, and that it is not coming at the expense of quality, and here is what I see.

First of all, what I am seeing is that these kinds of more cost effective production methods are being explicitly applied and primarily concentrated on people with chronic illness for the reasons

that George Halvorson indicated. They're spending 70-percent of their dollars and there are bigger opportunities there.

Secondly, if you look at what is happening here, it is better primary care for chronically ill patients that is accounting in what I found to be a 15-percent to 20-percent lower rate of spending within geographies irrespective of what they're talking about, a high spending geography like Miami or a low spending geography like Seattle.

And here is basically what they are doing. They are basically re-engineering across two frames. First, they are reducing the number of health crises per year because health crises result in expensive hospitalization and ER use. Secondly, they are re-engineering cost per contact. They are basically saying, do you need a doctor to do this or do you need information, or do you need an electronic health record and a medical assist to do this, and continuously re-engineering across both those frames.

Here are the three things that they are doing. I've shown you examples from outside of healthcare that illustrate the concept. They are doing much more salient caring. They're letting the patients know that it really, really matters to them as to whether they stay health trouble.

It's a psychological intervention similar to what Peter described and they're not just presuming or hoping that an interaction with the patient once a month when they come and see the doctor but in a million years, help chronically ill patients do

everything they have to do to stay out of trouble. They are using community health workers, promontories and nurse practitioners over the phone to help people between visits. They are using nice people. That's the Nordstrom reference. They also are focusing on lean production and I have shown you my icon to reduce the cost for contact.

Lastly, they are very aggressive about focusing their specialist referrals on specialists who are practicing very conservative high-quality medicine. This is exactly what Billy Green has been saying about how you pick baseball players. If you want the best ratio of baseball wins to payroll. What are they doing with this information?

First, let me dissect this into leading employers maybe a couple of hundred Fortune 500 companies and then leading-edge employers which are the handful 1-percent of large companies and progressive unions that are interested in mapping and pushing this innovation in 60-miles-per-gallon healthcare faster.

But the leading-edge employers are as Hal suggested, beginning to tier physician networks and/or workout gain-sharing, saving shared arrangements with physicians in order to fundamentally create a market that encourages physician adoption of benchmark care delivery methods both quality and low-spending.

Last, there's this small group of very leading edge employers and unions that are actually trying to figure out what would be a conceivable new knowledge turn in healthcare and they're

actually paying, in this case primary care doctors to test some of these innovative methods to see whether not what appears to be - for example the three illustrations that I gave whether when those are actually translated in other geographies, do they generate the same gain. These leading edge employers cut across all industry types and I've credited a number of industries from much of these leading-edge employers originate. Thank you.

MATT MILLER: Thank you, thanks very much Arnie. We'll hear now from Mark Smith.

MARK SMITH, M.D.: Thanks, good afternoon to everyone. It's a pleasure to be here and thanks to Alan of Stanford for inviting me. I want to start with an observation and then a disclaimer. The observation is that I've heard almost no discussion of patients today. It is as if this system that we are talking about is acting on inanimate objects who either provided or not provided care, who are treated in one system or another. It is like we are working on widgets or hamsters and it's an interesting observation not only because I think it has to do with how we drive innovation, but with the mindset of the incumbents in this industry. We are all of us incumbents. That's how we got invited.

I would point out that you've heard many times today the word reimbursement. Look up reimbursement in the dictionary. It means being paid back for expenses that you've already paid. There is a sense of entitlement to the word reimbursement. You do not

reimburse your barber, you pay him. You do not reimburse your lawyer, you pay her.

And yet all of us in the doctor and hospital business, it is so deeply ingrained in our outlook on this system that we talk about our payment as reimbursement. So I argue that this professional domination, this professional mindset is really quite extraordinary and quite constipating in healthcare and why I want to talk about innovation.

The question for this conference is "Can Innovation Save Healthcare Reform"? That, of course, raises the question what is healthcare reform. Healthcare reform is basically whatever you want it be. If you're a hospital, healthcare reform means getting paid more and faster. If you're a doctor, healthcare reform means getting paid more and without any restrictions on what you do. But in the public domain, healthcare reform means and the foreseeable future is likely to mean extending insurance coverage to people who do not have coverage to buy them basically into the current system at the current system's price to see the current providers at their current price reform.

That's what politicians mean by healthcare reform. Often the words comprehensive and fundamental are attached which means we're going to do not only what you want to do but we're going to do what I want to do too. That is what fundamental means.

The reason that this is the content of healthcare reform in the public space is because this is one of the few things that

politicians can promise without immediately getting into trouble with one of the constituencies represented in this room. That is to say, we'd like to preserve the power relationships in the income streams as much as possible without these share shifts that Brook talked about. Only we're going to promise people that we're going to give them something at the same time.

I would argue that much of our current insurance systems and some of you have heard me say before, what we called insurance is actually not insurance. It's insurance, it's prepayment, it's discounts, and it's asset transfer. That traditional way of assuring people access has now become so expensive that our system is unraveling and our foundation is desperately concerned with innervating in the delivery system such that the benefits of American medicine can be brought to people who do not have such benefits now.

It's increasingly dysfunctional actually to talk about people in binary fashion as insured or uninsured because there are people with insurance who are going bankrupt. There are people who are insured by public payers, Medco was the most notorious, for which insurance is more or less a hunting license to find a provider that will accept that form of repayment. On the other hand, there are people who are uninsured who are now able to access certain services for less out of pocket than people who are insured.

It is not clear to me why we pay Aetna \$20 so they can pay Medco \$15 so they can pay CBS \$10, so CBS can collect their \$5 copay from us for something we could have just bought at Wal-Mart for \$4 in

the first place. That's innovation, actually. Yet our debate in the public space is how can we get everybody into these traditional insurance products that cram together these different lines of business at an increasingly unaffordable rate.

Let's talk about affordability. If you need to hear anything else that was said by previous speakers, particularly Peter and Gail and others, it is that everybody who is paying says our system is unsustainable because they are paying too much. Everybody who is getting paid says our system is unsustainable because they are not getting paid enough. I submit to you there is no mathematical answer to that problem. There is no payment rate. There is no slider along the linear scale of payment which is generally how payers try to adjust outflows that will satisfy both constituencies.

The answer to that has to be reorganization, has to be new business models, has to be in fact innovation. There are industries and Arnie has made reference to some that actually cost less to do things than they did 20 years ago. For those of you who would like to blame technology for our healthcare costs, Telecom has a fair amount of technology in it.

Retail has a fair amount of technology in it. The problem is not the technology, the problem is the way in which we diffuse price and adopt that technology or not. And I would argue that the answer to the affordability of healthcare for people in this country has to be to some extent the reorganization of the delivery system for which all of these instruments are paying.

When you hear people talking about copays, deductibles, taxes, employer contributions, and fair share, they are desperately trying to find a way to finance whatever is going on in this black box of healthcare and I would ask you to be really revolutionary and think inside the box. Some of the things that you've heard from Arnie and others, about trying to figure out what it is we do inside that box of healthcare have to do with what I would argue are the three places in which we need to direct the stakes in the ground for innovation in the next four years.

I'm not so unrealistic as to think that we're going to get out of this situation in four years but I would argue first that we've got to think about innovation in the biomedical sphere that we have heard from Brook and others, and I would not discount the possibility that there really are breakthroughs that can dramatically change the way in which medicine is delivered and the cost thereof.

If you think, actually, ironically about our obesity epidemic, it is an ironic and unfortunate by-product of the success of American capitalists, that calories are now so cheap that we can give them away. For most of humankind, we've spent an awful long struggle trying to figure out how to produce enough calories to survive and yet the genius of American capitalism, I'm not suggesting there are not downsides. I have read omnivores dilemma too. But the genius of American capitalism is that the crisis of food that one might have predicted in 1920 has actually been innovated out of existence.

I would not discount the capacity for biomedical innovation to dramatically change our patterns of care and the cost that results from it which is why I think it's appropriate to always worry about stifling those innovations. It is also appropriate to talk about narrowing them towards the places they can have dramatic and major impact and having them accompanied by information so they don't get adopted willy-nilly beyond their areas of application.

Second, I think we need to think about innovation in the delivery system with a small "d", retail clinics, onsite clinics, diabetes-oriented outpatient care, and telephone medicine. In most ways, we now do for ourselves many things that would have been thought impossible 20 years ago.

Most of you who came here now bank for yourselves, make your own travel arrangements, do all sorts of things that the professionals in those field 20 years ago would have told you was impossible and dangerous. Every travel agent would have said, God forbid if you make your own plane reservations, you will wind up on a different continent.

So my sense is, if I were king, I would have a Manhattan project to move diagnosis and treatment down the skill level, to let nurses do what doctors are doing, to let *text* to what nurses are doing, to let patients do what *text* are doing. In fact, to achieve cost savings the way every other industry achieves cost savings, developing tools that allow less skilled people to do the work of formally more skilled people.

So I think one of the strategic areas is to move as much as we can out of the professional domain and stop worrying about how we can pay doctors the wages doctors need to do what is no longer doctor's work.

Lastly, I think we need innovation delivery system with a capital "D", by which I mean, that people whom we are paying, the organizations, the providers, the entities that are providing care. For much of the payment reform that Gayle and others have reasonably talked about. The fact of the matter is, if there were payments stream out there today to provide that coordinated, comprehensive, longitudinal, integrated care, there is nobody to pick up that money off the stuff.

And so the promotion of integration between hospitals and doctors and the promotion new entrants to this field has to be part of our delivery innovation. Lastly, I'd ask those of you who are venture capitalists to think with us about how we can apply innovations to the least well served as well as the most well served, in part because as Clayton Christensen said, you often want to compete with non-consumption.

And so rather than going up against all the incumbents in this sweet spot of their income streams, let's pick of some people who are not being well served now and figure out how to do so innovatively and efficiently, and see how those innovations might penetrate the rest of the delivery system. Thanks very much.

