THE BROOKINGS INSTITUTION
FALK AUDITORIUM

MAKING "ENHANCED USE" OF HEALTH INFORMATION

Washington, D.C.
Friday, May 14, 2010

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P R O C E E D I N G S

MR. McCLELLAN: Good morning, everyone. I'd like to welcome you to today's event at The Brookings Institution. I'm Mark McClellan. I'm the director of the Engelberg Center for Health Care Reform at Brookings, and delighted to see all of you this morning. We're delighted to be hosting today forum on Making "Enhanced Use" of Health Information.

Some of you may recall that we've been working on this topic for awhile. Most recently we had an event in December where we discussed the importance and feasibility of using the same kinds of data that are generated for helping patients get the best care, generated for purposes of delivering care, routinely; to also apply those data to other topics like population health improvement, and evaluating the quality of medical services and treatment decisions.

And given the importance of these issues, we expect to continue to examine them in forums like this one, and I'm looking forward to a very timely discussion of how these issues are progressing today, so then, obviously, a major focus of federal, state, and local policymaking as we try to move forward in implementing health care reform.

I particularly want to recognize the Markle Foundation for their generous support of this event and for their many efforts to promote the effective use of health information technology. Carol Diamond's here today. We had the privilege of working with her leadership on a broad range of efforts to provide some broad-based comments and input into the regulatory processes around health information technology. We're very pleased that they've been able to provide this kind of coordinated effort to get effective action on health IT.

Also before we get started, I want to lay out the format for our discussion today. We are focusing on interactivity and up-to-date interactivity and discussion. After I provide a little bit of a framework this morning, which I'm going to do next, we're going to have a format for all of our activities today that promote that approach. So first you'll hear from our speakers, not in the form of some long prepared remarks but from more focused comments, and in discussion among them about some of the latest issues and implications and health IT implementation.

And then we want to bring you all into the discussion as well, so please be ready with questions when we get to that part of each of our sessions, and we'll give you a chance to ask those questions. We'll have microphones around the room and have you involved that way.

I also want to welcome everyone who is joining us on the web today. We're doing a simultaneous webcast and a lot of participants that way. I want to remind you all as well that this meeting is on the record. We're being recorded and webcast live.

Now to start us off this morning, I want to provide a little bit of context. And if you haven't done so already, I'd like you to take a look at the background paper that our staff prepared for this event. It contains some more details framing information for the discussions that we're going to have this morning, and then I'm going to walk through on these initial slides with you today.

As you know, information is really at the heart, at the lifeblood, of health care. The health care is very complex, it's very individualized and increasingly so, and effective medical decision-making requires taking account of all kinds of information to get the best results at the lowest cost for a patient.

Now, we've got an example here on this slide. This is the kind of information that a doctor would want to get in a medical record, information on demographic characteristics of a patient like age and sex, and information on the types of health problems that they have, co-morbidities, also the treatments that they've had recently -- and maybe not so recently now, such as medications, flu shots, and information related to their health outcome just like hemoglobin A1C test for a patient with diabetes, or LDL levels, or blood pressure, their body mass index and past medical utilization that could indicate potential problems with the health problems -- with the health conditions that they have like diabetes -- as I said here, a lot of evidence related to the treatments that they are receiving, and, of course, to make sure that the payment systems work and the administrative records are there to support it, information like insurance plan and coverage, and information that can make the billing work as well.

Now, all this information is very important for patient care itself, and much of this information, historically, has been provided on paper, but, you know, there's a big push to move that to electronic systems that can follow the patient, make it easier to get the right kind of care and to make the administrative needs of our health care system -- paying the bills, checking on coverage appropriately -- those kinds of things as efficient as possible.

It's important to keep in mind, though, that these same data elements are the information needed to learn more about how to make heath care and health better for out population. Many evaluation studies and research studies rely on things like looking at particular demographic groups -- age, sex, race, and ethnicity; of looking at particular types of risk factors for health care problems -- smoking status, insurance coverage and the like -- to learn more about the kinds of health problems and the kinds of medical treatments that patients may receive -- quality of care, other issues.

Again it's the same kind of information that's used for patient care. Medications, treatments related to primary or secondary prevention, treatments related to coordinating care, test results and other aspects of care that gets the outcomes, hospitalization for complications, other health outcomes as well, preventable adverse events. All that can be drawn from the routine care provided for patients, and if you think about where our health IT policies are going in this country, there's an increasing emphasis on trying to make the clinical data for patients and the administrative data not only electronic but electronically provided in a way that can be shared among health care providers.

It could be controlled by the patient; it could be used as a more informed basis for clinical decision-making. To make that happen, I've seen more use of information technology among different kinds of health care providers, you know, a simple slide has some pictures of doctors and hospitals. This goes for pharmacies and other sources of health information and information increasingly being exchanged in ways that are facilitated by health care provider organizations themselves and graded delivery systems by health plans that are handling not only administrative transactions like paying the bills, but also monitoring a quality of care, promoting wellness programs, promoting best practices for chronic diseases, care management programs that also are trying to pull data together, help with tracking patients who have certain conditions or combinations of conditions to help them get more effective care.

And at the community level in regions and states around the country, information exchanges that are sharing information consistently to improve care as well. These electronic data sources that augment health care providers and patients can provide electronic feedback, the kind of data exchange, the kind of tracking of recommended evidence-based practices for care decisions, support systems, alerts and so forth to help providers, to help patients get better care as well.

So we're moving towards this goal of a more electronic health care system primarily for purposes of improving the delivery of care. But it's important to keep in mind that all of the recent legislation and major legislation related to health care in this country is also focused on developing enhanced information to improve the way that the health care system works, improve the capacity to use that information, that increasingly electronic information to deliver better care for patients, to make better decisions and improve outcomes and avoid unnecessary cost.

Three types of enhanced information on health care that we want to emphasize today include information related to quality of care, which providers, which organizations are delivering services more effectively at a lower cost; also information related to public safety and health surveillance, complications related to medical procedures or drugs devices, and also evidence related to the best treatments for particular kinds of patients, evidence related to comparative effectiveness. And if you look at the recent legislation that's been enacted over the last few years, all of them include major provisions intended to enhance the health system's capacity to develop all of this information and evidence.

Now, for example, the recently enacted major health care reform legislation, the Patient Protection and Affordable Care Act, includes provisions related to quality. They're absolutely at the center of the legislation's efforts to bend the cost curve and get to a higher value health care system. It creates not only an effort to promote the availability of better measures of quality of care on providers' organizations, health plans, all of the major components of our health care system, but payment reforms that link those measures to new ways of paying for care that's focused not on volume and intensity of services but on quality of care, on the value of care, on getting better results for patients at a lower cost.

CMS will have very broad authority through its Center for Medicare and Medicaid Innovation starting next year to implement pilot programs that are based on these kinds of quality measures, and it can be expanded nationally. The Accountable Care Organization program in Medicare is now part of the Medicare program, and it, too, is going to be based on and rely on these measures of performance at the organizational level as well as outcomes, not only outcomes for quality of care but outcomes for overall cost of care.

So it’s absolutely central.

The same legislation includes further steps to use electronic health information to support public health surveillance, support community health goals and the like, and it establishes and funds permanently an independent, nonprofit, patient-centered outcomes research institute which I guess is the politically correct term now for “comparative effective research” that would as well be based on data from the delivery of care to identify which types of medical practices, which policies, which approaches to care work better in terms of outcomes and costs for certain populations of patients.

It’s not just the recent health care legislation that has put all this momentum behind getting enhanced information on health care from our health care system; the stimulus legislation, the AARA of last year did this as well. It included major new steps on getting information on quality including the health IT funding relating to meaningful use -- which we’ll talk more about shortly -- and the programs that have come out of the Office of the National Coordinator for Health IT related to developing electronic quality information and using it to promote the adoption of health information technology that’s used to have an impact on patient care.

It also included an explicit plan, explicit requirement for HHS to develop a plan for a national infrastructure on drug safety, bio surveillance, other types of public health information activities. And it provided some initial funding, grants that are out now approaching a billion dollars in awarded funding for comparative effectiveness research.

And going back a little bit further, the FDA Amendments Act of 2007, which was the last major FDA legislation, expanded greatly the post-market surveillance capacity for FDA, not by FDA working alone but by envisioning a system whereby FDA and public health authorities more generally, providers and patients would be able to draw on the experience of hundreds of millions of Americans with using medical products and with the adverse events that might be associated with them.

So the point of this slide is that we now have in place just over the last few years some major steps, some major momentum, to doing a much more effective job of learning from our health care system developing enhanced information on quality, on public safety, and health surveillance on comparative effectiveness to drive improvements in care and to drive support for better decision-making.

So back to the slide that I showed you earlier about the increasing amount of electronic information exchange that's occurring among health care providers and patients in the delivery of care itself. You can envision a lot of these other steps -- say, the quality measurement efforts -- as being about trying to learn more about our health care system from those data that are exchanged. And one way to think about this is with all the data that are being exchanged for patient care, that demographic information, the information on treatment choices and outcomes, that's the basis for computing measures of quality of care directly, not through a separate process whereby providers have to go through additional reporting and checking in about quality but drawing from the electronic data itself to produce performance measures.

For example, a denominator for a quality performance measure might include a provider's patients who have diabetes. A numerator for that measure might be the number of those patients who have received evidence-based procedures have then been shown to improve outcomes for patients with diabetes, like doing regular checks on blood sugar, doing foot exams, doing ophthalmologic exams and things like that. Those are now fairly widely-used measures of quality, and they can be in principle collected from summarizing information on the actual delivery of care.

In turn, those performance measures can be fed back to provide information to support quality improvement activities by providers and changes in payment systems, and changes in other regulatory support that can promote better care for patients.

Now, I just again, I try to make this point about how these different policies fit together. If you think about patients with diabetes at a particular -- seen by a particular health care provider, what the meaningful use incentive for health IT essentially are aiming for is evidence that health IT is being used to improve patient care.

So that might include a performance measure like being able to keep track of all your patients with diabetes, and being able to know whether or not they've received certain recommended treatments, or if you roll up that information, that is the basis for some of these enhanced uses for determining quality of care, at least these affects of quality of care, at the practice level; for doing public health initiatives at a regional level, say, the county or state levels where there might be a shared approach or shared policies implemented to try to improve quality of care and provide better support for it. So that's what I mean by "summarization," an aggregation of going from the patient-level data that's involved in the actual delivery of care to information coming out of our health information systems that can enhance our understanding of care and can provide a basis for improving care.

So some examples of these kinds of applications go beyond quality analysis. For example, are there particular drugs associated with an adverse event? Well, by using electronic data on patients who are actually receiving care, I can start to answer these kinds of questions, or at least determine if a safety signal is present; maybe not identify a causal relationship but at least gain better understanding of a magnitude of a potential problem and how it might be further evaluated and addressed in subsequent post-market studies.

So for this kind of analysis, we need information on demographics, race, sex, ethnicity, on co-morbid characteristics that might influence the outcome like smoking status and other diagnoses, and whether or not a patient received the medication in questioning them; or did they receive Avandia and outcomes. Did they have a heart attack?

Again this is information that's generated in a routine course of delivering care that's increasingly becoming electronic that could be captured more routinely and quickly to answer questions like these public health surveillance questions involving confounders, involving data on conditions, involving treatment data, involving outcome data.

Other questions could get -- could relate back to a quality of care: How do they -- a particular physician's performance, or a group's performance, or an organization's performance -- compare to other options available to patients in the area in terms of getting to better outcomes for patients with diabetes? You know, it all comes out of this core information used in the delivery of care.

So that's back to the slide that I showed you a few minutes ago of health information exchange first and foremost for the delivery of patient care, but as can also be used as a basis for the kind of summary information, not patient-specific identifiable information, but the kind of summary information that's needed to learn more about quality of care.

Changing the numerators and denominators a little bit, but otherwise keeping the slides the same, the kind of information that could come out of these systems is not just on qualify of care but on medical products safety surveillance. So collecting information on adverse event rates with the denominator of patients who are exposed or use a certain medical product or drug, a numerator of patients who have adverse events in question is a way of getting more routinely and quickly information through active surveillance related to safety signals involving medical products, and that information in turn can be fed back to improve decision-making as well.

And, similarly, for comparative effectiveness research, potentially, this is a bit more challenging in that many factors other than treatments influence the outcomes that patients have after they’re treated, but by using the same kind of information system on the delivery of patient care with some way of randomizing patients to different treatment groups, maybe explicitly randomizing them.

