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**Confronting the Chronic Care Challenge
Hardwiring Effectiveness to Deliver Better Health at Lower
Costs
Partnership for Quality Care
March 19, 2008**

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[START RECORDING]

MALE SPEAKER 1: Are there any questions? Okay, then I guess the next panel.

MALE SPEAKER 2: Please welcome Eugene Bassett, chief operating officer of Jackson Health Systems, and Martha Baker, president of 1991 SEIU.

EUGENE BASSETT: Good morning. We have the pleasure of introducing the first panel topic, which is "Hardwiring Effectiveness for Delivering Health, Better Health at Lower Cost." It is a pleasure for me being here. I'm representing Marvin O'Quin, chief executive officer and president who was called away to Tallahassee today.

If we were asked to sort of think about a partnership in which we're presently undergoing at Jackson with our colleagues in the union and it appeared to me that the foundation of hardwiring anything, of course, is the medical, electronic medical record. We are now in that process of developing that with all levels of the organization and certainly as a partnership between administration and the leadership and the unions, it's driving a whole different culture within the organization.

One of your speakers today, Kathy Hebert, will give you some information of her journey on this hardwiring and the use of the electronic medical records as a tool to drive change.

Martha?

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MARTHA BAKER, R.N.: Good morning. I'm Martha Baker. I'm a nurse at Jackson Memorial, actually a manager in the trauma ICU and president of SEIU Healthcare Florida, our local is 1991. And, it is a pleasure to be here today. This concept of partnership is certainly something all of us can invest in, I hope, and meet a lot of the goals in the last presentation.

I have the honor of introducing the panelists and your moderator today. Dr. Philip Madvig is a medical doctor and Associate Executive Director of the Permanente Medical Group; Dr. Kaiser Lim, Assistant Professor of Medicine at the Mayo Clinic; Linda Beckman, Northern California Labor Coordinator and Kaiser Permanente HealthConnect SEIU United Healthcare West Leader; and Dr. Eran Bellin, medical doctor, Vice President of Clinical Technology, Research and Development at Montefiore Medical Center; and your moderator today is Dr. Kenneth Thorpe, Professor and Chair of the Health Policy and Management of Emory University. Dr. Thorpe?

KENNETH THORPE, PhD: Good morning everybody. Come on. Ever since I've moved to the south, we've got to have more of this. Let's try it again. Good morning. Thank you. It is a pleasure to be able to moderate this panel, particularly with so many old friends in the room and real leaders on this issue. Obviously, already been mentioned, Andy Stern, Dennis Rivera, Ken Raske, and others.

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Let me put the panel very quickly in a context because you're going to hear four outstanding papers. As was talked about at the introduction, we have been at this game for at least 60 years and we haven't made a whole lot of traction nationally. My sense is that coming in to 2009 we have a real opportunity to do something on health care reform that is major and structural. However, I think in order to do this, there are a lot of lessons that we need to take away from our previous shot at this 14, 15 years ago. We need a different message, a different strategy, and we've got to find some way to do this in a bipartisan way.

What better way to start this discussion on health reform, not just health financing reform, but health reform, around the issues of affordability and quality. If you think about it, the flip side of the uninsured is that 85-percent have coverage and if you look at the polling data from 2006, 96-percent of people who voted in 2006 had health insurance coverage. Their number one issue and concern is that it costs too much and there is spotty quality.

So let me leave you with three facts that these papers are going to deal with on the affordability issue. One is that it's already been talked about, about three quarters of what we spend on health care is linked to chronically ill patients so if we are ever going to get the basis spending down, we have

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got to figure out a better way, the more effective and cost effective way to deal with that.

Two, about 15 to 30-percent of the growth in spending is linked to a rise of obesity in this country, an explosion of chronic disease. That points to some strategies with respect to the population and basic public health management and the good news is that if you look at these issues around chronic disease and embedded chronic disease in the system, about 80-percent of it is preventable.

So, I think that is good news because it focuses our attention on three areas for health reform I think moving forward. One is that we need a new delivery model. Our delivery system was great for patients in the 1950s, not great for patients today. Two, we need to have a different way to pay for health care, that really allows those delivery models to prosper and develop, and three, we need to give our providers and health care workers the tools, the information technology to actually manage the patients.