MATT MILLER: Thanks very much Mark. As usual, we've got more stuff on the table than we can possibly do full justice to. But we're trying to do as much as we can in the time that we have.

Stirling, let me start with you. Based on your observation and study of NICE, one of the things that, when you talked about limits setting as an essential factor, if we're going to make any progress on this, and I'm going to stipulate on behalf of everyone in the room that at least people on this room are comfortable with the idea that we're going to have to set some limits on beneficial care somewhere if we're going to change the cost curves.

Talk about the process and the way NICE works, because I think as I understand it, although obviously there has been media backlash on some issues. Is it right or to be effective, does this need to be a more elite process that somehow happens in a way that is a little untransparent for it to actually stick politically or by contrast, to do this do we need more fully transparent publicly debated things like Oregon tried some years ago about where are you to draw the line. What would your counsel be to folks thinking about this in the years ahead as to which is likelier to be effective?

STIRLING BRYAN, PH.D.: Okay, it is an interesting question in the context of developments at NICE. To date, NICE has made these decisions behind closed doors. So it hasn't been a transparent in public process and I think it recognizes that that was a mistake. And actually, this month marks the start of public attendance at the meetings where the positions are being taken.

So the coverage decisions are being taken at the appraisal committee meetings, and those meetings now are open to the general public. And NICE has recognized that actually, if you want to get true engagements in this process from key stakeholders, and key stakeholders are the public, the patients, as well as government industry and other groups, then you need to be open. And I think that's right.

MATT MILLER: And are we ready for these debates? Is the broad public ready for these debates based on your experience?

STIRLING BRYAN, PH.D.: Well, I can't talk for the U.S. public. I think the UK public is now quite familiar with these debates. I mean, this has been happening, NICE has been in existence since 1999 and there has been lots of media generated, negative publicity that has caused enormous amounts of debates. And we are moving towards the situation where that's now recognized. Limit setting is something we have to do. Now whether the U.S. public is ready for that, I'm not sure.

MATT MILLER: Arnie, let me bring you in. You talked in a very constructive way about the ways that employers can try and pilot innovations that model what broader system may be able to take on. There are some who say, and I noticed there are some folks from the committee for economic development in the room here, of business-led think tank that has in its most recent healthcare analysis said we need to move beyond the employer-based system if we're going to tackle the problems ultimately that the systems needs to address.

How do you think about the employer role in the period ahead? What are some of the essential pros and cons, you think, in terms of preserving employer centrality which is kind of unique in our system, versus the idea by some that we need to really evolve beyond that?

ARNOLD MILSTEIN, M.D., M.P.H.: I think it's politically very difficult to take away employer autonomy. Many employers believe that health benefits are a critical element in productivity of their employees and motivating them. And I think it's very difficult to take that way.

For better or for worse, many employers are facing quickly in the low-margin businesses or with low-income employees are beginning to throw in the towel, either directly or by watching passively as 75-percent of their workforce no longer take-up the health benefits that they're being offered because they cannot afford the 25-percent share.

So I think over time we already have a national defective policy of gradual employer attrition. But I do think it's healthy to have at the margin some exemplary large employers that are much less afraid of the provider community than the U.S. Congress is actively encouraging and testing, physician leadership in discovering and adopting better and cheaper ways of delivering care.

MATT MILLER: Thanks for that. Now, Mark there is a lot on what you said we could explore. Let me ask you in terms of your checklist of the high priority potential innovative areas the

deskilling of healthcare. The ability to move down into less expensive levels, what ought to be a component of what we do inside the box to change. Obviously there are interest groups that fight for nurse staffing ratios; you have the whole medical-industrial complex inside that box that's I guess a resistor to the deskilling or re-skilling. What are ways to start that conversation that political leaders and leaders can actually make some progress on and survive?

MARK SMITH, M.D.: I think it has to do with competing with non-consumption. If you use Arnie's analogy of Jet Blue or Southwest is probably better, they didn't not start with business class travel from LAX to JFK. So the foundation for instance has funded a pilot project doing diabetic retinopathy screening in the central valley of California remotely from the school of optometry in Berkeley. This is not a big cash cow for ophthalmologists and they don't object.

I don't know that I would start with cataract surgery. Some really, I think, we've got to look for places where there is a strong moral case that the current system has not provided care, and so all sorts of areas that have to do with state licensure, telemedicine and its application I think, they have the strong moral case if there are not neurologists in this town, then neurologists have a hard time saying well you should not be able to do this by telemedicine. So I would look for those places where there is non-consumption. Where the incumbents are not that worried because it is an unattractive market

or population. I think that's often where you can get an opening wedge.

MATT MILLER: That is very interesting thought. Let me, because I know folks felt we did not have enough time for Q and A in the last session, let me turn now to our audience to begin asking questions. I know we've got mikes that can go to people and if we are short of questions, I've got a list of them to fill them on, but I want to make sure this group gets a chance to really pepper our experts with their thoughts. This gentleman over here? Do we have a microphone on the other side of the room too if we need it?

LEIGHTON REED: Leighton Reed from Alloy Ventures. I have questions for each of you but I'll just ask one particularly about the NICE experience. I very much appreciated that talk. I'm concerned about the perverse effects of focusing the full force of those economists crunching numbers on only innovation and I'm quite interested to hear that part of NICE's mandate is to look at existing technology.

If we really focus all of our comparative effect in this work on the new stuff, we're really shifting the relative burden, whereas we have a lot of very expensive sacred cows. It represents, by far, most of where we are spending our money. How does NICE decide which of the old stuff to focus that attention on and how do you get that balance right? There are also some important political issues there. There you really do have incumbents instead of the new kids?

STIRLING BRYAN: It's a really important question and in fact, one of the criticisms is that I didn't mention that NICE received from the House of Commons health select committee earlier this year, which is exactly that's on the focus of its work program being too much on new technologies; and in fact it has had an increase in its budget in order to expand its horizons to more adequately, or at least to begin the process of looking at existing technologies.

And so, it is worth saying that the agenda that NICE has is set by politicians. So at the moment, it looks at what politicians tell it to look at. It does that independently. But it's not independent in terms of choosing the topics that it looks at, at the moment. But again there are movements on that. I think these investments on identifying existing technologies, existing practice that we should be moving away from, is central to such a body.

MATT MILLER: I saw this gentleman here.

PHIL PIZZA: Phil Pizza from Stanford Ivy, follow-up comment to Mark's comment earlier regarding deskilling. And I think it's notable and maybe a bit ironic that the Association of Academic Health Centers and Medical Schools, AAMC, has been advocating that there can actually be a 30-percent increase in the number of medical school classes. And this is based of course on the assumption that there need to be more doctors, yet without any prescription for how they're going to be deployed or employed over the future.

And this I think is just one more example of allopathic medicine is doing it, this is being followed of course by osteopathic medicine and for profits, really flooding the system with a group that I think is less clearly necessary than those who might really help to make our healthcare system work more effectively and in some degree, is really a reflection of what happens when you do not have a healthcare system, and all of these free entities really begin moving in different directions.

MATT MILLER: Any reaction? Well sir, I see this gentleman here.

JOE MINARIK: Hi, I am Joe Minarik from the Committee for Economic Development.

MATT MILLER: Is this microphone on or can we -

JOE MINARIK: I think I can hear it. Let me talk a little louder. Okay, I want to push Arnie a little bit further on the question he got from Matt. Arnie I think I agree with absolutely everything you said in answer to the question about what the role of the employers is today.

In the absence of leadership, the employer is trying to get the industry to work harder, to try to become more efficient. God bless you, you have to do it, but do you really think that those efforts can get you to the end of the rainbow in terms of healthcare system with which we would be satisfied? I don't see that getting an expansion of coverage.

It's very hard to think of employers having enough leverage over the entire healthcare industry coast to coast, to actually work the entire system towards more efficiency. So, for all the merit in what employers are doing, don't you think that we have to eventually go to a public policy solution to get us to the system that we need?

ARNOLD MILSTEIN, M.D., M.P.H.: Yes. [Laughter]

MATT MILLER: I see this lady over here.

MISSY: Hi, I'm Missy from Google, Google Health and this is for Mark and Arnie specifically. So I really appreciate Mark you starting off with the observation that we're not talking about the patient, and obviously at Google we're thinking about users and patients everyday and we have so much to learn.

But I want you to comment about some of the trends that we're seeing around concierge medicine or direct to bedside diagnostic tests where you're able to get results in a minute, but how is it that we can start thinking about disintermediating the supply chain of the Medco \$10 and then the next person that is getting a cut. Because I too believe that the employer-sponsored health insurance is not the answer anymore.

And not to push Arnie on this, but I'm just curious because you are seeing models today where the consumer, the patient is paying \$1500 month to have the kind of customer service they want from a doctor, and certainly that leaves the safety net out, but I'm just curious as to if you have looked at studies like that and what your take is.

ARNOLD MILSTEIN, M.D., M.P.H.: I'll address just the concierge question and say that in some ways the innovations that I share with you and much better management of chronically ill patients did have a number of features of concierge medicine. But I think what distinguishes them as a basis of hope, about while we are waiting for more cost effective technologies to come out of the pipeline, speeding up our replication of today's benchmark practices.

The thing that I think is a basis for optimism is the application of such more intensive management of chronic illness. But if you look at what studies have been done at concierge medicine today, it is unfortunately predominantly focused on the wealthy worried well, not only the subset of the population that would benefit the most.

So I am a great believer in taking our sickest patients and doing a lot more to help them stay out of trouble, but I'm not impressed that the concierge solution will address the problems of the Dorsets.

MATT MILLER: Mark do you have a followup?

MARK SMITH, M.D.: Two comments. One I think, the doctors who are developing concierge practice, they don't control the reimbursement part. I think what they're doing, perhaps is somewhat misguided way, but understandably, is building for themselves a kind of a new capitated environments so they can operate in the way they'd like to operate it and makes perfect sense. So you can criticize it, but I understand it.

Second thing is I want to point out when someone asked about patient records for full disclosure, I surfed on Google's health advisory clinic. What is so important about Google and Microsoft and others is, the patient generated demand for patient medical record.