We had an example in the background paper about the recent I-SPY Trial, or maybe using features of health care delivery that lead to similar patients being treated differently, patients who are facing different formulary designs or different copayments in their insurance plan, that too provides a way of comparing different -- comparing groups that are treated differently as a result, and whether they have differences in outcomes and differences in costs, which again is more evidence that can be used to feed back, to improve the delivery of care.

So lots of additional uses or enhanced uses of information from the information that itself is used in the delivery of care.

Now, this slide is just to emphasize that that information inpatient care is coming from a range of diverse sources, many of which are not communicating effectively today due to a number of obstacles, or due to the fact that much of this information is not yet reliably electronic or at least not reliably electronic in any consistent fashion. So hospital physicians have some electronic information today. It’s in most cases not very comprehensive. Electronic claims information is usually available.

That’s limited in its detail. Registries, other sources of information like pharmacies and clinical labs can help, but we have some real challenges in going from what is possible today in the exchange of electronic information, even the availability of information, to secure privacy-protected uses for both patient care, and in uses of the kind of summary information that I was describing for broader questions about health care policies.

And that leads to where these legislative steps that I was describing earlier are so important. If we're going to get to a high-value health care system, that requires a capacity to generate knowledge that is actionable, and that's that kind of additional enhanced uses of information that I was describing plus support for applying the knowledge.

Now, a big part of support for applying knowledge comes from health information technology, and I view these as reinforcing types of activities. The health information technology, meaningful use payments are intended to promote better tools being available for doctors and other health professionals to use in patient care, for the patients to use themselves, but by recognizing that it's not just the health IT payment incentives that are going to support better knowledge capacities in our health care system, but all of these other payment policies, and all these other reforms that are coming actually are much stronger and a much potentially more virtuous cycle for promoting staffs to get to a higher-value health care system.

Quality reporting programs are going to be paying more to doctors, to hospitals, to other providers and Medicare for reporting on quality of care. The same kinds of measures that are being used for quality reporting are ones that can be used for meaningful use. So that's the same systems can produce both measures.

Payment reforms are going to be coming. As I talked about before, at the Medicare Innovation Center, implementing bundle payments, medical homes, other reforms that have been specified in the legislation, so talked about the accountable care organization payment. That's additional payments tied to not only producing this kind of information on quality but demonstrating that you're using these kinds of systems, these kinds of delivery reforms to improve patient care.

In addition, there are other sources of research and evaluation: grants from FDA, from NIH, and AARP for the comparative effectiveness research, from many other public and private entities interested in post-market surveillance and other evaluation and research activities that can draw and help drive forward the system as well. So tremendous amount of financial resources that could be used to create this virtuous cycle of improved capacity for using health IT, not just to improve care but to provide the kinds of evidence in all -- in many areas that can lead to better decision-making and more valuable health IT that can increase the value of having the health IT in the first place.

Now, getting from here to there is not necessarily quick or straightforward however. As I said, there are huge gaps in our health information technology available today. A lot of the approaches to try to get from here to there have focused on incremental steps, taking simple steps, doing what's practical, doing what can be implemented in a number of different provider settings around the country. Maybe that starts with just using electronic administrative data which are widely available but limited in their quality for things like quality measurement and safety surveillance. Over time we're seeing more opportunities to bring in some at least specific additional clinical information, either limited electronic medical records, or electronic lab results, or results from pharmacies and the like that permit somewhat more sophisticated summary information coming out on all of these types of questions: quality measurement, safety surveillance and so forth. And, of course, what we'd like to get to sooner rather than later is more comprehensive and reliable interchangeable information around electronic and personal health record.

So making that happen now has a lot of challenges. The capacity to generate knowledge that is actionable has a lot of challenge around timeliness, around having mechanisms for actually sharing data, accessing that data in a way that preserves patient and addresses patient concerns about privacy and security that has consistent ways of summarizing data for reuse. It's actually focusing on information that's relevant, that can be put together effectively through common standards that aligned patient and population health issues so that we really are building on a system used to deliver care for patients that's valid, that has a critical mass of participation so that we're not just talking about outlier patients or a small fraction of a provider's patients, and it has sufficient clinical detail that has a relevant clinical information included, a relevant statistical accuracy to really make a difference.

So those are the challenges in getting to the kind of goals that we are pursuing to make a health care system that really works. And that's what we want to talk about today: Where are we in this process? How can we most effectively move forward and that to get to enhanced use of health information while we're improving patient care and using health information technology to make that happen.

And we've got some terrific people here with us today to help us have that timely discussion. And I'd like to start with Farzad Mostashari.

Farzad, if you don't mind coming on up. I really appreciate your being here today. I know ONC has been extremely busy. Among other things in the last few weeks -- and, Monce , I know you've announced the Beacon Grant Award -- you've got Sharp Grants actually being implemented and underway and so on.

I think maybe I will join you down there. That'd probably work better (inaudible) up here on the podium again. And lots of activities around meaningful use of health Its you're working to not only finalize the ONC regulations relating to standards and EHR certification process, but working very closely with CMS and other parts of HHS, and the federal government.

So get consistent and well-coordinated federal policies in all of these areas to promote quality and safety and effectiveness and overall population health, and I know you've got that all worked out. So I was hoping you could give us a little bit of an update on how exactly this is happening. How are we doing in terms of using information generated in the routine delivery of patient care? How are we doing in making that electronic and consistent? How are we doing in also extending it to these many other uses that are really essential to getting us to a high-value and effective health care system?

MR. MOSTASHARI: Absolutely. It's one of the principles that we have at ONC is to think about what the outcome is and work backwards from that. And one of the outcomes clearly that we expect from the work of ONC is not only that we have improved care for the individual patient but that we can also, at the end of the day, we can say that we have a transformed health care system that can learn and that can implement what it's learned.

So that is one of our goals. It's one of our elements in our strategic plan. Next to adoption and exchange is what we call Element 3 -- and if you can help us come up with a better name for it, we'd really appreciate that. But it really is an important critical outcome that we expect. The question is how do we get there from here? And how do we do that in a way that builds on every step incrementally moving forward.

MR. McCLELLAN: Well, what's the answer?

MR. MOSTASHARI: Well, we have to start, I think, at the level first of principles and policies. We have to have standards, we have to have services, we have to have tools, and we have to have research.

So similar to the Nationwide Health Information Network around exchange, where we say it's not a thing -- the NHIN is not a thing, it's a set of shared policies, standards, and services that enable information to move. I think, similarly, for this domain we need some shared principles, shared policies, shared services, and shared standards that enable us to move.

Let me give you some examples. So one of the -- and one of the things that I hope we can collectively as a group help establish are -- what are the principles that will govern this learning health care system? So there may be principles -- one place we should probably start is fair information practices around data minimization and use specification and so forth -- but there my be other principles that are specific to this domain, principles like -- and I'm just throwing these out, right -- data should be as close to the source as possible.

That can be a principle, and we can discuss whether that meets the needs or doesn't meet the need. What is the appropriate level of aggregation? Is it atomic, or is it completely centralized somewhere in between? And what are the principles that govern where that level of aggregation takes place? Is it at the level at which action needs to take place, or the level of which all the data is together? But figuring out where the balance is on that.

Another principle you stated -- it's a principle and I wish to make it explicit -- is that the data to be used for these should be data collected through the routine delivery of care. If that is indeed a principle, it has profound implications in terms of the design of such systems.

For example, there should be minimizing the burden on provides to collect data specifically for these secondary purposes, and it has implications, for example, about what we can and can't expect the systems to do for clinical trials recruitment, for example, or for research where you may want to take a more stepwise approach, where the data collected is a part of, routine part, of delivering care, provide some screening, but then you don't expect to collect the nth degree of occupation on every single patient who is seen in routine care 'cause that's not going to happen.

But if someone comes in with hepatitis A, then it might be entirely appropriate for the clinical care as well as for public health surveillance purposes to then ask the person, you know, are you food worker? Are you a food handler? Are you a day care worker, and so forth? So those are -- that's another principle.

Another principle that I think we've expressed but we need to make it explicit is that data should be collected once and used many times in many different systems instead of building these categorical programs.

Another principle might be that services should be separable so that if you're -- it's not necessarily the organizations that provide information routing, but also provide the analytic services, the aggregation services, and those are separable.

So I think the first place we need to start with is figuring out can we express some high-level principles that define the architecture as we move forward? Kind of the difference between the U.S. Constitution and the French Constitution, as an example.

MR. McCLELLAN: Well, you've done a lot of work to describe and lay out these principles. You've had a standards committee and a lot -- and a number of other advisory groups that seem to be reinforcing these general principles. And now we're moving from the concepts and the goals to actually implementing the vision. You've got a lot of legislation that's on your plate, a lot of funding that's going out the door now and shortly, all with the intent of seeing these principles come into practice.

I was wondering if we could focus in little bit more closely on how that's going --

MR. MOSTASHARI: Sure.

MR. McCLELLAN: -- and what you see as the next step.

MR. MOSTASHARI: Sure.

MR. McCLELLAN: So one big area there has been the meaningful use of regulations --

MR. MOSTASHARI: Yes.

MR. McCLELLAN: -- where there's been an effort to coordinate both some feasible steps on standards and some work with CMS and their proposed payment rules starting this -- you know, it’s activities this year for payments next year, so this is happening right now -- doing that in a way that’s coordinated.

How is that going in terms of actually implementing the taxed --

MR. MOSTASHARI: To the goals, yeah.

MR. McCLELLAN: That’s what I thought. I expected nothing less.

MR. MOSTASHARI: Look, I think meaningful use, and particularly in reference to this conversation, the Health Agency Policy Committee defined some of the components of this learning health care system as being in future stages of meaning for use, stage 2, stage 3, and we think that it’s critical that this be a part of that construct.

Obviously, we’re in rulemaking for stage 1, and we’re not in rulemaking for stage 2 and stage 3, and I can’t even talk about what we’re doing with rulemaking for stage 1, as you well know.

But we do think that providing incentives and a business case, a policy environment that provides a business case, for the learning health care system is important, and meaningful use is one part of that. It’s an important part of that, but it’s only one part of that.

There are other parts to it, too, what federal officials do in their regulatory activities. If we have CDC and FDA and many other organizations, CMS, who are collecting information, can we define some shared approaches to that that can foster the one data-many uses principle? So how do we leverage those other levers in addition to meaningful use I think is going to have to be an important additional part of the conversation.

MR. McCLELLAN: And while a lot of the focus in the meaningful use regulation, the vision that you’re laying out, as you said, this is a proposed rule, and you’ve taken in comments, and you can’t say too much specifically about how exactly that’s going forward, but a lot of the focus seems to be on quality, and that’s understandable because the whole, or at least one of the main purposes of health IT that you want to see happen is that it actually had an impact, a positive impact, on the quality of patient care.

As you pointed out, there are a lot of other enhance uses of health information that aren't so much about the quality of care directly delivered in a provider's office but about things like we've talked about in these introductory comments like identifying potential safety problems with medical products, learning more about the best approaches to caring for certain kinds of patients.

MR. MOSTASHARI: Sure.

MR. McCLELLAN: Thus practice styles and things like that. And that is, too, a part of these regulatory steps or these payment steps.

MR. MOSTASHARI: And I guess one way, or another way to put it is that the arc that we described, policy committee recommendations described, for how we're going -- what's our model for change here -- is that in the initial stages of meaningful use we're just going to nail down some core data collection, and that's going to be important.

If you're going to have, for whatever, whether it's for quality purposes, whether it's for drug discovery, you need to have problem lists, you need to have med lists, you need to have allergy lists, you need to have structured lab data. So you need to have race, ethnicity, and language if you want to be look at disparities.

So in the first stage there's got to be the basic building blocks, foundational building blocks of information that's going to be needed whether it's for quality, whether it's for population health, whether it's for research. So making sure that we establish initially a strong base, information base for that is one.

The second is some of the functions that we described in the Notice of Proposals you were making, can have profound secondary implications. Let me give you an example.

Not only -- I'm not as good as --

MR. McCLELLAN: The feds.

MR. MOSTASHARI: -- really on this one. One of the requirements was that patients be able to get a copy of their own records electronically. And you might think, well, how many patients really are going to ask for that? What it enables us to do, though, is to make sure that every practice and every vendor has to produce electronically a patient clinical summary that contains -- guess what -- a med list, problem list, allergies, labs, and so forth.

So could that humble clinical summary, electronic clinical summary, form the Rosetta Stone for solving the problem that has plagued all these activities around getting, deriving use out of the information store in transactional EMRs, which is, how do you get it out? How do you do the mapping to the data model for all these different systems that differ from configuration to configuration, much less from EHR to EHR?