Now if you think about those solutions, those aren't partisan issues. They are not republican issues. They are not democratic issues. They are really common sense initiatives and we are fortunate to have four papers here that is going to provide new cutting edge information on most of these areas. The speakers have already been introduced. They are going to

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go in the order that they appear in the program, so why don't we go ahead and start with Dr. Madvig?

PHILIP MADVIG, MD: Good morning. I'm going to talk about cardiovascular disease this morning and gonna move fairly quickly into this and just make again the point that this is one of those chronic diseases that does account for a substantial amount of suffering, premature death and also if you look at that number \$450 billion a year this year will be spent on cardiovascular disease, it's a big piece of that \$30 trillion dollars over the next ten years that we heard about.

The good news here is that the biomedical research world has in fact come up with a lot of very effective therapies that are available to address that situation and the bad news is what you heard earlier that Beth McGlinn reported, that in the United States as a community of care givers we really only get this job done a little bit more than half the time in general and that's pretty much the case with cardiovascular disease so we know what to do and yet somehow we are not getting it done and that is what is referred to in the Institute of Medicine's report of a few years ago is that as the quality chasm in the United States, and I'm going to talk about some of the things that we are doing at Kaiser Permanente to help us get across that.

So again the point is we have the medical evidence that tells us what we could be doing to improve the care and the

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efficiency with which we provide that care to these patients and I'm hoping that I'll make fairly quickly the point that in order to cross that chasm there are a number of things that make a big difference. They include having an organized delivery system. They include redesigning the processes of care and also using advanced information technology and I'll make the final point on this slide as well which is that it also involves engaging the patient, actually patients and their families represent the largest pool of health care workers and can engage in a lot more self care than has been true in the past if we can help them understand their role.

So I'm going to go fairly quickly through these opportunities. I'll probably skip acute care. I just want to make the point that a lot of this disease is preventable, even for people who have cardiovascular disease, you can prevent the next event and for those who nevertheless develop an ongoing chronic condition, there are effective ways to take care of them as well.

In primary prevention, the main features are these. If we can help people modify their lifestyles and if we can control their risk factors through medication, we can make a huge difference in the likelihood that they will progress to have significant cardiovascular disease and what we have done in our program, just focusing here on one part of this which is controlling high blood pressure, let me just point out that on

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the left side of this screen is the rate at which we and our organization were successful at controlling high blood pressure about six or seven years ago, 36-percent, it turns out to be pretty much the national average, not better, not worse, not good. The fact is we didn't even know that was our rate until we started using some crude information systems that allowed us to see our own performance and since that time we've made some substantial strides in improving this and they have relied on some of these factors that I've put down here, one of them being something that we borrowed from the pharmaceutical industry which is essentially imitating their process of detailing. We have created essentially clinical champions, respected physicians generally in each medical center, whose job it is to go out and engage their colleagues and to help them understand what it takes to improve the blood pressure control of their patients.

And then this phenomenon called "Reviewing Reports." I'll get to that in just a second. Data based on information systems that can be used to make changes in care, and then redesigning processes of care to get beyond the historic way that doctors have organized their care.

This is data, this is a revealing report here. I've made it a little less revealing by hiding the physicians names but this is something that we are doing routinely which is to publicize the performance of each one of our physicians in

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various aspects of quality of care, in this case the rate at which they are controlling high blood pressure, and you should see a couple of things here. One is that there is a big range. There is a lot of variation which is true of everything that we look at in health care. And, the benefit of displaying this is that it allows everyone to come to grips with the fact that unlike what we all believe as doctors, we are not all above average, and in fact there are some of us who have greater opportunity to improve than others and they can recognize their situation and they can also see who is a high performer and learn from those individuals so we call these things revealing reports or they might be called in the current vernacular transparency.

Once you know what you're doing, once you know what your success rate is, you need a way to understand what am I actually, where are my opportunities for improvement? So what we have learned is fairly simple actually, if you can look at your own performance and see whether you're essentially intensifying treatment in response to lack of success, you will be able to change your performance and so using this algorithm here that says check, treat, and repeat, and retreat if needed, we have been able to create reports that describe individual performance at each of these steps, allowing the individuals and others in their community of caregivers to recognize where their opportunities are for improvement and the result is this.