Last May, there was a conference in Fort Lauderdale called Towards the Electronic Patient Record, the TEPR Conference; it was the 24th annual conference, so this is a true story. This is not a new idea upon the chattering classes and become the policy made them. What is interesting is now, the tools converged, you can't do something until things exist. But now the tools are going to be able to have this truly driven by patients, and that I think is the most exciting to hear.

MATT MILLER: Other questions? Go ahead, sure.

MALE SPEAKER: George talked about that interim electronic clinical information is not that useful for the clinicians. What is really useful is when that information gets translated in the active decision support for doctors and nurses in the care team. So they know what has to happen next and what is not happening that should be happening.

I think there's a very analogous at this point are the harvest of opportunity on the patient's side of managing one's illness. And that's to not simply say, well here's a personal health record, is it not really interesting to see what money you have spent and your services and your illnesses? I think that will pale in its

value to the point of which we begin to introduce electronic clinical decisions for patients, so that they know day to day what the opportunities are, either to get a different treatment, a different doctor, a different hospital, different self management program in ways that will reduce their out of pocket spending and improve their probability of living another year.

MATT MILLER: Gentleman here?

LENNY MENDOZA: Lenny Mendoza [misspelled?] from McKenzie, a question for Mark. The challenge that you said about innovating for the underserved, there are a lot of innovations that are happening in various places around the country and around the world that have proven to be cost effective, both within the system as well as outside the system, whether that's retail clinics or \$4 prescriptions. It's a different question about the innovation beginning than how do we scale it? Do you have thoughts on what we can do to more rapidly scale what works?

MARK SMITH, M.D.: Well this I think is worth, we all would agree, policy changes are necessary and I think part of it starts with saying, at least for us, the answer is not going to be that we will find some poor defenseless payer who will agree to anti-up to buy everybody into the system. And ironically, many of the people who are advocates, who are honest and passionate, advocates for the underserved are so focused on insuring the uninsured. That is the only thing you can hear them say.

So when you talk about these other stuff it is like they do not want to hear that it is all about insuring the insured. I think there is one wild card here and I was thinking about was Brook was saying that, it is very common to hear people talk about indicting our country for not being socially responsible, we are the only western country blah, blah, blah, blah, blah. But the one time when there was a technology that was life and death, it was clearly immediate life and death that if you had money you got it and if you didn't have money you didn't, we federalized it.

When dialysis happened, real transplantation happened; we were unable to face the consequences of life and death on the basis of money. And so one of the wild card kickers, I think we ought to have in our minds from a policy standpoint is what happens when this combination of diagnostic and therapeutic personalization that cost 80 grand, happens and people are confronted with you live and you die because you don't have insurance, then I think this question of the uninsured or not having a system takes on a different urgency.

And I wouldn't bet on the outcome because we're fond of beating ourselves up for saying we're not as organized as they are in England, but the one time people had to actually step up to that question, they had a different response.

MATT MILLER: Can we spend a nanosecond on the consumer because I have not heard a lot about that except Mark, you touched on it with the Wal-Mart \$4 generic as opposed to this whole system, but my favorite recent factor in healthcare I have learned is Singapore.

Singapore spends 5-percent of GDP on healthcare, or thereabouts versus the 16 we have, the 10 to 11 other advanced nations.

And look, obviously lots of differences culturally, it's a smaller place, there's a benevolent dictator it has been for several decades, but it is still an astounding fact. And apparently, one other difference is, is that something like half the money in the system comes out of pocket. Just brief words, there is no time for the whole consumer healthcare debate, but is there something in that that has to play a role in how we engineer what we are doing?

MARK SMITH, M.D.: I think a lot of the statistics we use and the options we don't take into account the huge amounts of money that people, including low-income people, including low-income uninsured people pay on either what we would recognize as healthcare or copper bracelets, herbal remedies, natural products that are for them a substitute for things that follow in the formal insurance system. So, I think there's actually a lot more money being spent out of pocket in peoples' lives than we often acknowledge.

MATT MILLER: Any other brief thoughts on that?

ARNOLD MILSTEIN, M.D., M.P.H.: Sure, I mean, [inaudible,] in the paper that was cited earlier, specified some of the challenges in expecting consumers, average consumers of average intelligence to rationalize healthcare decision making. I think there are probably opportunities for directional movement that would be constructive but you have to make it a lot easier for people to know clearly what the better choice was about with respect to how much they would have to

spend and their impact on longevity and quality of life. Something analogous to a Jiminy Cricket on your shoulder, curing you when there was an opportunity to make a change in treatment or provider that would do you a lot of good.

MATT MILLER: I think we've got time probably for one last question, do we have? I see a lady right here, can we get a microphone over to her?

ANNE COPSIL: Anne Copsil [misspelled?], a product development executive. What role do you think outsourcing will play in lowering healthcare cost? Other industries have ship things overseas and I used to think, well you got to have the patient that didn't work, but I think I have read recently that an insurance company was pilot testing in sending patients that they would go about their surgery somewhere else. Is that much of a solution?

ARNOLD MILSTEIN, M.D., M.P.H.: Mark and I wrote two papers on this and I think in the near term it's not going to represent much of an opportunity for savings, let alone quality gain. If you look, when doctors and actuaries take a look at current American health insurance spending instead if you were to take every non-urgent expensive surgery for which it might make sense to, instead of ICU enrollee including paying for their spouse to get on an airplane, stay on a nice hotel to actually want to go to a place they have perhaps never heard of before and get care from someone whose name they can't pronounce, it maybe maximum, a one time, one to two percentage point opportunity to reduce American healthcare spending,

now as telemedicine advances, and if we're to relax our licensing laws so we would allow physicians from other countries to begin via televideo to deliver chronic illness care, that would be a different story.

But for the time being, with current medical licensing laws substantially restricting the ability of offshore proprietors to do anything more than entice people to fly overseas for a few expensive things, it is not much of a solution.

MARK SMITH, M.D.: I think the big opportunity is back off these functions and some of this is clear people already know but I am familiar with at least one company that does not have to a fair amount of medical record review quality stuff. Anything that doesn't require a state license and knowledge of the local culture can now be exported to an English-speaking country and I think you'll see more and more of that.

MATT MILLER: So we have got about 30 seconds left, so let us just boil it down in the last thoughts because this is about the next four years. Let me ask each of you just about 10 seconds each, if President Palin comes to you and says [laughter], I just wanted to see what that sounded like, and says what is the one thing I should focus on in the next four years, how would you put it? Mark Smith.

MARK SMITH, M.D.: I would align federal research, vital medical, and health services research priorities to try to attack those areas of greatest opportunity to reduce uncertainty and decrease cost.

MATT MILLER: Arnie?

ARNOLD MILSTEIN, M.D., M.P.H.: Medicare should begin incentivising primary care doctors by again sharing opportunities to reduce all the Medicare spending and improve quality of both.

MATT MILLER: And Stirling, since she is seeking foreign advice as well.

STIRLING BRYAN, PH.D.: I think it's about generating high quality evidence, where we just don't have it at the moment and being aware of the fact that there is so much service briefing provided where we don't have assigned space, so that would be my advice.

MATT MILLER: Please join me in thanking our wonderful panel for this terrific conversation. There will now be about 14-minute break and we will resume promptly with our final plenary panel at 4:45.

[BREAK]

Alright welcome back. Hopefully people have had the caffeine boost they need; it's a long day of healthcare debate, but we're not done yet. We have a very exciting hour before we solve the rest of the world's problems and we're obviously shifting gears here a little bit.

This panel is sustaining innovation in the developing world, so now we have been talking largely about the United States but obviously the need to innovate in terms of better healthcare at lower cost is arguably an even more pressing concern for that huge portion of humanity that lives in the developing world.

Obviously the challenge is in the industrialized nations by comparison seem like good problems to have. How do we manage the affordability of an aging population with all these remarkable new healthcare innovations coming online across the developing world?

So many of the basics that we take for granted are simply missing, and as our panel will no doubt explain in detail the barriers to making progress against this, are multiple, and complex and hard including, among other things, just an entirely different level of need for public, private cooperation, a challenge in any context but particularly challenging in the developing context as we'll hear.

How can the innovation process work in this environment and deliver what we all know we can. Can capitalism and healthcare work in this setting given so many constraints? And what ways must capitalism potentially bend if we are to achieve the goals that the many of us share for the developing world. How should we weigh questions of justice in this mix, because our evolving approach obviously is going to implicate lots of choices and trade offs that have a serious effect on some of the most unlucky people on the planet?

All of these we're going to explore from several angles of vision with again another terrific panel. You know the drill. Let me introduce them briefly. Each will offer about seven or eight minutes of opening angles of vision in to these set of questions, then we will have discussion and obviously leave time for Q&A.

I will introduce them all just quickly, you've got the materials for more detail, is John C. Martin from my immediate left, and your left as you are looking, Dr. Martin joined Gilead Sciences in 1990, he's currently chairman of the Gilead Sciences board of directors and CEO. He served as president and chief executive officer for about 10 years before then.

Prior to Gilead, Dr. Martin held leadership positions in the Anti-viral Chemistry Division at Bristol-Myers Squibb, and also served with Syntex Corporation for a number of years before that. He is also on numerous advisory boards and councils dealing with all these questions, so welcome to you John Martin.

Next to John is Melinda Moree. Melinda is currently working as a consultant in global health. She is a senior partner with the center for global development on a project to characterize the markets for drugs and vaccines in middle income countries. She recently led this supplier consultation project for the Gavi managed advanced market commitment, and until early 2007 was the director of the malaria vaccine initiative, with which I am sure you're all familiar. So a great welcome to you Melinda.

And then last but of course not least is Paul Wise, who is the Richard Behrman, Professor in Child Health at Stanford and a core faculty member at the centers that we are toasting today here at Stanford. He is a health policy and outcomes researcher whose work is focused on children's health policy, the interaction of genetics and the environment and shaping child and maternal health and the impact

of medical technology on disparities in health outcomes. Welcome to you all and let us begin our session with John Martin.