So there could be profound implications, transformative implications, of some of the basic data collection and data export and data transformation requirements, and the standards that are a part of the first stage of meaningful uses.

MR. McCLELLAN: Kind of what Anish Topra means when he keeps saying to keep it simple. So we know we've got these very complex data systems, very complex --

MR. MOSTASHARI: Yeah.

MR. McCLELLAN: -- statement decisions and issues in health care. It does seem like, and you seem convinced, that there are some core elements that may not be everything but that can get us a significant and substantial way down the road to better health care delivery, better evidence to support health care delivery without getting into too much complexity at least in the short term.

MR. MOSTASHARI: That's right. And I think one of the mistakes we could make is to try to make it perfect in the beginning, and try to stay -- and everybody try to get their requirements in and say, Well, for me to do my research, we need these 7,254 data elements to be prescribed as standards and to be in every EHR system and part of meaningful use. That I think would be a profound mistake.

MR. McCLELLAN: I'd like to invite our other respondents up for this panel right now, and I think the timing worked out very well for Amanda Parsons, the assistant commissioner for the New York City Department of Health and Mental Hygiene.

Amanda, thanks for making it down here despite the transportation hassles.

And also John Halamka is joining us. He's the CIO of Harvard Medical School and Beth Israel Deaconess Medical Center. And I should have said earlier that detailed bios for all of our very distinguished participants today are in your packets. That's why I'm not spending a lot of time on it, a lot of time on it up here.

So I'd like to turn to John and Amanda. Farzad's talked about the importance of principles. He's talked about how those principles are being applied in a number of the initiatives that are underway at ONC and through coordination with the rest of HHS and the federal government. He's talked about keeping it simple and making some clear progress.

You all are on the actual delivery end of things. You're actually trying to implement these kinds of steps in health care system, both in partners' health care in Massachusetts, and with a broad range of community-based providers who, at least as I understand it, when they started didn't really have much in the way of electronic health systems other than for billing.

What are the challenges that you are coming up against, and what do you see as the biggest issues from a practical effectiveness standpoint for moving forward with this kind of vision.

DR. HALAMKA: Sure, well, how do we start with that? So I always see about 1,700 clinicians all of which have to have meaningfully used electronic health records. And Farzad said it really well. It's really all about work flow, and that is if I suddenly impose a radical change in work flow and say, You're going to get the 7,254 data elements for research, they'll never see a patient. In fact, when they first looked at the meaningful use regs, they'd say, yeah, I can see two people a day.

No. The answer is the EHRs should be passively able to provide certain data elements for many, many uses, whether that's bio surveillance, or public health monitoring, or to the patients themselves for care coordination, and it should be very straightforward for a clinician to get those as part of delivering care.

It's hard. It's really hard. So if I were to just give you an example, so, say, Farzad, you have a rash. You know, it looks like it's a little infected. I'm going to give you some Keflex. Keflex, 500 milligrams BID, done. It takes two seconds.

Oh, you're allergic to penicillin? Turns out I'm going to kill you with that prescription. Oh, Keflex? Can't quite read that, hmm, 500 or 50, I'm not sure. The errors in paper are huge; the work flow implications of doing it structured electronic fashion will be slower. And so we have to take these docs who've practiced on paper for 20, 30 years, move into structured data entries so you can have that data captured for multiple uses and somehow not disrupting to the point of quitting their practice.

And you have to understand, the alignment of incentives, which we talked a little bit about before the panel here, are not great. So imagine, hmm, I'm going to get home two hours later every night, and after six months I'll be delivering such high-quality efficient care that Blue Cross will benefit handsomely. Where's the value proposition in that?

And so what we hope is that through meaningful use and building good electronic systems that capture the data for multiple uses will build a foundation for new payment models, which will now incent doctors to coordinate care, and they'll be paid for quality and outcomes in process rat her than quantity. So, hey, I used this, it's safer, and I get paid more. Aha, that works better.

And in the meantime probably the two of us are just staying awake at night trying to get the EHRs rolled out, getting the bits and bites right, and dealing with what is a really challenging next year and a half as we are on this journey to meaningful use.

MR. McCLELLAN: Amanda, you, too, are relying on the goodness of physicians and other providers in moving forward on this with a little bit of faith?

MS. PARSONS: So I entirely agree that it's all about work flow, and I think one of the difficulties that we have had is really to try to take an incredibly fragmented system map. If you can just paint the picture a bit, New York City 40 different plans, we work with over 2,000 primary care providers across a variety of settings, community health centers, health patient departments, a lot of independent small practices, even in jails.

And we get even a simple issue like triggering our clinical decision support, brilliant idea, right? You have clinical decision support and HBA1C is too high, clinical decision support can prompt a provider to change or write a new medications to tackle the diabetes.

It turns out if you received your lab result back and it does not have a LOINC code, you cannot actually trigger that clinical decision support. Now, who's going to point that LOINC code in there? Who's going to put the LOINC code in there? If you ask the electronic medical records vendor, the answer is the physicians. If you ask the lab companies, they're not -- there's not a really good answer.

Who do we think should put the LOINC codes in there? We think the lab companies should. For every single one of their lab compendiums they should put the LOINC codes in there. And any time they update those compendiums they should provide those to us so that we can make sure that they are properly inputted into the electronic medical records systems.

Instead, what happens now is we have a very, very, sadly, former physician who spends almost his entire day sifting through 40,000 lines of Excel to LOINC code several different lab compendiums so that we can then provide those compendiums to eClinicalWorks so that they can put them back into the electronic medical records so that our clinical physicians support can work.

That's not scalable. So we really have to figure out how to work through pushing forward standards. We understand everybody likes to do it their own way, as do I, but there are some things I just have to do because it's the right thing for the world. So it is the right thing for all of us to agree to drive no the right side of the road, and we all agree to do that. And I think we've got to figure out how to push individual stakeholders towards a common platform that enables us to move forward.

MR. McCLELLAN: And before we go -- this seems to fit with your theme of, you know, let's find the important problems, the important practical problems and come up with a way of dealing with them in a way that's not overwhelming, that is -- that can address the kind of issues that Amanda was raising. Does that sound right, and is this the -- how do you deal with implementation challenges like the ones that we're hearing about?

MR. MOSTASHARI: Yeah, and, you know, one of the things that you learn, I learn, working in government is to be humble about what government can do. And one of the things we can't necessarily do very well is predict the future. And I think the implication of -- one of the implications of that is to take actions that help today in stepwise fashion that add value now, soon, and yet are not down dead ends.

So, you know, make it stupid simple, but not stupid, things that can have utility in a broad variety of future scenarios. So rather than build a cathedral that says, you know, this is exactly how it's going it's going to work when we're done building it in eight years, and you're not going to derive any value from this for seven-and-a-half years, to say what are things that we can do like LOINC -- making sure that LOINC codes are -- can be -- that labs can be incentivized and assisted in having LOINC codes in the lab results. Those are the kinds of things where it can have a lot of ripple effects and benefits for a wide variety of future outcomes.

MR. McCLELLAN: So do you see some specific things that ONC would facilitate to make that happen, and that's the best way to do that? Is it through some kind of collaborative process with involvement of people like John and Amanda? Is this what's behind some of the Beacon Grants and the Sharp Grants to maybe solve these problems, regionally and extended out?

MR. MOSTASHARI: Yeah, how do you do it? So, well, some of it comes down to standards, and we have with us the guru, with -- and John can talk about what all the work that's happened, and I think it's been significant in terms of making standards and value sets that are accessible, that are usable, and now a process, a governance process for getting those that it tested against the real world and then adopted as part of our rulemaking. So I think there's been significant progress on that.

There's also kind of boots-on-the-ground stuff. So we think that there is going to need to be some boots-on-the-ground work doing the hard work of the transformations, for example, that Amanda talks about. California, I heard, as part of their state health information exchange grant that we are giving them, is going to be getting all the small labs that are too small to really do this on their own, and they're going to basically make a little reel for the labs, for the small labs, where they will do the transformation services and messaging content standardizations for those. So that's a grant program that we're doing that can help have the boots on the ground to help do that, facilitate that locally.

The regional extension centers, there's over 95 percent of the U.S. population is going to be -- is covered now by a regional extension center that does what Amanda's doing in New York. And so, you know, it doesn't scale perfectly, but it's a lot better than the way it was before in terms of being able to give those docs the advantage of a scale that they offer.

And an important part of it is going to be to get that sharing going so that work that that doc that Amanda has working full time can be reflected at least in part and used by other people across the country.

MR. McCLELLAN: Amanda, John, what do you think? Any further thoughts on how to overcome these very practical but potentially manageable implementation problems?

DR. HALAMKA: Oh, sure, so very quickly on the standards. A whole set of standards have been working on for several years. There's now the HIT standards given to me which I co-chair that says, well, how do we actually get an e-prescription from place to place? How do you describe a medication or a lab in an unambiguous way so it's actually comparable from New York to Boston? And we're publishing code sets so they're free. You will be able to download compendium that can be used in your EHR and can be adopted by the labs, and only by providing these unambiguous vocabularies and standards and transmission and security and privacy mechanisms can we ensure interoperability.

But yet that's not enough. So here's a problem. In Massachusetts, 15 percent of all lab and radiology tests are redundant and unnecessary. One man's redundancy is another man's country club membership, right? So if I go to a hospital and say have I got a deal for you, it's going to cost you $500,000 to implement the standards, and another $500,000 to join a health care information exchange. And we're going to reduce your income by 15 percent is a bit of a hard sell.

So David Blumenthal fires out a working-on as an alignment of incentives that says, actually, there will be help information exchange dollars provided so you can get over the hump and then, as payment reform is made, hopefully, people will be incented to do the societal good. Seventeen percent of our GDP spent on health care, no longer sustainable, not competitive as a country, got to get rid of that 15 percent redundancy and waste. The standards, the policies, the incentives will do that.

MS. PARSONS: And I think the final point that Farzad made about, you know, not trying to build the cathedral and, you know, designing the perfect, which is don't let perfect get in the way of good. And right now what we need is good because we don't even know what perfect is. And I think we think, you know, you design today the cathedral of eight years from now, you, in a year, you will want to read it by map cathedral; in two years you'll want to completely revamp it.

And so the important thing is to get out there -- and we tell providers this all the time -- they say I'm not sure this electronic medical record is right. It doesn't have -- I'd like to be reminded about DEXA scans and yours doesn't do that.

Move forward. Let's all get on -- let's all get on the same page. Let's all start to take little bits of this problem because we are making change, so even though all these demonstration projects you can see labs now have a lot of incentive to do some LOINC coding, and they didn't before. And so you can't belittle them for not doing it before, but now that the game is changing you're giving them a reason, a competitive advantage, if they do. And I think that's the point of even the extension centers.

Frankly, meaningful use isn't even nailed down, you know, for us to implement, and our job is to get providers there. That doesn't mean we sit here, twiddle our thumbs and say we're not going to go forward, right? We think we've a pretty good idea of what meaningful use is going to look like. It's all the right things, and it's, frankly, what we would have been moving, what we should have been moving forward towards even without meaningful use in place. So let's all just start moving forward and trying to identify where we can have, even if you just take two plans and get them to agree on equality measure, or get four plans to agree to look at a meaningful use measure.

We're starting to move forward, and I think that's the important part, and everybody's going to have their bone to pick on any individual system, but we're frankly a lot further along than we were two years ago, and the world will be a different place two years from now.

MR. McCLELLAN: Now, both of you have talked about on the one hand the challenge of implementing these steps without the financial support in place for doing it, in some cases financial penalties, but also the fact that you're not very far away from that having at least being able to talk about multiple plans, setting up payments for they're, at least to some extent, tied to some of these key quality measures. Maybe not everything, but in some of these key priority areas.

Is that happening soon enough? I mean that's certainly the what's envisioned in the health reform legislation. You're going to have payment systems that over time at least take big steps in this direction. Are we doing enough now to make that step-by-step simple but meaningful progress?

DR. HALAMKA: So there are a couple of accelerators. So if you would ask if the average primary care physician -- I'll ask you the same question -- have $40-to-$60 thousand dollars in their checking account, and they're ready to leap and get an EHR today, the answer? No. But luckily there has been legislation that is a safe harbor in the STARK regulations that allow hospitals in the community to fund 85 percent of implementation costs. So what do we do?

We build the data center for the community physicians so that we can provide a subsidized cloud-based, web-accessible electronic health record, and the barrier to entry is significantly reduced. We do the project management for them, they have no idea how to do work flow redesign, and they have no idea how to buy software and negotiate with vendors, so we do it for them. And then all the meaningful use requires certain data exchange, so we build all that for them.