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This is a few years of changing performance, moving from that point of 36-percent now up to a level which puts us in probably about the top 3 or 4-percent of organized health care systems in the United States as far as performance goes here.

Now that is an example of primary prevention. I'm going to move to secondary prevention. This is actually probably where the biggest opportunities are. This is about patients who are already known to have cardiovascular disease that had a heart attack, that had a stroke, or they have things that put them at equivalent risk, basically diabetes or kidney failure, and there are a number of things that can be done to support their improvement, their reduction in risk. We happened to organize it into a program that we call "PHASE: Prevent Heart Attack and Stroke Every Day." The main point here of saying it is in a program is that one of the fundamental things you have to do is you have to know who your patients are that are at risk, you have to create essentially a data registry and be able to follow them over time to see how they are doing. And in this program, again, these are some of the factors that have made the difference and I have highlighted three of them that I want to just point to fairly quickly, information systems, process redesign, and engaging patients.

This is what has to be done for a typical diabetic patient. There are 22 different things that, depending on the

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patient's age and gender, that really need to be accomplished in an encounter with the patient or over time, it is a lot of stuff and by the way that is not generally what the patient actually came in to see their doctor for. They came in for something related to their gastroesophageal reflux disease or something else, so how do you get those 22 things and the other things done? Well, if you try to do it through the historic model of care, which is essentially one patient and one doctor together in one office, one at a time, it doesn't work. It may have worked fine in the past when there wasn't that much that we could do. We have a lot of things we can do and we're, as we pointed out, not getting them all done, so we need to change to a different model that does not rely on the patient arriving in the doctor's office but engages in a proactive population management approach and which uses electronic medical records and uses team care and moves the care when it can be moved out of the doctor office.

I'm not going to, if I can get the next slide to advance, I'm not going to give you detail about this but essentially you can lump here into three different venues, there is the care in the doctor's office which can be called "in reach." There is the care when the patient isn't in the office which can be called "out reach." And there is the members care for their own medical conditions. And one of the ways to make this work better, don't try to read this long

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slide, but is to expand the team to leverage the physician time by giving roles to other people. In this case, panel management or population management in the hands of a panel management assistant. These are medical assistants who have had six weeks additional training and what they do is they use an information system which tells them for each doctor who their patients are with diabetes, hypertension, asthma, etc, and they work with the doctor, they come into the doctor's office with a list of those patients with all the information together and they sit down for 15 minutes with the doctor and go through ten patients and the doctor can very quickly say this patient needs to have her medication doubled, this patient needs to get a lab test, this patient needs to have an appointment with me, etc, and during 15 minutes can do the population management for ten patients, then the medical assistant goes out, makes phone calls, executes those orders, gets lab tests done, explains things, etc, to the patient.

It is a very efficient way. It relies on an information system that has a screen that looks like this which allows sorting of all these patients into categories so you can find the highest priority patients first, like the diabetics whose blood pressure and blood sugar and lipids are not in control and bring them to the attention of the doctor and you can essentially go through your entire population of patients over a few weeks' time and then you get to start all over again

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and go through them again, make sure that they are well taken care of.

I'm going to skip past this slide which is simply a web page that shows you how our patients are able to access their doctors and also go to some of the self care modules that are available to them on the internet. I want to just make a point here which is that you've got to redesign processes of care as well. If you look at diabetics and sort them into those who are well controlled and not, then you can take the ones who are not controlled and find that in some cases it's because they have not taken the medication that has been prescribed, in this case it was, this is research we did about 24-percent of those patients, about a third of them the doctor hasn't done what the doctor needs to do which is to intensify treatment in the face of lack of control.

And if you take a closer look at those, one of the things we found that you will hear a little bit more about is that the use of an electronic medical record can help the doctor to see those patients clearly because when they are in the office the electronic medical record can put up what is called a best practice alert, that is what is in the yellow here, essentially saying to the doctor you have a patient in front of you right now whose blood sugar is not controlled and this patient is on the following medications and do you want to

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intensify therapy and if you do, that red arrow points to all you have to do to get it done.