JOHN MARTIN, PH.D.: Okay, thank you, and congratulations Alan, to you and your colleagues on the 10th anniversary, also for putting together such a successful program. So I'll be using our experience with HIV to talk a little bit about some global health issues, first by way of background.

Gilead is a property that is located halfway between Stanford and San Francisco Foster City and in our 21 years of existence, we have come up with 11 drugs which have a track record of really good productivity, but we are also very proud of our innovation in other areas and I think as a company, we're probably a little bit different from some of the older pharmaceutical companies in that we have those types of innovations.

First, I'd like to talk about two types of medical need. One type into medical need is what we tend to think about our industry, and you think about our industry is the discovery and development of drugs that treat diseases better, or treat diseases that haven't been addressed before.

The other type of medical need is access to these wonderful new products that our industry is responsible for and that's the place where we have been criticized in the past, and maybe to some extent today because of not enough focus on that.

David Gellar here from CHI is sitting at this table, I think describes us the best because the first type of unmet need, the

new drug one of the scientific contract we have the public. That is, that we innovate discovery drugs. The public recognizes IP and allows a limited period of exclusivity and the profits of which go back into the discovery of additional new agents.

The second contract, he referred to as the social contract. And that's the contract that the public expects of us, although it's not often articulated but it's there, at least as a motional feeling that people want to obviously have access to the products that are the result of our innovations.

So we've been at and in the forefront of global health primarily because of our work on HIV-AIDS. I don't know how many of you know that much about the abolition of drugs for AIDS but it's really remarkable. AIDS patients need to take three separate drugs to fully control the virus and prevent resistance development and yet there were not three drugs available until 12 years ago.

And so patients will take a monotherapy or eventually combination therapy of only two drugs, failing rapidly and running out of treatment options, and that's why AIDS was a rapidly fatal disease. In 1996, that has changed. There were enough products approved by the FDA so that the disease could be treated of combination therapy, but it's complicated.

Patients had to take a lot of pills at multiple times per day, and the pills had side effects. If the patient takes the pills they feel better, but the drugs maybe make them feel sick, makes it

hard for an individual to take all their pills day-in and day-out for years. As a result, patients were still failing therapy.

It has been demonstrated if a patient doesn't take 95-percent of their medications during the course of a year, during that year they have a 50-percent chance of developing resistance and running out of treatment options. So our work has been to come up with drugs that are better tolerated and simpler to take. And we have two of the three drugs.

And one of things, this is was a particular innovation when you think about for industry, we partnered with another pharmaceutical company, Bristol-Myers, that kind of third drug that matched ours, with all three in a single pill so it could be taken once a day. A patient can't miss part of their medication and they either take all or none.

Before 12 years ago, single pill is what lead to resistance for single drugs. So this has been an opportunity to provide better care or people into this. And so we failed the first contract, the scientific contract and has really converted AIDS into a reasonably well-managed disease.

The second part of the contract, access around the world. We even have issues at the United States where that can be addressed by providing free drugs through access programs and reduce the barriers to that so if a patient doesn't have insurance or ability to pay, the doctor can very quickly give them a card that allows them to

go to a pharmacy immediately after that appointment to get their pills.

In the rest of the world, we embarked on a program of period pricing. This is an innovative program. For one reason, it is innovative in the full price markets, U.S., Europe, Australia, Japan, and Canada, we have consistent pricing. That is price within fairly tight end; it's really hard to explain to the American public why the drugs should be cheaper in Canada for instance.

So that's the top priced here is that, then middle income countries we divided in the upper middle income and lower middle income. And they pay different prices. An example of an upper middle income would be Brazil; an example of the lower middle income would be Thailand. Not just the economic differences and it is great there as the prevalence deference where the burden of HIV is much greater in Thailand than Brazil.

And then we have no profit markets which are about 100 countries around the world where the product is provided at no profit. It is kind of unique to think of what other industry provides their product for sale at no profit in those markets. But the drug category is unique and that is really the right thing to do in this case. But then we found that the uptake of our products, even though, just by way of example, 70-percent of U.S. patients treated for HIV take the Gilead product.

In the rest of the world where the burden of disease is much higher, millions and millions of people are in fact, the tens of

millions and up to maybe two million now are being treated. We have a much smaller market share. And so somehow, the economics were not working. So we embarked under a grand experiment is really gray gold in scrutiny is here in the audience, to see if we can provide greater incentives and competition.

So what we did was license the manufacturing technology to some Indian generics, teach them how to manufacture a drug and let them compete without restriction in this market so that there will be economic competition. And so far of that, we thought in theory it should work but we're not sure that economics would actually prevail under these types of circumstances. But so far it seems to be working quite well.

We've gone from less than 50,000 patients on our lead products about a year and a half ago to several hundred thousand now. So this model seems to be working, where competition among various companies that can make a profit, the generic drug industry can make a profit in these markets is competing to get patients on drug, and so ultimately the patients will benefit. So this is a pretty innovative approach.

There are still a lot of other barriers, like we know about the healthcare systems, but you may not know that regulatory approvals take much longer in many of these countries than it does in the United States and Europe for instance. Regulatory approval in the United States is 6 to 10 months but it can be years in countries in Sub-Saharan Africa.

There is another thing that is kind of really remarkable and we're thinking about having the cheapest possible drugs out there. Many countries around the world still mark up the price of drugs by 50-percent, putting an important duty on them, thus further restricting the ability of a said amount of dollars to provide drug probably across the board.

However, what has happened over the last few years has been extremely positive. The number of people getting access to medication has been going pretty dramatically, and it is through the cooperation of industry groups, government organizations, NGOs, and of course academic institutions. Thank you very much.

MATT MILLER: Thanks very much, John. We'll hear now from Melinda Moree.

MELINDA MOREE, PH.D.: Good afternoon and congratulations to Alan for the 10 year anniversary and to Cathy for pulling off this quite interesting conference. I really enjoy the time here today. You know AIDS kills over three million people; TB kills over two million people, and malaria almost a million people a year. When we kind of hear those numbers and it's like how do you make any sense of it. So in my own limited way of trying to make sense of it, I think about analogous systems.

So my son is in elementary school, there are about 500 kids in his school. And if kids in his school died at the same rate, the kids in Sub-Saharan, Africa die over the course of the time before they graduate from 5th grade, 71 of those kids would die. And there

would be a funeral about every four weeks or so. It's something that to me is just unimaginable. That would never happen here. And I guess I think that anything that is unimaginable here shouldn't be acceptable anywhere else. And that's the reason that I'm going to talk to you today about some of the things that are being done.

The public sector and non-profit sector are up until maybe 10 years ago, stood very firmly on that moral high ground of need. And we talked over and over about how many people need access to new drugs, vaccines, and interventions. And so we stood on moral high ground and shook fingers at industry in particular, and said you ought to do something, you should do something.

And I think the industry over time has been very patient and sort of explain back that they're actually an industry that is run on demand, not need. And that we look for demand for products, it's really not there. And so they were kind of point blank, I don't what you expect us to do with this.

So in the last 10 years, I think there's really been a revolution. And the revolution is one of culture and it's one where the private sector and the public sector are sure to come together and recognize the relative strengths and weakness of each sector and what can be done instead of sort of pointing at what should be done.

So one of the ways to try and bridge this innovation gap, where you do not have market forces that are driving this translation from kind of the early discovery in to products was to find two different ways of doing it. And I think this was really coming

together if everyone agreed that there is just not enough money in the system to make this all work. So the existing products, cheap products, not being purchased and used in developing countries.

So there were a couple of things that were done, put purchase ones into place so the global fund for AIDS, TB and malaria has now committed \$11 billion in 136 countries to buy drugs and other interventions for malaria, TB and HIV, and also to support the health systems that will deliver these.

There is another one, the global lines for vaccines and immunizations which now has raised \$3 billion to go through the purchase of vaccines and surprise, surprise, when there's money, the uptake of these vaccines changes dramatically. So now, in most countries we have introduced hepatitis B vaccine in the short period of time.

But the other part that I'm here to talk about today is on the product development side of things and this big gap where you don't have market forces driving some kind of bridge between these. And what was developed at that time was this product development partnership they sometimes called the public-private partnerships but trying to say this is really about making new products; drugs, vaccines, diagnostics for the developing world.

So the history of this is in 1997, the Rockefeller Foundation funded the first of these, called the international AIDS vaccine initiative which is still going strong. And the idea was to fund this organization to try and step into the gap between industry

and good academic ideas and drive products forward into clinical testing.

On that followed the program that I ran, the malaria vaccine initiative, others for malaria drugs, TB drugs and vaccines, another one for diagnostics and several others, but there were about 10 that are sort of well-funded and what I would call robust programs. The characteristics of these are that they are either non-profits or foundations; they try as much as possible, although some would argue to run by the industrial style of management. They create infrastructure to help everyone move their products forward.

So there's a lot of infrastructure building that has happened in Africa and Asia about the ability to do clinical trials of promising candidates that really, five years ago didn't exist. And these are regulatory trials where you have got to have certain levels and standards on your data and a lot of these countries are stepping and meeting that. So there is a whole new environment now for the infrastructure fresh testing these products in the developing world.

One of the other parts which we've never found a good word for is, we call it creating and enabling environment. And essentially trying to get the public sector aligned in creating an environment that is conducive to moving these products forward, testing them, getting a license, financing around them, that really, largely, the private sectors have looked, this isn't our role. And I think, rightly so.

And so this part of developing partnerships have tried to step in to organize the public sector. It was always one of the funny things of people with when we first started and be, and they would say, oh you are going to try and get the private sector organized and it is like, no actually we are going to organize the public sector, which always tends to be a bit harder.

Okay, it is a lot harder actually. So what are the results of this? I should say that I was just trying to account up how much money has gone in. And just for HIV vaccines, TB drugs and vaccines, malaria drugs and vaccines, in the past three years, there has been \$2 billion worth of investment in this. Some these organizations are much more well-funded than biotech companies and have a lot of capital behind them.