So basically, the clinician is told here's a six-week program, we'll redesign your office, we'll train you, all you have to do is turn on your computer, open up a browser, and everything else will just happen. Still very hard, but we've reduced the barriers because the hospitals who subsidize this and some regulatory changes have enabled it. So we will by the end of 2010 have 1,700 of my directly associated clinicians using electronic health records. As a state, Massachusetts is about 50 percent, and I think we're on a good trajectory to hit the goals that you've outlined for 11, 13, and 15.

MS. PARSONS: So your question: Do our payers move in rapidly enough towards aligning the way that they reimburse around measures like meaningful use?

MR. MOSTASHARI: Does the stepwise approach work for them, too?

MS. PARSONS: I would say I don't think they're moving fast enough, because I would like for that to be, to be in place even today. So, but there are movements out there. For instance, we have, you know, a Medicaid and a Medicare e-prescribing incentive in New York state that allows us to drive at least the meaningful use, you know, e-prescribing measure. There is, you know, a smoking cessation benefit that allows us to drive forward. The routine captor of smoking status and an intervention that succeeds.

We have patients on a medical home, and that also allows for a lot of alignment around meaningful use. I think for us we have to be a little bit creative in the way that we help message that to providers, levering the existing plans that are out there. They may not be labeled meaningful use, you know, pay for performance, but they, if you understand meaningful use, then you understand the incentive, you can understand where the alignment is occurring and then translate that to the physicians.

But I think, quickly, we'll need to understand, you know, how are the plans being measured? And what will happen with HETUS, and what will happen with the way that they themselves are publicly measured. And there needs to be, I think, alignment with meaningful use. And I would like to see if engage the payer community more around that.

MR. McCLELLAN: And as far as the way that I read the Beacon Grants that went out last week is that there was a very big emphasis on exactly these issues. And you were providing some up-front funding to facilitate stuff like the ones that Amanda and John have described. But there is also a big emphasis on sustainability and on demonstrating that not only would it be possible to produce these meaningful use measures, but quality measures, other enhanced information coming out of these regional systems, these regional initiatives, that could be a basis for payment reform, for financing of safety surveillance studies and so forth. Is that --

MR. MOSTASHARI: Exactly right. You know, I started off by saying that we look at where we want to be and work backwards from that. And then we go forward. Then the Beacon communities are meant to offer real-world demonstrations that not only the theory right that a connected community with health information technology, health information exchange and quality feedback can improve in a very tangible way the lives of Americans, the health and health care of Americans, but to actually be able to show it.

And I think we meet those demonstration that it can work not only in a given institution organization, an individual delivery network, but it can actually work at the community level, the graph that you had of rolling it up to the community level so that we can offer some, some nearer-term assurances to purchasers and payers that these health IT enables virtual networks could be the basis for a famous performing.

MR. McCLELLAN: I'd like to open up to a few comments from those who have questions. For those of you who are here today, if you have a question, please raise your hand. We're going to get a microphone to you, and when you ask your question, be sure to try to identify who you are. And we have time for a couple of questions right now. And, if not, I think there's definitely some more discussion going up here.

Please go ahead.

MR. LANE: Great. My name is Reginald Lane. I'm a priest. I work at Armed Forces Services Corporation right now.

My question kind of goes to the heart of an absence, it seems to me, of behavioral economics in the model. And we're talking about many position-centric in terms of data entry variables, but we don't have very many consumer-centric variables. Your own Darrell West did a great paper on consumer-driven medicine, so I'm wondering where the consumer comes in. I realize that patient satisfaction is to a panacea in and of itself, but we actually haven't engaged any consumer variables at this point, it seems to me. Thanks.

DR. HALAMKA: On that, I can certainly start. So for the last 10 years Beth Israel Deaconess has made all of its electronic records available to patients. Now, if you really are great in your catchment area, and you're famous, and you've got wonderful surgeons and great quality, you can maybe shift the market 2 or 3 percent. We surveyed out patients, and 19 percent of the patients in Greater Boston said they would switch doctors to have an e-enabled doctor where that meant I had access to my records, secure messaging to my doc, refill prescriptions, make appointments, get written referrals, that sort of thing.

So what has been part of meaningful use in its earliest stages is making data available to patients, giving them summaries as they leave the hospital or the outpatient stay, making sure, as they go from hospital to a skilled nursing facility of long-term care, that the data follows them. So it's a foundation, I think, as you said, that it gives us the capacity to engage the consumer in novel ways.

And there are vendors, many vendors like Microsoft and Google and others creating products that will leverage these standards and will leverage these capabilities. So what I'm saying is actually 10 years ago I was a voice in the wilderness, what? You're sharing data with the patients? That's strange. Now they're demanding it, and you see papers that are saying, actually, 7 percent of patients in America have access to an electronic health record through a personal health record system.

So I think that consumers are aware that capabilities will exist, and there will be novel products in the marketplace over the next couple of years. The consumer, hopefully, will become the steward of their data because, ultimately, they own the record, not the doctor.

MR. MOSTASHARI: I think you're right. I think that too much we have thought of these as somewhat separate spheres with important connections and work of pioneers to offer patients a view into the physician-centric/provider-centric data models, and we have, as a result of that I think, developed some parallel tracks now where there's a model for information exchange where the patient's in the middle. And the patient is the one who gets their information from multiple place and holds it and shares it.

And then we have models that are provider-centric. There is -- Ken Mandell has done some nice work around -- and we did some work around Google disease and Google health. For example, the consumer-oriented approach doing public health surveillance. How can we find out what diseases are happening, right? By looking at consumer behavior and consumer beliefs rather than provider systems.

There's an example from research with patients like me. One of my favorite stories, and actually favorite people, of where they're actually providing information that is --

comes from almost entirely from patients that enables people to do direct discovery and research. And these seem to be kind of, pretty separate tracks here.

So I think -- I think you're right. Finding more connections between those tracks where I think we have in the law, and there's a lot of activity around being able to feed those patients-governed and patient-owned sources of data with information from the clinical system. There's, I think, more than we can do on that basis, but we also have to think about more the other way: How can we push patients' observations and patient data in such a way that it's accessible to and influences the clinical care?

There are work flow problems when you try to do that, but it's not -- doesn't mean that we shouldn't try.

MS. PARSONS: You know, much like the pain scale became another vital sign, you know, all of a sudden, not just looking at what you could observe of the patients but what they were feeling at the time. I think we do need to understand what is going to be that element that we are -- that brings to the medical conversation that the patient keys in an incredibly relevant way.

I think the difficulty is that everybody wants a very different interaction with the medical system. So what would meet my needs in terms of a personal health record, or the level of information and the transportability of that information may be different from my mother, maybe different from my neighbor. And I think we have to keep that in mind that it's not about a technology that's going to solve this; it's about being able to provide many different forms of flexible, digestible information, some that come with suggestions, some that don't; some that come with education, some that don't, and be able to allow patients to start to say this is how I want to engage with this world.

I think when we did our initial patient survey, we thought we would be able to significantly improve the patient satisfaction with their provider because through the deployment of an electronic medical record. We had to cease and abort that study because the initial baseline, over 90 percent of patients were overwhelmingly satisfied with the care that they were getting from their provider. Where do you go from 90 percent?

But we know that's not really true. We know that maybe, you know, it -- so it's very hard to do these kinds of blanket looks at things and what satisfied one patient is so different than what satisfies another. And I think at the end of the day it's all about thinking through all the different flexible elements that could make up a package that any one person would interested in having.

MR. McCLELLAN: I think that's a great question and discussion to end on. We are going to have some more time for discussions as we continue, but I'd like to right now thank Farzad, John, and Amanda for coming in and having this discussion, and even with a fly buzzing around, where's President Obama when you need him, right?

But thank you for a great discussion to kick us off, and ending on the consumer things like just the right point. Thank you all very much.

DR. HALAMKA: Thank you.

MR. MOSTASHARI: Thank you, John.

MR. McCLELLAN: And I'd also like our next panel to come on up, and I'm going to get out of their way and move off to the side here while I introduce them.

We're very pleased to have leaders from a variety of organizations here that have already begun to use health IT for enhanced uses, for the patient care, applications that we were just discussing, but also for enhanced uses like quality measurement and quality improvement and developing better evidence on what works. So I'm very pleased to have them all here today.

So we've got Jim Walker, the chief health information officer for Geisinger Health System; Bob Steffel, who is the president and chief executive officer for HealthBridge in the

Cincinnati area; David Patterson, the state health information technology coordinator for the South Carolina Health Information Exchange and chief of the Office of Research and Statistics there for the South Carolina Budget and Control Board.

We also have John Steiner, who's the senior director of the Institute for Health Research at Kaiser Permanente and also represents the HMO Research Network, which is a network of integrated care HMOs that has been for a long time doing these kinds of enhanced uses around important clinical research questions.

And, finally, Michael Raymer is the general manager for Microsoft Health Solutions Groups, and I think has more to add on this issue of consumer applications as well.

What I'd like to do is start with a few minutes for each of you to give some opening comments, and then we're going to open it up to a discussion after that. And at least the order that I have written down on my notes here, have a starting things off with Jim Walker from Geisinger. So, Jim, thank you very much.

MR. WALKER: Thank you, Mark. We have graphics. I just have a couple of graphics. What they're intended to communicate is that currently everybody knows we have a fragmented health care system -- that's probably the first slide.

The second slide is the fragmented system that we're currently developing, so that's, you know, soft of the way it is now, a blizzard of information from all kinds of directions, and professionals are paid to make sense of that blizzard.

The second slide is what we're creating for the patient now, a blizzard of patient health records, of oceans of information, as they have been referred to in peer-reviewed articles, that will be connected and directed at someone: the patient, the doctor, someone. And as has been said before, we think that work flow or care process is critical to all of this, that what is needed is the next slide.

And what we’re trying to develop is a slide where all of that information from all kinds of sources is rationalized through a well-defined set of care processes that make sense and all of which point at that person at the top, the patient, and which are enabled for the patient through all kinds of different communication channels.

One of the things we find is that we have patients who want to come to see their doctor and say I want you to hold my hand and tell me what to do, and we do that And we have patients who say I don’t want to see you, I want to manage my care through the patient health record, and we have about 146,000 patients now, about 29 percent of our -- sort of the population we have a continuing relationship with, who are managing their care more or less that way and are connected to blood pressure monitors, are using a scale to send us their weights daily so a case manager can help them keep their congestive heart failure under control, are filling out questionnaires, are doing the pre-visit, all that junk that you hate doing when you go to see a doctor or anybody else. They can do that online at home so when they get to the office, they’re done.

So this is where we’re trying to drive. And I want to talk about some principles that we think are critical to doing this. And let me just say a couple of things. Well, the first principle is that we need to understand the health care team and the teamwork that is required to provide high-value health care. And we define the health care team as the patient, patient’s caregiver, physicians, nurses, case managers, front desk clerks, schedulers, payers, regulators, and public health and, obviously, others.

And we believe if you don’t start from that standpoint and say what -- how do all of these people make contributions to care that the patient experiences as being all about them, about never being redundant, about never making me answer the same stupid question for the 12th time, about, my god, they know what I’m on and what I need next, and they never waste my time.

That's the goal, but if we don't start from that teamwork, we'll never understand either the care processes which are primary or the health IT needed to support those care processes. And we will never link disparate organizations into what the patient experiences as a seamless experience of care. So the second is lead with care process improvement.

We believe one of the reasons it's been hard to show benefit from health IT is that we haven't done that. And if you don't improve the care process, you can't expect automating what you've always done to do better. We think that if you get -- we actually have evidence that if you get the health care team on the grid, just get them connected, get them starting to use the very simplest sorts of services, what happens within months is that they will be pressuring us to provide better services, more integrated services, more granular services, more interoperable services faster than we can do it.

An example of this, the last group to go live on our outpatient system went last because they made the most money and they're the most adamantly opposed. Six months later, they refused to see patients in outreach clinics if they didn't have the HR. And that's the kind of -- I think that's why we appreciate ONC's sort of bait-and-switch approach to health IT and meaningful use because once people get started, there isn't any turning back. They will be driving the movement toward improvement.

Next, we think critically important is to understand the power of human intelligence, particularly the human intelligence of the health care team, and to be very skeptical and sophisticated about the limitations of the intelligence of systems designers and of software systems. We often get that exactly backwards and create a disaster. And there's a whole set of science and methodology about turning that simple principle into care processes and health IT that actually works.

The next important really critical principle is flatten the learning curve. It is incredibly hard to start learning to use health information technology. Patients, doctors, anybody else. It has nothing to do with age, or intelligence, it's just hard. At this, if someone said to you from now on you have to do all your work in Spanish, and so instead of writing a presentation you're sitting there trying to remember what the plural dative is. And so there's a whole set of things we can do to do that, but that's critically important, and it clearly differentiates the organizations that are getting something done, that are achieving meaningful use, and the organizations who users are still suffering more than they're benefitting after years and years and years of implementation.

Focus on -- we, is that -- one last one. Focus on task-specific information. It's sort of been hinted at before. What clinicians absolutely need to provide good care is a remarkably constrained set of data, and one of the things we're doing in our Beacon community and at our health information exchange that services about three million patients is to identify the information that's actually needed to manage CHF or COPD, or post-op, and provide ways both for case managers and physicians to enter that information in a place where it's available to the patient and all of their caregivers.

We're also going to reach out to 5,000 consumers and patients and give them the opportunity to start putting in focused, actionable information that will be available; then, to all of the people that provide their care and that they will be able to access themselves.

MR. McCLELLAN: Jim, thanks very much.

I'd like to turn now to Bob Steffel.

MR. STEFFEL: Thank you. Let me start with just a quick snapshot of what HealthBridge is and what our market is like. HealthBridge is a not-for-profit multi-stakeholder company; you would use a health information exchange today. We actually were conceived back in '96 to be what we then called a stakeholder-neutral health information utility.

We serve a population of about 2.2 million citizens in Southwest Ohio, Northern Kentucky, and Southeastern Indiana. If we had had the good fortune to be a state, we would be the 34th in population, but, unfortunately, the market around Cincinnati just happens to cross state boundaries.

If one of the key questions we're asking ourselves about health care transformation it is, you know, how should we organize ourselves, and what's the scope of what we're trying to do? And I think it's to point, to talk about the size that you need to reach and the boundaries, the jurisdictional boundaries that market cross but, you know, some don't like to.

Just to tee it up, the annual health care spin for our community if about $13 billion. In terms of what data is accessed or exchanged, each month we deliver clinical results for 29 hospitals, two large national labs, several local labs, and several other organizations. These data are pushed to all of the physicians of record on that result when it is created. Over 5,200 unique physicians receive these results through the HealthBridge infrastructure based on however they choose to receive it. So we can mail it to them, we can fax it to them, we can put it into the community-wide clinical messaging system, or we can in almost all cases put it directly into their electronic medical record.

The printing and faxing are insignificant at this point as 95 percent of the results that we deliver today are delivered electronically. In addition, the community infrastructure includes a robust master patient index that's actively updated as data flows through as well as a standardized physician directory.

There's a question that was in our outline that asks, how do we -- how do we analyze data across organizations? Well, the answer to that is "very carefully." Our focus is really very squarely on the delivery of results to physicians so they can take care of their patient. Data analysis beyond this primary use is only allowed with the explicit permission of the originator of the data.

The sharing of certain data, data, for example, that could be used for market share analysis, is a no-no. My board actually won't let me share that data with them. There is an IRB process that we work on with each participant, as necessary for research that I'll mention in a minute. It's a bit cumbersome right now. We're actually working toward a community standard IRB process.

So what enhanced uses are enabled? We really think that we have a far more rapid and comprehensive delivery of clinical results than most communities. Three minutes is the norm from when the lab result comes out of a lab machine until it's available electronically for the physicians. I was in a physician advisory committee meeting, and the physicians among themselves were say, you know, that's really the standard care. We should have that data in three minutes.

Data also flows, like I said, more comprehensively, so if you go to the emergency department and you tell the emergency department physician who your primary care physician is, the emergency department report will flow automatically back to your primary care physician.

Amanda, I took this out as advanced functionality, but I put it back in for you. And this has to do with LOINC codes. The way that the data flows to us and the fact that we have, you know, so many of the participants sitting around the table, we've been able to move the LOINC codes along very, very significantly, and we're up to a high percentage of those codes at this point in time.

The notion of the key issues to get to for effective exchange of information in terms of improving population health, once it's been covered to a certain extent I really -- I hear you asking how do we get a handle on really mastering a population health, much less improving it, when patients can access literally thousands of different providers and hundreds of different organizations? I agree that that's really the same question of how do you

-- how do you coordinate the direct care of patient across, you know, so many unconnected venues?

In our model, the answer to both of these is the same: We believe that the key processes connecting patients, physicians, hospitals, payers, public health and others are best understood and then refined in the context of their relationships with each other. So we used a systems approach at a community level to enable stakeholder-directed process improvements.

It's clear that significant population health benefit can happen from the data that's passing through us starting with a master patient index that's out there and ready to be accessed. But we are not to the point that we have turned our attention that that particular goal yet.

So I'll conclude with that.

MR. McCLELLAN: All right. Thanks very much, Bob. And next I'd like to turn to David Patterson.

MR. PATTERSON: Thank you very much, and I appreciate Brookings having us. If being government means you're humble, being with state government means your extra humble.

But we really began our project in a sort of different way. My office is a statewide repository, a trustee of data. And it's a service agency under state law. And prior to ARA we already held all payer hospital data from every hospital in the state covering inpatient, outpatient surgery, and emergency department encounters.

We also were the repository for the state's Medicaid data and also for the state health plan data. So for hospital encounters, we had data elements that could provide a problem list, at least at the level of diagnosis and procedure for everyone who had encountered a hospital, and for the Medicaid and state employee populations, essentially everything including drug lists.

And along with that, as trustees we developed processes for holding these data. They were always held in trust, could never be released in any kind of identifiable form. We'd like to think of ourselves as a data Switzerland where the data comes in, and the owners then essentially provide the number to abrogate the data.

And this is very important because as you move forward through HIE, there is the need to develop trust, there's a need to develop collaboration. And being sort of that neutral party really gave us some history with that, as well as well over 10 years of claims that we could leverage to provide value before any of the incentives were available.

So prior to ARA, we had already begun allowing hospitals to access their own data and providing aggregate benchmarks to their peers data and to hospitals that were in contiguous areas, including things like our quality measures, and had done quite a bit of reporting for the Medicaid agency in South Carolina, and it even engaged in some projects funded by HERSA to begin using data collection and data movement to support essentially a rudimentary medical home project that would use patient navigators to guide patients around the system of care.

So all of those themes that have existed here we really began with pretty early on. And that allowed us to be incremental on, and again, that's natural for government to be incremental. But it also reduces risks and increases your chances of success, and allows both your stakeholders and collaborators and patients to get accustomed to the idea of what the electronic movement of data can do.

Beginning in 2006, we even moved towards HIE engaging in a collaborative project to build a record locator service and moving towards a federated data-stays-at-home model, because as the operator of a warehouse, I literally don't want the liability of any more data coming in than I absolutely don't have to have, and it also increases security.

Having successfully concluded that project, we then moved incrementally to testing and established and supported a REO in South Carolina that began marrying clinical data with its greater depth, to the very broad but pretty shallow claims data that we already had. Again, piloting the process, gathering lessons learned from the providers, allowing engagement of the patients in that community, and also following the policy models and policy development that naturally has to accompany the electronic exchange of health information.

Follow that pilot with yet another pilot that then moves towards a essentially a common model of care for an insured involving all of the FQHCs, free medical clinics and rural health clinics in South Carolina, focusing specifically on the uninsured, allowing these providers to better coordinate care among that population. And then, of course, ARA high tech then prompts us to leverage the existing architecture and gives us now a mission to make that exchange statewide.

So we really began with what we had and incrementally moved forward adding clinical data as we went on. Now our plans include connecting the immunization registry, dealing with a lab issue that has come up repeatedly, including the problem of LOINC coding and developing the firmer governance for what is really a statewide health information exchange, hopefully, what will eventually be a component of a nationwide health information network.

Looking at the challenges from our perspective, first of all, we had the advantages of partnership with our Medicaid partners, the hospital association and medical society, primary care association from the very beginning. Yet we still find continuous problems in a lack of understanding on the part of providers, particularly rural providers who may literally retire rather than engage in this, and also in the patient population broadly in South Carolina, which can be a little disturbed by the notion of access to all of this information.

And so this is one of our ongoing challenges, and that translates into a policy challenge because from the perspective of the state there's a lot of harmonization that needs to go on in the code and regulation in order to allow this to occur both within our borders and then across our borders. And so it's definitely a challenge.

What would be ask to improve this? Clear and consistent messaging tied with collaboration with the local exchanges that are already operational, and success stories that we can leverage, as well as clear messaging and collaboration with our federal counterparts in order to get this out. So that's the perspective of the state.

MR. McCLELLAN: Thanks very much, David. And next I think we'll hear from John Steiner for Kaiser and HMO Research Network.

MR. STEINER: Thank you for having me here this morning. I'm really representing three concentric circles of research departments. I'm the director of the Institute for Health Research at Kaiser Permanente in Colorado. We're an integrated delivery system for half a million individuals. We've had an Epic-based electronic medical records since 2004 and a legacy EMR prior to that time.

Our research department, locally, is actually 115 people and, as I'll talk about, a subset of a larger group of affiliated research departments across integrated delivery systems. Even in a population of a half a million, we are able to do research using our health information technology that has substantial clinical and public health importance.

Recent examples of our work include demonstrating that a very substantial increase in the rate of immunization, preventable diseases amongst children who don't receive timely immunizations. We've been able to show that Medicare Advantage patients in Kaiser Colorado demonstrate reduced medication adherence when they reach the doughnut hole. Most recently, we're showing that clinical pharmacists can, using home blood pressure readings that are added by patients to an interactive website, can manage blood pressure medications and reduce blood pressure in a satisfactory way.

Kaiser Colorado is part of a larger group of research departments within Kaiser nationally. Six of the eight Kaiser regions have research departments with a total of about a thousand researchers. In 2009 alone, this group was a recipient of over $54 million in ARA funding for comparative effectiveness and other research.

Kaiser recently has made substantial investment in the infrastructure or our research units through what we'll calling the Center for Effectiveness and Safety Research, which is enabling us to continue to develop our virtual data warehouses to more effectively link our administrators in efficiencies around contracting IRB and other important research functions, to coordinate our investigators to decide what projects are worth pursuing and what investigators across Kaiser regions are going to involve those projects and to develop a data coordinating center to assist researchers from the various sites in accomplishing their studies.

We're also undertaking a couple of proof of concept projects looking at blood sugar control and diabetics undergoing total joint replacement, and looking at the impact of the recent H1N1 epidemic on pregnant women in our integrated delivery systems.

The goal of this is to develop actionable research results within a year of the inception of the project. A real critique of research within in the greater delivery systems traditionally has been that the pace of research is so much slower than the pace of operational decisions. And we're really trying to see to what extent the efficiencies that we have through our increasingly integrated research model can accelerate the pace of discovery and implementation of research findings.

The largest circle that we're a part of is the HMO research network. This includes most of the Kaiser regions as well as other large integrated delivery systems geographically dispersed in the United States. Geisinger is actually a member of that consortium.

Collectively, the HMO research network contains electronic medical records data for over 12 million patients. The major initiative that we're engaged in now is the discussion with the director of the NIH around establishing a so-called collaboratory, which would make the HMO research network essentially a national research resource.

All of these research efforts are based on two critical things. The first is the existence of a virtual data warehouse at each of our sites. This has required extensive and costly development to ensure that we have identically named and defined variables that are adapted from each of our individual systems.

The second is a distributed research network which is a way basically of querying and interacting with those virtual data warehouses. That allows investigators and programmers at one site to basically send code to other sites to identify patients who are eligible for studies or to create data sets to conduct a particular study.

We were asked to talk about some of the guiding principals that are at work within these research consortia. I think the first such principal is that we are stewards rather than owners of the data. We hold the data on behalf of the members and on behalf of the employees of those organizations, distinct from traditional academic researchers who collect the data and feel that they own it.

The data really aren't ours. We have them on behalf of our patients, and that establishes a lot of obligations on us with respect to confidentiality of data and restriction of the information to the minimum amount of data necessary to address a particular research question. I think the second guiding principal is to explore and expand the richness of our data. Many entities have claims data that have transactional information, sometimes pharmacy information.

The data within our integrated delivery systems is far richer than that. We have the results of lab tests, we have easy access to pretext information from notes and pathology reports and so forth. And as we develop into the E health era, we now have information from telephone contacts, from electronic contacts, e-mail contacts between clinicians and patients that are really the source of the next generation of research.