So the results of these. First of all, I just would like to say that is hard to evaluate the results because there is no evaluation framework. In some ways this is similar to industry trying to make products, but in other ways it's very dissimilar. I remember one time bringing a group of CEOs to give us advice and it took the first half of the day for them to go like, well you just should not work on this and we're trying to make a malaria vaccine and I just could not find an economically appealing argument why we should be doing what we are doing.

In the afternoon, we all kind of came together and moved on with it. But there's not really an evaluation framework and it's hard because it is different than what industry is doing. There was a

report by Mary Miranda of the Georgia Institute that took a look at the drug product development partnerships and was able to show a substantial increase in the pipelines of products for these neglected diseases, and also to show that there was indeed value for money in this approach.

So the successes, there have been some. These are very hard diseases for the most part that we all have been working on, but in the malaria vaccine, we were able to show for the first time never approve of concept that a vaccine can protect children in Africa from malaria. That was a partnership in GlaxoSmithKline that products going to phase three clinical testing, that wouldn't have happened and you can talk to John Stefan [misspelled?], the CEO, wouldn't have happened without the input from philanthropy in the public sector on that.

There was a bit of live disappointments and a good part of what these groups have been doing is actually testing products to the point of failure, which is something that you see doesn't happen in the academic environment because when your product fails, you don't have any more money for it. But these groups actually, the portfolio approach incentivises them to kill products. But it leaves us with a bit of an issue because a lot of those pipelines that look so rich a few years ago are starting to dry up a bit.

So what hasn't happened as a result? A lot of things have happened, the pipelines are full, a lot of money is going in, infrastructure built, easier to test these products, but what hasn't

happened is, one of the groups that we have just utterly, almost utterly failed to attract are the pre-profit large biotech companies which some people term capable innovators.

They are too big that they do not really need the money. It is more of a distraction to them, but they're not so big that they are worried about their image and trying to get things away. They're just trying to break even. And so we failed to engage them and to find incentives, the right mechanisms for making that happen.

I think that we also maybe seeing the limits of what pharma will do around corporate social responsibility. I personally am not a fan of that model for supplying needed drugs to poor people, but I'm sure we can talk about that later. I'll just skip down because it's a little late, it's blowing. But I hope that we can pick up on the fact that right now, many good things are happening.

A lot of it is in this corporate social responsibility philanthropy model, which has really moved us substantially forward in having pipelines for these products and setting up a better environment for all of it to move forward. But I think that we are seeing the limits of that. And I think anytime we create bridge, we should make sure that when we get to the other side of that bridge, then we're actually at a place we want to be. And that we have used our money effectively to get the most value from that. So thank you.

MATT MILLER: Thanks very much Melinda. We will hear now from Paul Wise.

PAUL WISE, M.D., M.P.H.: Thanks very much. I do want to congratulate Alan, Cathy, everybody at CHPP Corp. As somebody who actually works at CHPP Corp, I can tell you it's a really remarkable place. You've created a special kind of academic unit that combines a kind of intense intellectual creativity with a generosity of spirit that I have rarely seen in academic settings. And I'm very grateful for allowing the new guy from Boston to work with you guys.

I was asked to present the perspective of a physician who works in the developing world policy, but also on the ground, working with patients and health programs in different parts of the developing world. And one thing I've learned is when Alan and Cathy asked me to do something, I do it, particularly Cathy, I do it.

And the perspective I want to convey to you today is a perspective of desperation. I don't need to tell the people in this audience, a very informed audience, particularly coming up here after John and Melinda, to tell you about the profound need that exists in the provision and health services in the developing world.

However, I do need to insert some sense of urgency to the discussion that we are having today. Because if you spend any time on the ground providing care at Sub-Saharan Africa, Central America, Caribbean, particularly now Haiti, India, you come away with a sense of urgency that may not be conveyed in these kinds of conversations we are having today.

Now again, I don't need to document what the need is to an audience like this. I would rather do to talk about, at a conference

on innovation, is what factors the relationship between innovation desperation. In other words, what is the relationship between technical progress, new discovery, and the kind of real needs that exist on the ground?

And the reality is, in a highly stratified system of delivery, in a terribly inadequate system of delivery, new discovery, new efficacy, coming out of places like this, will worsen in inequalities and health outcomes. And the setting of profound stratified system of healthcare, new efficacy will exacerbate not general reduce inequalities and health outcomes.

As efficacy grows, as innovation grows, so too does the burden on society to provide that efficacy equitably to all people in need. The lexicon of innovation therefore speaks directly to questions of social justice. They are not detached entities that in fact, every new innovation, all new efficacy speaks directly to questions of equality and social justice. More children die in the developing world from conditions for which we have very good preventive interventions and cures.

Let me repeat that, the majority of children who die now in the developing world die from conditions that we already have highly efficacious interventions. There are many explanations for this, many good explanations for this but there are no excuses. There's no real reason for why we should allow this to continue. There are kids dying from age flu pneumonia in the developing world. We have basically

eradicated invasive age flu disease in much of the developed world through immunization that has been available for more than 15 years.

Now, my plea in essence, is that we extend how we think about innovation, not merely talking about the creation of new efficacy and of course that is critical and I am very glad that we are talking about that, but my hope is that we can extend notions of innovation into the delivery systems themselves. There is money sitting in the bank for the various global funds to address HIV, malaria, tuberculosis and it just sits in the bank; because it cannot be utilized effectively on the ground, because our capabilities, our systems of delivery are just so weak in the areas that need it most.

My hope is that we can think more creatively about building linkages between the business community, private industry, but particularly, in academia. To begin to focus the enormous resources of place like Stanford on developing far more innovative more creative ways to get the efficacy that we have now, much less what's coming down the pipeline out to the people who really need it.

We talked about this the last mile. Working with people in the business school, working with people in the Freeman Spogli Institute, and political scientists, people who have experience on the ground, in trying to develop new ways to ensure that new efficacy optimally gets to the people that need it most. The death of any child, the death of every child is always a tragedy. But the death of any child from preventable causes is always unjust. Therefore, there

is a remarkable urgency to the conversations taking place at the conference today.

Second, that we need to try to expand our vision of innovation and our engagement at universities like this to focus on mechanisms, the new machinery that will be required to get new efficacy to people who need it most. And ultimately my hope is that by doing this much more creative innovation, directed at the implementation of our new expanding efficacy, that we will be able to respond more effectively and more urgently to the recognition that to do all struggles, the struggle for innovation and the struggle for justice will forever be inextricably linked. Thank you.

MATT MILLER: Thank you Paul for that really eloquent framing of these issues. Again we have a full plate and speaking of justice, we will not be able to do full justice to this as usual. But let me start John, let me start back with you and see if we can tease some of this out. You talked about the regulatory approval process in these countries.

Can you broaden it a little bit just so people have a sense of, when people talk about the barriers to in front of where we need to go in this terrain, some of these are sensitive issues, but it's not a mystery or secret that the quality of governance in a lot of countries is not what is needed to be able to serve the population. There are issues of corruption, again sensitive issues, but stuff that businesses and others deal with on the ground

everyday. What is the right way to think about these set of barriers and what does the agenda sound like to begin to overcome them?

JOHN MARTIN, PH.D.: Yes, okay, well there is a lot in your question of course. The regulatory process can take four or five years and there are varied reasons for that, and one of the simplest ones is there is just not the infrastructure at places. What Paul is talking about, in area after area and yes, we felt very urgent to get this regulatory approval, but once we got the approvals we still found the uptake of our product was very slow.

Just to be clear, when the therapy is simplified with better drugs, more and more people here in the United States, it is not only that 70-percent of the people are on our product, it is also that more people are taking it. When three-drug combination first started in 1996, the idea was let us just treat everyone because the zone has HIV, if you don't treat them, they have aggressive destruction of the immune system so let us treat early.

But there quickly became the realization, if you treat early when someone feels healthy, they don't take all they medication, develop resistance, and then run out of options when they really need it. So by having products that are easier to take, then that should be the type of product that would do well in the situations that Paul was describing.

For instance, if you have side effects or you need laboratory monitoring, where the healthcare infrastructure is not present, but those drugs don't have any value. Also, if you have to

take three different pills but you are in an environment where people will not be able to get all three pills, they will be taking two or one and developing resistance, then that does more harm than good.

So what of the things we did a long the way, while we support it was an MRC study. That was a very large study in Sub-Saharan Africa, usually think of studies comparing drug regimens and that is what this did, but the most important comparison and the reason this study was designed to look at patients divided in half and half, to get the type of laboratory monitoring you'd get in the United States or just clinical monitoring, because economics or the availability of laboratory monitoring would not be available.

So the goal was to see whether or not one of the more modern regimens could be safely administered without the detailed laboratory monitoring we would all get here in our medical care in the United States. I think that proved to be a very important study. But still, with all of that, we found uptake slow until we inject that level of economic competition by enabling the generics and the drugs being paid for, there's a variety of funds around the world. The U.S. has a very large fund, but it takes more than that. I believe all that is what you are talking about urgency of how to make these things really be effective.

MATT MILLER: Thanks John. Melinda, you sort of painted at the limits of CSR as a model and the debate over that, say a little more about what you think folks ought to think about that question, and where it heads.

MELINDA MOREE, PH.D.: So who read the Wall Street Journal this morning? Financial collapse, all of these, everything?. I don't want to be at the bottom of the economic food chain when if it's my only way to access drugs. And so when we leave things up to a philanthropic model or sort of a giveaway part, I actually don't think that that is sustainable over the long term. And worries about price erosion and what that does to major markets. I mean, there are a lot of legitimate concerns around that, which has led to a model which was sort of charging really high prices in high income countries, and then giving it away to the poor., in some ways, so we do not have to deal with that issue of who can afford to pay what and how do we fine tune that.