I think the final guiding principal is almost obsessive attention to detail. A lot of people believe that doing research within integrated delivery systems is as simple as pushing a button. It's actually far harder than that. The transactional data need extensive transformation into the high quality data necessary for research.

In my shop in Colorado, we have 15 data programmers and database managers who are basically engaged full-time in moving data from these original databases into research ready files. This attention to detail is what allows us to do research that's of relevance for the public good.

MR. McCLELLAN: Thank you very much for those comments. I'd now like to turn to Michael Raymer, and Michael, I'll try to get your slides started up the same time as --

MR. RAYMER: Well, thanks very much for the opportunity to describe what our customers are doing today. Rather than talk about Microsoft products, I'd rather talk about some of the accomplishments of our customers. And I chose to focus on the Wisconsin Health Exchange, so if you could advance the slide once.

The Wisconsin Health Exchange today involves connection of over 40 hospitals, 120 clinics. We're processing a large number of transactions there and we're able to implement it in a relatively short period of time in five months.

The goal was for the EDs to be able to coordinate care on a geographical basis around that area. And one of the intentional designs of the application was to also aggregate the identified data so it could be reused on a future basis for public health, surveillance, potential projects. I thought I'd take a moment, if you'd advance the next slide, and just talk about -- a little bit about what it looks like to the physician at each of the ED clinics. It provides a patient summary view, much of what Mark and others have articulated today, in providing a summary of the medications that they're on, the allergies, any encounters they've had throughout the region.

You can see on this particular patient, just a sample patient, five emergency encounters, and then also to have a scalable data model over time. And so one of the things we're talking about over time is also the availability of images, so that you're reducing the amount of duplicate radiology procedures that are done in a particular geography.

With that as the background, it's very non-evasive to the clinician. They simply look at the screen as kind of the up front process of assessment and intake of the patient. Forward to the next screen, what I wanted to do is relate a problem that they had in Wisconsin. I think you'll need to hit one more, Mark, and one more again, I apologize, I didn't realize it had to build. But in 1993, they had a problem during a significant flood in Wisconsin where over 400,000 residents fell ill before really anyone was aware of the problem. Actually the pharmacies reported a run on Imodium on the counter, that was the first indication that they had a problem. And actually dozens of people died just related to this particular incident around flooding.

Let's flash forward to 2008, if you'll hit the next slide, Mark. Really they had a re-incident of the worse flood in 50 years. They had taken the public water system, they had installed new filters, but the question was, did the public works improve and was the water supply safe at this time.

If you advance to the next slide, we're immediately able in the Wisconsin Health Exchange to compare the outcomes of any presentation at the ED of how it varied between the Wisconsin Water Works and the other areas covered by the exchange. And you can see there was very little variation. They realized that they had solved the problem that had been generated in 1993.

So just a real quick example of something that you wouldn't necessarily have thought of when you were tilting up a health exchange, but by having the identified data, you're able to rapidly produce this information without any impact or additional work on the part of the clinician. Another example, if you would advance, Mark, would be really looking at H1N1. And so here's just a graph of the incidents of flu over the past year. And you can see also their ability to break it down by age. The individual presenting themselves at any of the locations of care throughout that catchment area.

Advance one more slide. I thought I'd talk just a moment about what is the impact then of having availability and coordination of care, has that really been utilized by clinicians, and have they seen it to make a difference.

So the University of Wisconsin is in the process of publishing this data and this scholarly publication. What they've identified, about 42 percent of the time availability of this data is actually making a difference.

If you advance to the next slide, we drove down a little bit more to see the actual impact on ordering. And you've seen about a 40 percent -- about 48 percent of the time we've seen a decrease in labs.

Some physicians have referenced and believe that they actually increase in number of labs which result of having access to this information because maybe it's caused them to be curious about another matter because they have a more holistic view of the patient, about 23 percent no change. I've seen a pretty significant decrease in the number of medication orders, and the same thing on imaging orders. So the projected savings looks to be about $50 to $150 per person.

Interestingly enough, the health exchange now is actually on an encounter basis being compensated by both Humana and Blue Cross and Blue Shield at basically $5 per patient interaction if the exchange is utilized in the course of the intake of that patient. And it's just demonstrating, they looked at the data historically and were able to correlate and see that the exchange was making quite a difference.

So as we think about it, what are we trying to accomplish and solutions, whether we're building for enterprises or consumers is really three things. One is that we really want to liberate data from the silos and make sure the data is flowing in the appropriate way in both a secure and private fashion.

Secondly, we want to empower both at the clinician level, but also the consumer. And I think many times the consumer is left out of the equation. And we found in a variety of instances around our partners, those customers around the country, that really we've had very great involvement on the part of the consumer. The third thing is that we really want to also, in addition to aggregation and liberating the data, we want to also connect care in a way that has not been done historically. So in doing that, there's kind of four principals we look at from a technology perspective, being from Microsoft.

You look at any problem and it's like when you have a hammer in your hand, everything looks like a nail. But from a technology perspective, we think of four things, one is an adaptable data model.

So the fact is, data is not always in pristine condition from its source system, but we rely upon the fact that both clinicians are really intelligent, and the fact of the matter is, sometimes even though the data may not be purely aligned, they have the ability to interpret that to help the care delivery process.

Secondly, we really believe in aggregated de-identified data. One of the things that we're concerned about is, the health exchanges today are not routinely putting that as the center, and much of the results that we've seen at Wisconsin would not be possible without the access to de-identified data. Performance and scale is really important, and finally consumer engagement.

MR. McCLELLAN: Thanks very much, Michael, we really appreciate the comments. What I'd like to do is start off with a few of my own questions to get some discussion going. And just to put you all on notice, I'd like you all to ask some follow-ups and carry this conversation along further and then we're going to open it up to everyone here.

And just kind of going back in order, Jim, back to you. As I understand it, you mentioned your recent -- congratulations, just awarded last week. As I understand it, a key element of that is to take what you've done within the Geisinger system, which is a pretty integrated set of providers with supporting data systems and the like, try to extend it out to other providers in the region who historically haven't been so electronically connected, let alone integrated in a more coordinated way like your own providers.

It seems like that's a much tougher challenge than the kinds of steps that you've described that you've been able to accomplish in recent years within Geisinger. Am I seeing that the right way and how are you all approaching it?

MR. WALKER: It is a big challenge, particularly making the business case, and we think that HHS is -- the cumulative effect of HHS's actions and legislation are already to have changed that so that there is a stronger business case than there used to be. But we do, in the beacon community, we are including hospitals, clinics, long term care facilities, home health, and then consumers, patients and their caregivers all in trying to build a linked web of both care processes, which is probably the hardest part of it, and integrated information, and so, yes, that is a big challenge.

We have done all of the pieces of that somewhere in some kind of opportunistic chaotic sort of way. What the beacon community gives us an opportunity to do is to put it all together into an integrated set of services, that from the potential purchaser we intend to be selling the service in three years.

From the standpoint of a payer or a hospital or a clinic or a consumer or patient, we intend to be able to say here is an integrated set of services, simple to use, one other phase for you, fits the way that you think about doing things, whichever one of those players you are, and we will save you more money than we charge you and be able to demonstrate that. So that's an enormous challenge, we're very excited about it.

MR. McCLELLAN: And you'll be able to show that, so we'll definitely keep -- now, Bob, you've got -- you're coming at this from a somewhat different perspective, your providers weren't so integrated as the foundation that Geisinger has been building on, but you mentioned stakeholder directed goals as being able to bring together, and I heard this from several panelists, stakeholder-directed goal being a good way to bring together the broader efforts for sharing information, and during the capacity to deliver better care for patients through coordination, but also population, health -- better population and health information alike.

As I understand it, you've been doing this mainly through shared goals and not the kind of financial business case that Jim just mentioned. Is that an issue, is it going to be an issue going forward? How do you see building on the momentum that you have already through all of these policy changes that are coming?

MR. STEFFEL: Okay, great question. Actually our approach is more or less the opposite approach, where we started with a push from employers, the hospitals and the physicians and the plans got together and said we need to do something. We -- you know, back in ’96, we said maybe this Internet thing is going to stay around, we can, you know, pull this together and make it work. But then the concept of having a neutral hub to pull it together, it really made a huge difference.

But right from the beginning we said we want to operate this thing as a business, we need to make this sustainable, if we can’t figure out a business case for any piece of this that somebody will actually pay for, then we won’t do it.

So over 12 years, something like 3 percent of our revenue is from grants, the rest is from customers that are paying less for the service. And in virtually every case, they see a very specific ROI from their interaction with the health information exchange.

SPEAKER: And is that primarily because of a demonstrated impact on quality of care and efficiency of care or other things?

MR. STEFFEL: It is more around the efficiency of the administrative processes. How much does it really cost you to print and mail versus sending it electronically? What does it really cost you to do an EMR interface with that big group that’s coming to pound on you and make you do it, and then, you know, what kind of liabilities come along with that? So it’s really fairly low-level administrative, you know, calculations of, well, wait a minute, you mean I can send this data to you and you’ll send it to all the EMRs, and so forth and so on. Hospital CIOs look at that and say sign me up.

The issue around population health, and we do some pretty interesting things, so because we have a standardized data flow that comes through one central point, we’re able to do, I don’t know, syndromic surveillance, every emergency department in the community automatically has non PHI data used in syndromic surveillance.

We realize that we could quickly identify the, you know, certain reportable diseases and route them because we know who the patient is and where they live, we can route them to the correct local public health department for almost no incremental cost, but putting together the larger population health business model and figuring out who's going to step up and make that work for us, that's what we're really, you know, beginning to tackle now.

SPEAKER: And any answers yet?

MR. STEFFEL: Well, I want to think that we can really build on the success of the collaboration and the communication that's happened. In fact, our esteemed moderator here is coming to Cincinnati in a week or two to oversee a meeting that I hope will help us launch this. And we're really moving toward the whole notion of triple aim, but that's, you know, to the care and the health and the cost, with some energized employers and hopefully reenergized health plans coming in to look at, you know, what can you do in a community with the systems approach, and you know, this data infrastructure to build on to really begin to address that.

MR. McCLELLAN: Now, David, you emphasized some similar themes about the value of having kind of a neutral convene or a neutral forum for bringing together all the stakeholders to help them identify common goals and then address those goals, and going forward as you're facing these kind of bigger -- both bigger challenges and bigger opportunities in terms of sharing data, improving care, fulfilling this potential for enhanced uses. You highlighted the importance of communication and clear messages about what was going on to bring along those rural providers and the consumers in South Carolina. How did the financial incentives, you know, this broad set of HHS based financial incentives and maybe private sector incentives fit in with that?

MR. PATTERSON: Well, they've been an enormous assistance. I mean we began really leveraging the warehouse because of the lack of a value proposition for providers. Back in 2006, the question was the empty HIE question, how can you connect enough providers to make this worthwhile, and so we first tried to provide value out of the box with an existing resource, and also leveraging safety net providers in the state as both sort of participants in a prototype, but also they're very, very important in the engagement of the rest of the provider community to the point now that our governance is essentially made up in part of these types of providers, as well as the hospital association to guide us.

And then last, but not least, since we mentioned meaningful use, that's really essential to the business model for sustainability for something like Skyex. We kept the costs low by leveraging existing resources, and then the incentives figure mightily into the business decisions of the providers when they look at the cost of actually paying for a connection. And so through the collaboration and messaging we have the associations essentially getting the message out that this is a good thing and that it's necessary, affording you the opportunity to explain that it's remarkably low cost, relative to some other things that providers often do.

And then you have some champions that help explain the quality benefits going forward. We had, for example, our pilot actually, through a project funded by HERSA, actually got all of their clinicians to 100 percent compliance with the standard of care for diabetics. You can't say enough of the value of those sorts of statements from physician champions to other physicians rather than someone from the state.

SPEAKER: It sounds like you're seeing -- given the priorities that you identify locally among your stakeholders, you're seeing enough opportunities to go out and connect with the HERSA funding or new meaningful use funding --

MR. PATTERSON: Right.

SPEAKER: -- you see plenty of potential to build on there and haven't been --

MR. PATTERSON: Absolutely, and as some of the external uses of the HIE, Medicaid is, in South Carolina, is one of our core partners and have been from the very beginning reporting and supporting their disbursement of those funds as part of the secondary mission of the exchange and supporting that. And it also, again, allows you to explain that to the providers themselves.

MR. McCLELLAN: John, you all are at a very sophisticated point in terms of being able to conduct the population level or some population level studies, and I'm wondering if you can help us think a little bit about scaling up beyond what you're doing already.

As you mentioned, there's a lot of interest even from the Director of NIH in turning what is a tremendous national resource of this HMO research network into something it can do even faster, more extensive support for clinical trials. It's 11 million -- 12 million people, that's tremendous, really aiming for a health care system that would be potentially much larger and even more diverse than that. As you get out of these integrated systems where you can have this very careful attention as you emphasize to getting the data right and making sure it is truly comparable and the conclusions are appropriate, it seems like that might get more challenging. Any thoughts on expanding out this model to a much more diverse and broader population of providers and health care delivery systems?

MR. STEINER: Well, I think that's taking a number of directions. I think one example that's underway that I know you and others at Brookings already know about is the FDA Mini Sentinel Initiative that is really trying to detect adverse events of pharmaceuticals in a population of, in the short term, 100 million individuals.

Obviously not all of those have electronic medical records of the depth and sophistication of the integrated delivery systems. But the first step is that we can -- we in the integrated delivery systems can essentially back create files that resemble those of other settings, so that we can add our data to the data that exist in these other entities.

If you're trying to detect a signal, a drug adverse effect that is often rare, but significant in a drug that isn’t prescribed commonly, you really need these large populations that you’re alluding to. We think that the less detailed claims files, and counter files, pharmaceutical files of other entitles are excellent at signal detection. And then the way that integrates with what the HMO’s and integrated systems can do is really signal verification. If you believe that a certain drug is causing low platelet counts, then you need to be able to drill into the medical records and confirm that the low platelet counts are due to the drug exposure and not to other things.

So that’s one way in which the two -- the more detailed and the broader data sets can interact I think to address health care surveillance problems. I think the other thing is that we think that increasingly systems outside integrated delivery systems are going to be adopting EMRs is really a topic of discussion here today.

And the other thing that we’re really trying to develop is ways of doing work together. Others have alluded to the problem of IRB review; that can cause chaos if each individual IRB is required to take a look at the study, to make modifications to the consent form, but then contradict the suggestions made by a prior IRB at another institution. So models of contracting across multiple sites which delays projects, models of centralized or seeded IRB review that allows projects to go forward more rapidly, and then certainly models of data exchange, how -- the virtual data warehouse model that we’re developing here and ways of extracting data through distributed research networks, these are all things that we think, while we’re testing them in our current systems, are potentially scalable to other systems with similar data as EMRs become more common.

MR. McCLELLAN: And, Michael, from your standpoint, you emphasize some of the same points about building off distributed data systems and having mechanisms for contributing elements or summary information from those systems to these larger scale projects. You highlighted some regional public health efforts in Wisconsin, also some use of summarized data it sounds like for payments, for quality related payments from Humana and Blue Cross. Is that going to be scalable, too? Can that get, for example, the level of supporting CMS payment reforms and the innovation center, accountable care, things like that, what needs to happen?

MR. RAYMER: Well, I think, you know, we have a number of our customers today that are looking at the implementation of accountable care organizations, and, of course, that road is a little murky, but I think what it involves is really unification of data that historically has been stored in various silos. So an organization of what's going to be accountable for both the cost and quality of care in a catchment area many times is having you engage with other providers that provide services that they don't typically do.

So we're working with one health care system today that's had to go out, secure relationships with the -- nursing provider, with a physical therapy company, at the same time importing data from the payer.

And historically there have not been good data systems and data models that really can ingest data from those various sources to provide a fundamental foundation for analytics on that. And so we believe the model that we've implemented at Wisconsin is extensible and applicable in an accountable care organization.

I think one of the interesting opportunities will be for health exchanges to think about themselves as a business model as being the data engine for an accountable care organization. So, you know, I think if I was responsible for a health exchange, my main objective would be to align myself with the accountable care organizations that are springing forward in any kind of geography because I think it provides an important independence element. They already are gaining sources of all that data, and you know, rather than tilting up something completely different.

MR. McCLELLAN: Interesting. I have just a follow up question for all of you based on this. I'm going to take you back to the first panel, where Farzad emphasized that we want to keep it simple but deal with the complexity and the importance of these public health and quality issues systematically, as well, and that -- kind of like the approach that they are emphasizing, is to find particular pieces, not try to do everything at once, but particular pieces, particular issues that could be scaled up to even the national level, maybe as part of accountable care organizations, as part of public health initiatives and the like.

What's your sense, any of you, of what might be the most promising elements or incremental but important steps in getting to this -- getting these goals nationally? We heard about lab results is one where some limited work on standards done consistently could potentially make a big difference; is that something that will be on the list? What will be some other concrete examples?

SPEAKER: One of the things that we realized as we were preparing the beacon plan is that what is often needed in a community of care is a fairly constrained set of data. Now, Farzad is exactly right about, you know, -- allergies, recent results, that's one, but there's this other set of information sets, like what are the things you need to manage a patient with congestive heart failure? I'd say there's about 44 data elements that you need for that.

What do you need to take care of a patient with COPD, this lung disease? And so one of the things that we're doing is identifying the minimum data set, the adequate data set for each one of these populations and then creating a simple web tool that enables physician, case manager, patient, whoever is appropriate, long-term care facility, home health nurse, to enter that data and to update that data and then create a simplified view that is optimized in terms of making it easy for a user to look at that and sort of see the whole thing and understand the patient rapidly. And so I think that's one way that we'll do the kind of simple task focused, but all of it will be linked to standards, all of it will be somatically interoperable, so that I think one of the ways we see this developing as we will sort of build out those data sets over time to where they serve more and more different kinds of patients, more and more different kinds of cases.

Patients -- another simple example is, stolen from Google and Microsoft, but patients will be able to put their med list into a simple tool and make that part of the health information exchange which we are using as the engine, the hub for the beacon community, and then it'll be the same thing -- can do, that a case manager can do the med list.

One of the things we found out is that clinicians, even our ultra wired clinicians say we can never tell what the patient's med list is in the nursing home, and so one of the things we're going to do is have -- enable nursing homes to enter the patient's med list. And then that list will be available throughout the community, and you'll be able to see who entered it and when. And then obviously part of the role of the professional is to say, well, that's someone I know and that's recent enough that that's probably right, but what you always do is review that and update it yourself anyway. So one of the reasons it doesn't have to be perfect as long as professionals are using it is because even if you give me a year old med list entered by Aunt Edna, that's a lot better than starting at zero, and I can go through and update it.

MR. McCLELLAN: Other suggestions?

SPEAKER: I think the role to consider is really important in that a number of our problems in terms of cost control is at the fundamental level about behavioral modification on the part of the patient. And so having I think more of an electronic communication capability with the patient over time that doesn't just rely upon the screen of a PC, but leverages other smart phones, PDAs, et cetera, in terms of engaging the patient in managing their health in a more proactive way.

You know, we believe that it’s the stimulus funding and high tech funding aimed at engaging the patient and family electronically we think is a really important step.

SPEAKER: And how exactly to implement that, though? As you’ve seen, with the funding and meaningful use funding, it looks like it’s going to be tied at least over time to demonstrating that the health IT is being used to accomplished something; what’s the way to capture that for these aspects of patient involvement? You could maybe follow Amanda’s approach of just asking whether patients are satisfied -- satisfied unless you’re asking a really -- accomplish the goal, how can you really push that along?

SPEAKER: Well, I think Cleveland Clinic has done some really interesting work in this space, particularly with congestive heart failure patients and really utilizing home base monitoring tools to capture data electronically, whether it be weight gain on a scale, whether it be use of a spirometer in a home, pulse oximeter, blood pressure, et cetera.

And they’ve had a trial study they’ve been doing in the Cleveland area that, at least for that population of patients as demonstrated as significant and actually zero readmissions in that period of time by more appropriately managing the patient.

Probably the most famous example of that was in the Cleveland Plain Dealer they did a front page story of a truck driver that was one of these congestive heart failure patients, that each day at the end of his day would actually utilize what devices he had been given by Cleveland Clinic to measure his vitals. He uploaded them to Health Vault wirelessly from his truck. And his physician was, in turn, interacting with that in a seamless workload basis to adjust medications, et cetera, and really engaging the patient collaboratively in that process. We’ve also done work in the Health Vault area with Wockham County, which has implemented this idea of a share and care plan, which is integrating both the responsibilities of the patient or the consumer integrated with the responsibilities of the case manager and caregiver or primary care physician, and they’ve shown great success in that interaction model in terms of improving the patient's health and also reducing the cost of care in that particular catchment area.

So early examples, and you know, they're still a long way to go, but I think the very first step is to encourage the providers to provide that electronic access. What we see, and I think probably Google would agree also, is, we're not seeing patients randomly, waking up one morning and deciding they need a personal health record, that is usually stimulated through the provider, and there's been a number of recent studies that have indicated that.

SPEAKER: There is a group in New Zealand that has tested and shown improved patient outcomes, I think it was pediatric obesity, where they have basically an educational curriculum that they've chopped up into little modules that they send on cell phones, and so the participant just gets a cell phone message every couple of days and they are showing benefit, and that's one of the things that there is probably a place for larger scale development, even federally funded national development of a set of curricula that would be reusable rather than all of us creating our own.

SPEAKER: Let's think about engaging the consumer using a systems approach. So if we have health information exchange that people are sending data to, and we know who the patient is and we can automatically populate the personal health record, then there's -- there begins to be value there for the patient.

But beyond that, if we can actually build the links to the physician office environment such that there is an improvement in work flow, rather than somebody picking up and calling the patient, they can see that the patient has the personal health record, they can push the button and actually deliver the result and document that it's been done, and then to really reach out there, what if we can engage the employers in a way that they can incent their employees to participate with a personal health record and use it. All of these different characters interact with each other, and if you can pull them together, I think we're a lot more likely to be successful in driving this kind of change.

MR. McCLELLAN: Other comments to add to this? Anything you want to ask each other, any clarifying or add-ons?

SPEAKER: One question about looking for particularly post-marketing surveillance of drugs, there are a number of European countries that have very sophisticated, active surveillance of databases, and that would, you know, if we could work together, that would get us up to a few hundred million pretty quickly. Is there any effort to get that linked?

SPEAKER: I don't have a definitive answer to that. I think, obviously, what the FDA has been focusing on is getting us to talk to ourselves first, which is an accomplishment in its own right. I think it's really only under the Mini Sentinel Initiative that's just been initiated where we're really starting to have the conversation between the integrated delivery systems and the other holders of relevant data about how to work together to do this even domestically.

SPEAKER: And just speaking from the experience with taking this up so far, it really does take some efforts to make sure that, just like you've described for the HMO research network, that, you know, a diabetic patient in one plan is the same as in another, the medications are being measured in the same way, especially the outcomes of the complications are being measured in a consistent way.

Then it gets back to the broader discussion we've been having here today about the need for practical standards, you know, maybe not standards for everything, but at least practical consistency for an important drug or a medical product, safety problems, or vaccine safety problems, there are going to be some issues that arise, there just always are, in trying to put data from different systems together, but through an appropriate process, those can be addressed.

And it sounds like from what you all are saying; believe the same thing can happen for patient entered information, for developing the key data elements or multiple sources for particular common health problems and for solving or addressing some of these other issues in quality measurement or effectiveness studies or things like that. It isn't going to happen automatically, it is going to take some work, but it's getting the sense that you all think these are manageable steps now, especially with the funding and infrastructure that's increasingly available. Does that sound about right?

SPEAKER: Yeah, we're on a road there's no turning back from I think at this point, and while the standards aren't fully developed, I think a lot of the sort of practical experience that you can gain from attempting to harmonize the data elements and to make them move I think are valuable to the process itself.

MR. McCLELLAN: At the same time, though, there's no magic bullet that will implement a set of standards and all this will just happen automatically, it is going to need some more work. I'd like to open up to comments from all of you who are here. Just raise your hand and we'll get a microphone to you. And, again, be sure to identify who you are and ask your question.

MR. PANTOS: My name is George Pantos. I am executive director of the Health Performance Management Institute, which is a think tank that is doing precisely what the panels have been discussing, to promote the notion of member engagement and to use technology to measure and manage how health plans operate and how they perform. I was wondering, in terms of a discussion here today, which seems to be also, Mark, in your earlier comments you mentioned performance management principals, I was wondering whether the focus of the electronic health record, as you have been discussing it, is aimed at people who are ill and go for care, which seems to be the emphasize that I got, or whether it also could be focused toward prevention, because one of the important components of saving and health outcomes is to be able to prevent illness.

And this gets kind of mixed up in all the buzz out there, and yet it seems to me that if member engagement is directed toward getting people educated about their health and adopting a healthy lifestyle, that certainly being able to get the data they need to be able to take those paths is critical.