I just say that it's a model that has gotten us this far, so I don't want to say that it's a bad model, but I think we are going to have to evolve from that. There are lots of people dying of AIDS, TB and malaria.

But most people, I understand, 83-percent of the world's population is in low and middle income countries, most of these people are dying of chronic diseases and we don't have specific funds to address those. But there is economic potential. And so personally, I'm trying to turn my attention more to economic drivers because I have more faith in those for the long term to solve the problems.

And again, it doesn't mean that things that people are doing are wrong, or bad, or misguided, I just think it has its limits. And in order to really get to the point, it is that endgame,

right? It's not just getting drugs for HIV, it's improving health and improving the quality of health for poor people living in poor countries. That is the endgame.

And if people are dying of chronic diseases we need to make sure that they've got medicines for chronic diseases and healthcare systems which are specially challenging for chronic diseases and that can deliver that kind of care. We have to think much bigger than what we are thinking now.

MATT MILLER: And just briefly then, what would be sort of, your dream agenda for the next phase of how we would go in that direction?

MELINDA MOREE, PH.D.: Well we have got some good drivers, so the pharmaceutical industry is still continuing its decade long decreasing growth in its market. There are a lot of pressures on that current business model. One way is to go to personalized medicine and try and keep a keen profits out of the current system.

The other is, I think someone mentioned this morning, is why not go to the place where there is less competition and start to create business models that may look very different than the current business models. And I think part of the problem is just the revenue differential so if we take five leading emerging economies, Brazil, Russia, India, China, and South Africa, they constitute 5-percent of the pharmaceutical market versus the U.S. which is half.

Okay, so I understand why people focus on the U.S. pharmaceutical market. But they are 5-percent now, but it's growing.

And that is where the high growth rates are. I do not know when that sweet spot will be, where they can actually start replacing revenue, but it's coming. Everything indicates that that it's coming.

Personally, I would want to be out in the forefront of that instead of sort of arguing over the reimbursements in the U.S.. I would go to the open territory, go to the open space. And I think that it's still largely unexplored.

MATT MILLER: Paul let me bring you into this. You spoke very powerfully about what the moral urgency is of addressing this stuff. We brought up a benevolent dictator before, so if you are benevolent dictator here, what would your thunderbolts be on this? What would you be saying the U.S. should be doing to sort of lead in this agenda?

PAUL WISE, M.D., M.P.H.: Well, I like the idea of being far more creative. That has been discussed before. But I think we need to disentangle who we're really talking about. I am not as concerned about Argentina, Brazil, China, and South Africa. I'm worried about the poorest people in those countries and the people in Haiti, Guatemala, and Sub-Saharan Africa and the approach there may need to be different at least initially in those kinds of areas.

I think one is, right now we have a hugely chaotic policy approach to the provision of health services in those areas. But NGOs have created parallel systems to national health systems in ways that's understandable at some level. But in the end it's not only not sustainable, but also I think counterproductive.

I think that the United States specifically should work far more aggressively to hold national governments accountable for the building of infrastructure and the provision of services to their people. One of the several projects we are working on with the Friedman's Moakley Institute is to look at what kinds of national government policies are actually quite effective in providing expanded health service delivery in some of the poorest places on earth.

Some of the findings are quite surprising in what we are learning about that. But my hope would be to bring this out of just the philanthropy model as you are suggesting and bring it back into where it belongs into the negotiation of national ministries of health working with global organizations and hold them accountable for this.

One study a student working for us did very recently, found that about 40-percent of all child deaths in Sub-Saharan Africa are occurring in countries in the midst of civil war. So how in the heck are you supposed to provide intraretroviral therapy to kids if NGO model built in places that everything is just fine. We need new, much more creative ways working with political scientist, working with security experts to get these services at some of the places we just ignored.

MATT MILLER: Just sticking with you Paul for one second, if it's not depressing enough the challenges you talked about the collision between the sort of new era of innovation that we seem to

be on the threshold of, the personalized medicine, et cetera, combined with the aging of the baby boom population.

And the way that this is all going to conspire to drive, put enormous fiscal pressure on the advanced nations who already have trillions in unfunded liabilities anyway in these programs, makes one think that's going to make us even less magnanimous to the developing world when everybody scrambling to become a have and not have not in the new world of the health care in the advanced countries to say something that will tell me my depressing feeling now is wrong. Do you see what I mean?

PAUL WISE, M.D., M.P.H.: I do. I would not want to leave you real depressed. That is the opportunities here as well. And I see a lot of -

MATT MILLER: That is good.

PAUL WISE, M.D., M.P.H.: I see a lot of people working, people from this country working to engage these issues in fundamental ways so it's an urgent issue, but it is not a depressing moment, I don't think.

You know, the whole day if nothing else is conveyed a message of complexity in dealing with the health care system in the United States, in my 30 seconds I'm not going to give you a brilliant answer that is going to be better than all the other brilliant answers that we have heard here today, but I do think it's important to keep some sense of scale of expenditures we are talking about.

The global fund is the basic creation of one dimension of \$11 million, that's about six weeks of the Iraq war. I mean it is not pro or con the Iraq war, it's just the statement about the scale of expenditure we are talking about and my sense is that we have a lot more freedom to think about expenditures in these places, if we could ensure that in fact that will be spent better than the way we spent so far.

MATT MILLER: Let me, John, I want to get you in for a last question here, but formulate your questions because we are about to go- you all in the audience and there will be microphones available, so think of what you want to ask.

But John, I want to give you a chance to both to react to some of the stuff that Paul had said and if you want- Melinda's note about the limits of CSR and whether we can from your own experience really harness the power of capitalism in a way that is going to work against these problems, and what it would take.

JOHN MARTIN, PH.D.: I agree with everything Paul said, the complexities and the need to have things operate correctly I guess is little challenge in all of these. But it is a question of economics so turning it over to Indian generic manufacturers that operate in that area, as I said we did not constraint them on pricing.

In some instances their prices would be higher than what ours; ours sometimes lower that sort of no profit price.

So we are seeing that have an impact in these markets that is something that, in its early days I don't know if it's going to end up but it's consistent with what Melinda is talking about.

MATT MILLER: And kind of no profit price is part of your portfolio business work for you shareholders, your board, the sort of traditional pressures you facing in running a U.S. based firm?

JOHN MARTIN, PH.D.: Yes, it gets by because the companies have tried to make profits on these environments have really struggle within it just conserved by so many individuals, it is inappropriate for the branded pharmaceutical but okay for the generic and I think that's why we made the this in to a generic market.

So we're relatively new company in our price for large stuff, our first stage drug was the 17th AIDS drug approved on market. So there are a lot of products out there already and we didn't put it on into sub-Saharan Africa right away to approval that no profit price, for one thing it takes a while to get a regulatory approvals but for another issue you really do with the new drug need quite a bit of commercial experience before you can become confident with the safety profile.

So you don't want to turn it loose somewhere where it's not going to be monitored that well. But once we are confident we made it available with no profit and people from various media outlooks would come who would they call and say how could

you make that decision, was that a tough decision, and frankly at our company we never really debated them, it's just the obvious path to take in those particular markets and we would gone through all the steps we have gone through over the last several years to get to where we are now.

MATT MILLER: Let us go to your questions. Please raise your hand, I see this gentleman here. We can get a microphone over swiftly. Here is a microphone for you. Tell us who you are again, sir?

ALDER BORTS: I am Alder Borts [misspelled?] from Stanford. I have been here all day and love it, but I hear technology and drugs. I do not hear prevention. And I hear that there are two million under treatment for AIDS and five million getting it, but we talk about the treatment. We have diabetes 20 million people in America and we are talking about drugs and genes. We have a diabetes prevention trial with lifestyle prevents 70-percent of diabetes. I did not hear discussion on these topics today.

MATT MILLER: Which of you want to take the blame for that?

MELINDA MOREE, PH.D.: I will step right up. You know having worked on a vaccine initiative for eight years of my life I feel like I'm completely devoted to prevention and I think that there's a lot going on in that model so if you look at the international AIDS vaccine initiative.

If you project all the cause of antiretroviral care into the future and really the entitlement of that it starts with \$50 billion to \$60 billion a year very, very quickly. That is not sustainable. It's not sustainable by government; it's not sustainable by donors. And that's one of the arguments that has been used to put so much money still into an HIV vaccine, even though sciences probably but as hard as it gets.

And so I think there is a lot of management role of philanthropist stepping in and saying market or no market we have got to be looking out what are the most acute means that are out there. From malaria a vaccine is really hard. In the interim there are drugs that are bed nets there are ways that you can prevent malaria and people going to everything they can that is the global fund to try and get those things out there.

So I mean I think there really is a prevention mind-set when it comes to global health community. When you marry that with the pharmaceutical industry mostly focused at high-income countries, I think there we have some challenges.

MATT MILLER: Are there other thoughts on that?

JOHN MARTIN, PH.D.: Yes, I can add. So the HIV vaccine it always seems to be ten years away.

MELINDA MOREE, PH.D.: No one is saying that anymore, though.

JOHN MARTIN, PH.D.: Yes, the problem that last year it got further away than it was a year ago I guess that we've had

some setbacks in the science. There are a lot of other things going on and I can tell you a little bit about what we are doing in United States or what U.S. government is doing.

The U.S. government in the year 2000 made it their goal and preventions to keep that as you say it made a third goal to cut the number of new infections by half. So we are at 40,000 in the year 2000 and 2005, we are still at 40, so the effort failed and hundreds of millions of dollars went to various educational programs to achieve that.

In the meantime the demographics of the epidemic in U.S. changed so instead of 40,000 we are now at 56,000 new infections a year. And so what the key thing is over half of the new infections come from the 25-percent of the people that are not diagnosed and know that they are infected. So the key is diagnosis, to get people know their status, modify their behavior and reduce the transmission rate.

Part of the problem in the U.S. is that because HIV is a recent disease without a treatment and initially and a lot of stigma, there are special rules around testing for HIV. If you go to a doctor, the doctor gets informed basically he signs consent and they can give you a variety of test. But HIV required a separate written consent pretest counseling that is time consuming and so the people that are needed testing weren't getting tested.

The CDC provided new guidance about a year and a half ago saying that this should be part routine medical care and more and more that has become the case for instance the state of California redid their legislation that began this year to make HIV testing part of routine medical care.

Now the scale outside, so we're talking about in the United States where for every person, there is ten people on treatment for one that is infected each year, whereas the numbers are reverse in the rest of the world much staggering larger number. So the ability as Melinda said to do that is just about a staggering challenge with this.

MATT MILLER: I saw this gentleman over here. If we can bring a microphone over.

PETER FARRELL: Question for John. Actually -

MATT MILLER: Who are you again sir?

PETER FARRELL: Oh, sorry. Peter Farrell [misspelled?], resident La Joya, San Diego. The question is for John. I have two questions actually. The first one, is there anybody else using the same economic model that you're using for a [inaudible] the three T pricing and also licensing to generic and so forth just curious about that.

The second question is, maybe I was napping when you discussed this, but the actual economics of the relationship with the Indian generic manufacturer about this. I understood you said you were competing with them in certain markets, but

what was the relationship - the deal that you actually did with them before you allowed them to compete?

JOHN MARTIN, PH.D.: Yes, so I think other companies with various products have aspects as Peter, that get you there, but the challenge I think you will see more and more. It's just that it's so simplified. The concern that we have more though is globally is their respective intellectual property. That is concern probably of our industry and in the middle-income markets too. There are number of forces in the world that are anti-intellectual property, but then there would go the innovation so that is very important.

Peter, all we really care about in developing world is more patients on drug, it's a nonprofit market for us so it makes a lot of sense and the terms of the deal are that they have those markets and not other markets and also that they're not marketing our brand, they have their own generic version. I should also say that one of the concerns that exist in our industry is product movement from no-profit markets to profit markets.

And to that end, the FDA partnered with us in a particularly innovative way because it wants it clear that they had the guidelines. But they approved a different trade dress in a different colored-pill very quickly once we submitted the package to them for our no-profit market. I didn't mention that earlier, but that was something that the FDA really did

partnered with us so and other companies are now doing that too.

MATT MILLER: So you could know if it was bleeding in to your - interesting. Other questions? Comments? Concerns? People are speechless at the end of the day? Not going to be forced to mention Sarah Palin again, am I? This gentleman right here?

GRANT MILLER: Thank you, all three of you very much. I am Grant Miller [misspelled?] here at Stanford. My questions are for the first two of you are non-Paul, since Paul can tell me all day long what is wrong with my silly ideas. So I know that a major strategy for enticing innovation to focus more on developing country health issues are full mechanisms, advanced purchase commitments, other sorts of financial rewards for a successful innovation.

Paul I think also makes a terrific plan that for a lot of being fillers and causes of morbidity in low-income countries they are reasonably affected with technologies that exist. And so a major problem in it is getting people to use them. There are some very complicated problems on the supply side that are particularly pernicious in developing countries, but I think they're general issues that come up today in the United States as well.

There are also some fairly large puzzles on the demand side about- with adoption rates of technologies condition on

them existing and being available for free. My hunch is that this might partly be related to product design types of features. People don't like a taste of chlorine in pouring of water, point of just drinking water disinfectants; there are undesirable things about using insecticide-treated bed nets.

So my question I suppose is do you think that there is any scope for a viable model of pull-type mechanisms that focus on product design features that would lead to technologies that would be adopted at much higher rates not replacing but perhaps in addition to pull mechanisms that focus on more fundamental basic scientific events? Thanks.

MELINDA MOREE, PH.D.: You want to add - I will start you can jump in. So I think a couple of things that advance market commitment were a bunch of donors put up \$1.5 billion to buy pneumococcal vaccines. I think it's actually one of those examples because a big part of that was developing the target product profile that was appropriate for the developing world so Prevnar, the 7-valent vaccine doesn't have any of the serotypes that are present in developing countries.

And so the bar was raised for this advanced market commitment in order to sort of pull at this point not really development but production of vaccines sufficient to meet the needs of the developing world. So I think there is some of that is going on now to say it's not enough to just say the leftover products, when you sort of get down with your 20 years

since off patent and we will take it, but to say there needs to be innovation for the developing world. The more money there is in the system, the more innovation there is and there is sort of a long history in the vaccine world but I would not go into it; we can talk about it later.

I think the other point that you made is one of technology diffusion and demand. And we are appallingly ignorant of the consumer characteristics and the market characteristics in most developing countries. And usually there are sort of well-intentioned people like me and others that sort of put together product profiles and other things that really often times have very little to bear with consumers would want and some of these are not consumer market so they differ a little bit.

But I think there is a huge scope, I mean [inaudible] did a couple of nice studies one in India, one in China of looking at the consumer market. Who is spending what and why? What's driving that? We don't have anything like that for most of the countries that we are working in and I think it's a great big black hole.

MATT MILLER: John, do you have any other -

JOHN MARTIN, PH.D.: No.

MATT MILLER: Our time is getting short; are there other - do we have a last question? We could do a quick question and answer, is there somebody else? I see fingers

pointing but I am blinded by this light. Is there someone there? I am sorry, I could not see.

TOM NEWMAN: Tom Newman [misspelled?] from UC San Francisco. I appreciated the comment about preventions or to going back up to the cause of the problems and I'm wondering about when talking about health problems in poor countries, whether it's considered even the legitimate question to ask why the countries are poor or and why the gap between the poor and the rich countries has gotten wider and to what extent?

Policies of the rich countries have made that worse, I will give as an example, farm policies you know, farm subsidies in the U.S. and the effects that have on poor countries and is that a legitimate question for people interested in health for poor countries to even think about and talk about?

PAUL WISE, M.D., M.P.H.: Thank you. Clearly, I think it is more than legitimate. It's essential if not central. And when we talk about prevention, pediatrician, we are talking about vaccines, we are also talking about nutrition.

Malnutrition is at the heart of most of the infectious disease mortality in the places I worry about, which is clearly related to overall poverty levels but also food policy. The price of food commodities in most of the developing world is doubled particularly corn.

In Central America, corn prices have doubled. The implications for health are astounding. We're seeing it now

ripple through the epidemiology of the area. So I think it is essential and it's important for people in health field to see it because ultimately clinicians are the ultimate inheritor of bad social policy.

Ultimately we see it on the wards in the clinics, and the more of social policy and public policies, international policies that were poorly constructed and/or poorly implemented. So we have that opportunity if not a responsibility to narrate what the impact of these policies really are in public discourse.

MATT MILLER: Let me- since we got one minute left, let me ask each of you very briefly and John we will start with you and move down to Melinda and then Paul. Just in summary now, if you had a stand of scale of zero to a hundred, where hundred would be kind of nirvana of social justice and economic rationality and all these terrains we are talking about and zero would be the depths of hell, where are we today on that scale and what is the one thing that we should give people hope about the trajectory of progress in the years ahead?

JOHN MARTIN, PH.D.: In my mind it is less than 10, I think Paul thinks it is probably more.

PAUL WISE, M.D., M.P.H.: Ten sounds good. I was going to say 11, but -

JOHN MARTIN, PH.D.: The one thing that does give me hope is I feel like a trajectory has improved over the last few years, that's the thing the life that I would say.

MATT MILLER: Melinda?

MELINDA MOREE, PH.D.: I am a little more generous today, I would give it a 20, and I think because part of the discussion has shifted towards someone asked today, which is how do you take these things to scale?

We spent so much time and energy on you know, this work, and this district, and this country and that district and that and NGO funds a little project and really now programs are starting to look at how do you actually take these interventions to scale in a country and improve the health care system and not just sort of steel pipe interventions and I think if that trend continues, that we see much more progress than what we have.

MATT MILLER: Paul?

PAUL WISE, M.D., M.P.H.: I don't know where I will put, some place between 10 to 20 but the issue is the dynamic situation and I think things are improving. I think we are better situated in many respects than we have been in my professional career at this point, but it is fragile and it can be turned around quickly and my greatest concern is that the interest, the engagement that we are seeing now from sectors that were never engaged will evaporate either through

inattention, lack of reward for vital development of new challenges that are deemed more essential.

MATT MILLER: Well that is a great thought to close on. Please join me in thanking our wonderful panel. Don't leave your chairs yet please, because we do have some brief closing and celebratory comments that are coming from John Freidenrich, I'm sure I have not said his name right, but I am calling people to the stage- yes. I am seeing now, John Freidenrich and Coit "Chip" Blacker and Philip Pizza. My apologies.

John is a leader at Stanford. That is clear. He has received his Bachelor's Degree from Stanford and NLLD. He's been a leading lawyer and very involved with the Board of Trustees with Stanford, and he is currently the Chairman of the Board of Packard Children's Hospital and of Stanford Hospital and Clinics.

Coit Blacker is a Director and Senior Fellow at the Freeman Spogli Institute for International Studies, which is the parent organization of Center for Health Policy. He also served in the Clinton administration in several distinguished roles in national security and Senior Director for Russian, Ukrainian, Eurasian Affairs at the NSC.

Philip Pizza did I say your name wrong? I apologize. He has served as the Dean of Stanford School of Medicine and the parent organization for the Center of Primary Care and

Outcomes Research and also a very distinguished medical career, so I welcome you gentlemen for your celebratory comments.

COIT BLACKER: Thank you very much. My name is Chip Blacker and I am privileged to direct the Freeman Spogli Institute for International Studies at Stanford and I can't resist the substantive observation. There is a terrific piece in the most recent issue of the Boston Review, by Rosamond Naylor and Walter Falcon on the Impact of the run up in commodity prices in the area of food on the global economy but also on those least capable of sustaining the burden I recommended to you in the most glowing of terms.

I was delighted when Alan asked me to say a few words in connection with this the 10th Anniversary Conference of the Center for Health Policy and PCOR and I am delighted because it allows me to do three things, to congratulate, to commend, and to thank.