Yet an electronic health record seems to be presented as a static document rather than one that has the ability to provide the data for people to take action on the consumer side. So I wondered if you could just, anybody comment on, maybe Michael would be the best one on this because of Microsoft's involvement, but isn't there a dimension here for prevention?

MR. RAYMER: We would absolutely agree. I think, you know, part of the challenge has been -- is that we're not incented to prevent, incentives today are perverse on the provider side, and I think that a lot of the, you know, the inertia now is toward enabling information systems to be in place to change the reimbursement system to be more driven toward outcomes.

We certainly have seen in countries where they are the payer and the provider, where the use of our systems have been to engage the family, the family caregiver or the individual directly more on preventative services and leveraging our technology to be able to accomplish that.

So I think the framework is being put in place, but until the reimbursement changes to really incentivize the preventable elements, I think it's going to be difficult to get the whole system to move in a more unified way.

SPEAKER: That was part of our motivation in South Carolina to begin with. I mean our exchange really grew out of support for care coordination models. Now, it had a human component that I think eventually will have a much larger electronic counterpart, with a care coordinator or a case manager having the dialogue with the patient. But back to the incentives, I think we need to move in that direction and in the electronic or technological wherewithal; to do that more effectively directly with the patient, we need to move in that direction. But as a principal, that's really where we've been all along.

SPEAKER: You know, within the integrated delivery systems, the incentives are so much better aligned. First of all, we have members, not just patients, and when you're thinking about prevention, you're thinking about all your members, not just, as you say, the ones who choose to access care.

Kaiser knows all the women over 50 who need mammograms. It doesn't rely on them to come in for a medical office visit to remind them that it's time to get their mammograms. Through some of the patient portals that Kaiser has developed, if you fill out a personal health assessment that's on record, then individual prevention reminders, if you need cholesterol screening, bone density, immunizations, what have you, then you can basically outreach through electronic means, through e-mails. This happens for me and my family as Kaiser members. So I think where the incentives are aligned, where there's an incentive toward and certainly no disincentive against prevention, you can see a much expanded use of these electronic tools to achieve prevention goals.

SPEAKER: Jim, you also have an integrated system that's --

MR. WALKER: So internally we've documented things like we were above national benchmark on flu vaccines. When we started running -- letting the database send automatic reminders to patients who are at high risk for flu annually, and by the way, we use U.S. Mail if that's the patient's preferred communication channel, or the network PHR if that's what they prefer.

We increased uptake the first year of 15 percent and it's increased every year since, at, of course, decreased administrative costs and not -- what we're doing in the beacon community is going out to mosques and synagogues and churches and PTO's and anybody else that will have us in the community and reaching out to -- that's why I always say consumers and patients, and enabling those people to say, yes, I'd like to get a flu shot reminder and be on a list that automatically annually I get a flu shot and a recommendation on where to go consistent with my care providers and all that. So, you know, there's clearly -- that is happening, the issue now is to find ways to reach out to people.

You can do things like say, okay, case managers that have patients that never see a Geisinger clinician, are completely outside of Geisinger, why don't we have them enroll their patients in this kind of electronic reminder system? What are the ways to get out to the community so that people out in the community have an option to say, oh, I'm 50 years old, it's a good idea to get a colonoscopy, where would I get that, how would, you know. So I think we have, again, we have the tools, we've done it, the question is putting it together in a system that really runs end to end.

SPEAKER: And these broader based efforts -- this panel have pretty complete electronic records for your integrated care population, these broader based efforts are much more limited electronic records, correct? I mean, you've identified some specific clinical problems that are of interest to the population of consumers or patients that you're serving, you've got a limited electronic capability related to that, and it's focused both on the patient or the personal responses and improving care for them, but also a basis for some of these reimbursement changes or population health measurements or something like that.

SPEAKER: Right, but because of our setting, ours is the absolute lowest tech possible. All you have to have is an Internet-capable computer.

SPEAKER: We're finding that the stakeholders beyond the patients themselves that are really interested in prevention are the employers, particularly the big, self-employed folks, they have a word I hadn't heard before, presenteeism, it's very important to them, and we really hope to get them engaged in this process to motivate and push and incentivize employees from one direction while we're catching them on the more traditional health system side with the personal health record and ultimately a community-wide register to be able to flow the kind of upper monitors.

But I think the employer engagement and them seeing a direct benefit that they can measure in terms of people being at work will really help us moving forward.

MR. McCLELLAN: Other questions? I know we had one over here and then back there.

MR. BING: I'm Landon Bing from -- Standards Organization. For Dr. Steiner, are the data in your research database identified or are they anonymized? And also, can you give a couple of examples of research uses of that data?

MR. STEINER: The data -- the basic principal is that, in the federated model that we have, the identifiable data remain within the institution, so that when an inquiry goes out for -- if an investigator at one center is doing a multi site study, they send out an inquiry for data that is de-identified at the host institution, either a summary table of data is created, or, if necessary, the data are appropriately de-identified, pushed back to the investigator, who assembles the final data set for analysis. So by the time they're touched outside an individual institution, they are de-identified.

The examples are many. I think one that comes to mind is that three HMOs -- Kaiser Colorado, Northern California, and Health Partners in Minnesota -- have been collaborating on a series of studies on a disease as common as hypertension. We have a data set with over a million patients with rich clinical information about hypertension treatment that enables us to start to ask questions that will never be asked in conventional randomized trials. For example, given that you're on a certain first line treatment for hypertension, what's the relative benefit of different second stage treatments for the same disease? If you're on a diuretic, a thiazide, should you be on a beta blocker or an ACE inhibitor in various combinations?

The cost to study those critically important questions in conventional randomized trials is basically unfeasible. So through this kind of comparative effectiveness research, we're able to address questions that really must be asked, and they can't be asked other than in these sort of naturally occurring --

SPEAKER: And that's a pretty complex study design it sounds like, looking at secondary medications and patients who probably have multiple illnesses and other issues at the same time, still done with the identified data beyond the individual institutions that are participating.

SPEAKER: Correct.

MR. McCLELLAN: Next question over here.

SPEAKER: Good morning.

MR. McCLELLAN: Okay, sorry. Go ahead and then over there.

MR. DAMATHASON: My name is Ellis Damathason from the National Association --

SPEAKER: I'm Malcolm --

MR. McCLELLAN: Start in the back and then you're next.

MR. DAMATHASON: -- from the National Association of County and City Health Officials. Several of you have talked about public health, and we represent local health departments. One of the challenges of not having public health at the table to start is that when you come to do secondary data use, it's very challenging. And Wisconsin is a good example.

Many of the data fields like chief complaint and race are pretext, which is I'm sure very helpful for the physician when he or she is typing it in, but not very useful for when public health want to use -- surveillance. So a two-part question. One is how do you get public health agencies to the table at the start? How do you incentivize them to do that? And then secondly, how do you balance the needs of physicians and the needs of public health workers?

SPEAKER: And it sounds like race and ethnicity data that's standardized is a key issue from your standpoint.

MR. DAMATHASON: Certainly from looking at disparities, but even chief complaint falls -- surveillance.

SPEAKER: I'll start from our side. Public health is literally a partner in our HIE collaborative grant. In fact, the three primary partners are State Budget Control Board, which I represent, the Department of Health and Environmental Control, which is our separate health department, and Medicaid really came together to form the core of that, building on work that was already done.

How did we get them to the table? Well, actually it's almost like any of the other relationships that you've heard; you find literally a win-win for all of the agencies. In their case, one of their key points of pain was the population of the immunization registry, which had been done through sort of a stand alone platform that providers really found impossible to use given its impact on their work flow.

So by going directly through the exchange, you again take -- eliminate the need on the provider side of having someone second key any of this information, yet you have a more complete registry. And we're moving from the immunization registry on towards reportable diseases and reportable labs. And so from our perspective, those are the kinds of discussions that need to take place within the state government just to harmonize all of those needs and desires.

SPEAKER: We see public health as a very important player in health information exchange. They are a natural ally of the health information exchange because they have a need to get data, to get it locally, and to be able to utilize it across all sources. So we've had a public health board seat pretty much from the beginning of HealthBridge.

The fact that the data comes through a single control point and it touches our master patient index has proved to be very valuable for public health because for some reason the labs don't always have phone numbers and no addresses and things like that. So just touching that master patient index has really added value for the data that we flow to the local health departments.

In a very similar flow, and I don't want to get into competing, you know, health department constituencies, but the same data flows can go to both the local, the state, and even CDC, you know, with very little effort once you have it in the right formats.

SPEAKER: I think in all the exchanges, the public health department has been very actively involved in the set up and also articulating what some of their needs might be for the health exchange, so they've been very, very actively involved in every instance I can think of.

SPEAKER: And maybe, David, this is a follow-up for you, but is there more potential for financial alignment here, as well as we've talked about in other areas, so, you know, FDA is now providing some funding, and I expect some drug manufacturers are going to be providing some funding for phase four studies along the lines that we talked about for drug safety surveillance using these electronic systems; is there -- or other funding that could help facilitate this kind of active involvement?

MR. PATTERSON: We are beginning to see some of that. And, in fact, the state HIT coordinators met just a few days ago, and that was a consistent theme among all of the states, is the need for sort of harmonizing all of the federal positions and funding opportunities, because when you look at this, these are actually all pieces of the same larger whole. But from my colleagues on the health department side, we're beginning to see some of that come along.

MR. McCLELLAN: Last question.

MR. LOVELL: Malcolm Lovell of Brookings Advisory Counsel. My impression is that the -- and this question is not a part of the HMO's, but the health care is not part of the market economy, and would it be a valuable thing to require doctors to post online what they charge so that people could do some reasonable shopping? Of course, quality is something else, but at least it would bring in -- anyway, how do you feel about that?

SPEAKER: I mean that's what the consumer theme you all have been talking about, better relevant information for decision-making certainly includes cost of care, how do these steps help make that happen.

SPEAKER: Well, I think, you know, that to the extent that consumers get presented with both the cost and the quality data, we've seen instances where they're not reimbursed by payers. Like LASIK surgery is an excellent example where the consumer becomes aware of both the economics of the procedure and the outcomes of the particular physician, and you've seen both the quality rise and the cost reduce. And I think to the extent that we make transparent to the consumer, both the cost and the outcomes of the variance between providers, you will see the free market make an impact on the overall cost of health care.

SPEAKER: Can you also say a little bit more about how to do that? I mean, in the spirit of the discussion so far, which is recognizing, look, there's a lot of complex information out there, it's not all comparable, it's not subject to the same standards, is there a -- wise approach here to giving people information they could actually use for decisions, should it be kind of picking up on Jim's point, should you start with some common clinical problems and try to get relevant summary information, how are we going to really accomplish this in the practical fashion that you all have been emphasizing today?

SPEAKER: No, I think you've hit it -- it's probably identify those -- and it's a role that potentially government could play as to kind of systemically identify those areas where the consumer could be more engaged in their care process and to drive the requirement of providers to provide both that cost and quality outcome data related to more narrow areas, so but those will be the areas in which there will be the biggest cost lever for the country. So I think you can't do it globally, but picking certain areas, certain types of procedures, certain types of problems or diseases would be a great starting place.

SPEAKER: You all doing that, maybe bypass surgery?

SPEAKER: There's a science and set of methods for risk communication which have been almost unused in health care. There's a large research effort that would be needed to learn how to do that, but it's clearly a national lead.

SPEAKER: But the large research efforts, that, to me, sounds like it's going to take a long time and not really going to fit what is practical, you know, get some useful steps done now, reasonable steps done now.

SPEAKER: We do everything on two tracks, and so we do what we do now, and yeah, we report things like decreased rehospitalization, decreased infection rates, how many evidence based sub processes in a process we get done for every patient, but we do need to address the other.

SPEAKER: Cost information, price information?

SPEAKER: I think so, I can't swear about that. They never tell me about cost.

SPEAKER: (inaudible) support your employers.

SPEAKER: It really is. And to wit, we have been involved in a project that's an RWJ grant aligning forces for quality, where most chose to use the available claims data. We worked with others in our community to actually extract the direct clinical data from the physician office electronic health records floated over to be analyzed in a very standardized way with the published intent of making the physician report cards, if you will, transparent, so that process is underway.

Because HealthBridge is also the regional extension center, we're trying to negotiate with our electronic health record vendors to essentially require that level of interoperability and output, you know, in the contract as part of the discussion with them so that we can flow that same kind of data much more broadly.

MR. McCLELLAN: Well, I'd like to thank the panel, thank all of you for some excellent questions, and thank you for the discussion this morning. (Applause)