So let me add my voice to the chorus of congratulations that is poured over this podium over the course of the day to Alan and his team and I do so from a slightly different perspective as someone who has been involved in helping to create and to sustain these types of very ambitious inter-academic partnerships at Stanford for since my 30th year.

I can only tell you how hard it is to do. Yes it is important. Yes we all understand the value, but very few of us have either the time where the patients kind of get down into

the nitty gritty and actually build this institution, so my congratulations to Alan and his team. The best part of this is the first 10 years are the worse [laughter]. They are the hardest. It doesn't get substantially easier, but it gets some little bit easier every time.

Second is to commend, not only the quality but the reach and the impact of the research that is carried on into the auspices of these two extraordinary organizations. In the world in which I live sometimes you get very high quality research but low impact. Sometimes you get middling quality research and very high impact and it's very rare indeed when you get the very highest quality research also translating into policy outcomes that are high impact.

I know best the work that goes on within CHP because it has more of an international orientation and I can only tell you that the work that Doug Owens and his group have done on HIV and HIV prevention in Russia and Paul and Paul's group on child health around the world has just had an enormous and eye-opening impact, so thank you for that.

Third, let me in a more parochial sense thank Alan and his team for their wonderful kind of collaborative sense with other units and centers research clusters within the Freeman Spogli Institute, their very, very active collaborations underway with the Center on Democracy Development and the rule of law in the area of health and governance with the Center for

International Security and Cooperation in the area of Biosecurity and Infectious Disease and with the Shorenstein Asia-Pacific Research Center on Asian Comparative Health Care.

It's a testament to the generosity of spirit that Paul referred to in his own remarks and let me just underscore that. And let me conclude by offering my heartfelt and most special, most sincere thanks to Alan and to Cathy, to Doug and to Paul, to Grant and to Jake, and may we all gather again 10 years from now to celebrate the 20th.

JOHN FREIDENRICH: I'll be brief because I think the Dean and I are the only thing standing between you and cocktails and dinner, and that's not a position I would like to stay in very long. But I'd like to say I have been involved with Stanford over the years I have been on and currently on both the Children's Board and the Adult Hospital Board and I've worked a lot with Phil at the Medical Center and at the school.

So I really found today's activities very informative and made me very proud to be part of Stanford. I know a lot of you who are here today are not from Stanford and I hope you have gotten some idea of some of the really wonderful people and some of their wonderful activities that we have here.

On a scale of 1 to 100 [laughter], I would give Alan and his group and Coit and his group at the Freeman Spogli Institute, which has just been sensational less than 10 years activity for his institute it is just really remarkable, how

highly regarded it is throughout the country and throughout the Academia so it is very exciting for me to be here and see all of these pull together.

But out of 1 to 100, I would give the institute and the program that Alan runs an 80 and the only reason I wouldn't give them higher, I know they can do better in the future, so I do not want to put a cap on them [laughter]. So when all of you come back in 10 years, I hope I'm back here with you, but thank you very much for having me and now I would like to introduce the Dean of the Medical School.

PHILIP PIZZA, M.D.: Thank you very much John. I would like to make two comments. The first is that I too, want to thank Alan in particular for his extraordinary leadership. As we have all heard today in giving accolade for the acronyms that Stanford Center for Health Policy and PCOR and have understood the important integration that has taken place between faculty really across the university, which is one of the wonderful things about Stanford, because it's able to bring people from different sectors of the university as well as wonderful individuals like John who help to support our activities is it to bring that to real fruition it requires an extraordinary leader.

And Alan is really that and he is extraordinarily, wonderfully, intelligent and talented as you all know. But he's also able to bring people together, to work in a common spirit

and sense of purpose, and he emulates a spirit of really almost humility in how he approaches the world around him and we heard that today in his presentation where he was quick to give credit to others in terms of the wisdom that they might bring.

But I think I would add that he really is his wisdom that he has really brought us to this point in time to this celebration today. He is a world class investigator renowned around the world for his contributions and because of that, he's a symbol the world class group of people that really have made this so successful.

Now the second is I think that we have today really learned a lot at least I have about various components that are important in terms of thinking about health care in the future and it has led me to want to add another acronym to those that are on the podium just in front of me, because I think it is clear that Stanford and certainly the medical school stands for innovation and technology.

That is something that we do well and seek to do well and we believe that that would will make a difference when directly applied to the right population to make a fundamental difference in how healthcare is delivered and hopefully in a less expensive way, but I also think that we could chew the IT part of that at two other letters D and E, and that creates the acronym.

So it is diet, innovation, exercise and technology. And of course Alan speaks to that as well, because Alan and I share a number

of things together, but one is a pathological need to run multiple marathons during the course of a year and that requires not simply saying the words or running the lines, but modeling it in terms of real behaviors.

So as we go forward perhaps we should change our name to the Stanford School of Diet, or at least epitomize those values, it's very important to our future. So thank you very much Alan for all that you've done and for the colleagues that you have assembled and for this 10th anniversary celebration. And now I think I call on you for final comments.

ALAN GARBER, M.D., PH.D.: Well, thank you Phil, after those comments I sort of feel I shouldn't say anything. But I am compelled to say something and I am not going to take long and there are a number of people to thank for what are centers that accomplished over the years and for today's event, but about what we have accomplished over the years.

Chip said, he knows how hard it is to create new disciplinary centers, but I have to disagree with him a little bit. We started from scratch, there was the university, the university's resources, but I was able to hand pick all the people including the faculty that we started with, and any of you who has been through an experience like that, notice that there are definitely practical difficulties and challenges, but it is far easier than to build something new with a lot that already exist that you have to work around and we were really fortunate that way.

And the first thing I did was to ask Cathy McDonald and Sarah Singer who are both here to work with me in developing the two centers, each is executive director of one of the centers, and subsequently when Sarah left, Cathy took over both their responsibilities in essence.

Our faculty also have been terrific and it just wouldn't be possible to get such great group had we have to start with existing people and resources and so on, and we just have been extraordinary fortunate that way. Another way in which we have been extraordinarily fortunate it is 10 years and you may be surprised to hear, for those of you who are not from academia that actually things do change in academia, even if seems that it's at a glacial pace and all of the leadership that have been in placed when the centers were created have moved on to other roles.

And so I actually have three bosses, two of them are up here, Coit Blacker and Phil Pizza, and the third Ralph Horwitz, the chair of the Department of Medicine. Let me tell you something, you may know this from your own experience, but it's one thing to have enthusiastic support from somebody to play the role in the creation of an institution of any kind and it is another to have the enthusiastic support of somebody who stepped in to a role, where they have to support something that they may not have felt any strong attachment to.

And we have had the remarkable good fortune of having leadership that has every step of the way been extremely supported by

activities, answered every request we have ever made positively and with great enthusiasm, I believe taken deep interest in what we do, it is actually the fact that they seemed to be really engaged and respect what we do that means the most to us and I thank you.

I saw that today and Chip and Phil's comments and Ralph is the same weight, so to have that kind of on-going support, in academia it is just remarkable and we are very grateful for that. So could you please join me in thanking these people? [Applause]

Now we have a lot of other help with today's event and I want to first thank our sponsors who have been extraordinarily generous and incidentally the sponsors have helped us in many ways other than financially over the years. So my words cannot be adequate to thank them, but let me just mention them.

The California Healthcare Foundation, Gilead, ProGen, The Stanford Center on Longevity, [inaudible], Genentech, and Lucile Packard Children's Hospital, we have also had tremendous help from our Advisor Committee, I won't name them all, they are in your program, but I may embarrass them a little bit by saying this, but there are two people in particular who I pestered with questions all the time, have been enormously helpful Rob Chess and Leighton Reed, tremendously helpful and helping us conceptualize this event and carry it out.

We also benefited greatly from the assistance of War Associates [misspelled?], three of the people are here now, Richard Golura [misspelled?], Daniel Freeman and Amanda Pate [misspelled?].

Let me just say that we have a lot of experience running meetings, that is seminars and involved 30 or 40 people.

There is a few more moving parts in event like this and the assistance of our associates have just been invaluable in making sure things went well. Within Freeman's Spogli Institute, we have had the help of Mary Ellen Forgraph [misspelled?] Nino Penick [misspelled?] and Judith Paulis [misspelled?].

I want to thank our speakers as well, and I won't thank them all individually but I think you will agree with me it has been an utterly spectacular group of people, great comments and great discussion. Above all else, Matt Miller whose moderation has been nothing short of extraordinary. We knew we were getting a professional but the combination of just great moderator skills and subsequent insights is just spectacular, so thank you.

Finally, I said there are a lot of moving parts we have a lot of help from our associates and our staff at CHPP have spent actually months preparing for this event. And the fact that, I hope you have not seen any glitches reflexive of preparation, Cathy McDonald [misspelled?] is really the person who most strongly push for having this event, I think she might have even thought of it. And there have been times when we did not know whether to praise her or blame her, but today we definitely feel like praising her, she has really kept spirits up through a lot of work and all of staff have other jobs that they have to do in addition to preparing for this, and they did a remarkable job.

Nancy Lienhart [misspelled?], our administrator I think is in the back of the room here somewhere played a tremendous role in preparing for this event. And there are four people in particular who took this under their wings and just spent an enormous amount of time making sure that everything would be just perfect, Mary Herta [misspelled?], Kristen Cox [misspelled?], Melissa Miller [misspelled?], and Celes Brown [misspelled?], would you please join me, thank you. [Applause]

There are many more people who I haven't thanked individually. Our administrative team and other people throughout the university and outside, and I hope you won't take my omission of your names as a slight but I do think that I am standing behind all of you [inaudible] and other snacks they are out in the reception area, but let me just add that I am really grateful to the audience to all of you who have taken the time out of your busy days, we know who's here pretty much, and we know how busy you are.

Most of you could have been up on the podium speaking today, and many of you who would not be on the podium today, like our trainees, would probably fill their role very well in another few years. So it means a lot to us to have you share in our celebration and I thank you for joining us. So please come up –

[END RECORDING]