Click on that button saying accept and it will open up a screen with a set of orders for new medications for the patient, instructions for the patient, and the patient leaves the office set up to move to the next level of therapy and through that kind of implementation of these various things we have been able to change the performance on various control factors for our diabetics in fairly short periods of time here and the point of this is not the numbers but what it means to patients because these patients, this is just the work we did in the last year. Getting a number, this number of patients under control means that they will not have the horrible events, stroke, heart attack, etc, that they otherwise would, so it has a real impact on their lives and it has a real impact on the consumption of resources in their care.

Finally, I'm going to fairly quickly just tell you something about chronic health, chronic condition management, in this case patients with heart failure. These are generally elderly patients. They are severely ill. They use an awful lot of health care resources. Over the last few years, we have made improvements in their care that have resulted in lowering their mortality rates and at the same time decreasing their use of health care resources, here I'm showing their hospitalization rate and their emergency department visit rate,

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and that is very good, but again when we look at our own performance, this is the stuff of revealing reports here, what we see is that we don't all perform at the same level even inside my own organizations, so here is looking at our 15 different sites and what we saw is that one of those locations or two on the far left were performing much better than everyone else in terms of their hospitalization rates and that had not always been so.

They had somehow changed their performance in a fairly short period of time. What we learned was that they had done something fairly simple. They put a nurse in the hospital to essentially acquire these patients when they were in the hospital and engage in overseeing their transition out of the hospital and into ambulatory care and they done one other thing which is they had created a telemonitoring option so patients went home, were given a piece of equipment that allowed them every day to send into a call center their weight, blood pressure, heart rate, oxygen levels, and that intervention was what had led to this improvement in utilization because the patients were managed better and they learned through this process what it was that triggered their exacerbations and they could self manage.

So the bottom line here is that through all of this effort, we are seeing in that pink line on the bottom a substantial reduction in heart attack incidence and I would

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show you the stroke incidence as well but most importantly I guess is this, my last slide, which shows that we have been able to maintain cardiovascular mortality rate in our program through these interventions that has kept us at 30-percent below a risk adjusted population around us. Thank you.

[Applause]

KENNETH THORPE, PhD: Common themes in these two talks and I was also very, very happy to see the calculus notation in there [laughter] so thank you for that. Our third speaker is Linda Beckman. Linda?

LINDA BECKMAN: Good morning and thank you very much for asking me to be here today. My company, Kaiser Permanente, is now completing a multiyear, multibillion dollar implementation of an electronic health record, the largest civilian electronic health record system in the world. I'll give you an overview of the system, how we have handled its implementation, and how it improves delivery of care.

First a quick background, Kaiser Permanente is the nation's largest non profit healthcare system, covering 8.7 million members in the nine states and the District of Columbia. We have about 160,000 employees, 13,000 physicians in 32 hospitals, and 416 medical centers. Most of our staff are covered by our labor management partnership, the largest and most comprehensive partnership of its kind. The

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partnership played an important role in developing, refining, and successfully implementing our electronic medical record.

I think most of us here already agree that the electronic health record, but quickly let me let you know the scope of ours, it's called Kaiser Permanente Health Connect. It brings together out patient, in patient, information, health plan, billing and the financial side of our system. Because Kaiser Permanente operates as both a health plan and an integration care delivery, all the pieces need to work together.

Okay so my slides aren't working. [Laughs] Okay well we are just going to keep going. There are slides but the green button is not working.

When KP completes all the links in our system, staff and members, it shows in a place about 10 of our hospitals currently and that means 2.5 million members are now covered by an electronic medical record. All of our members are now covered in an out patient medical records system and all have access to an online system. Technology gives employees, doctors, and clinicians the up to date information they need to provide the right care at the right time at every point of access in the call center, in the exam room, in the pharmacy, in the hospital, online, and at home.

Providers can pull medical histories, reviews, order prescriptions, get clinical updates, and check lab results

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anywhere. They can even see diagnostic images. Our patients have 24/7 online care and access to lab results, eligibility information, even their children's immunization records, which is a big deal when you forgot to get them before they go to camp. They also get after visit summaries and treatment reminders and direct e-mail access from their physicians. Oops now we are too far so we have to go back. It's not going backwards.

Because Kaiser Health Connect is a comprehensive and far reaching system, implementation is a challenge and system design in determining the ultimate cost and functionality of the system. Please do not underestimate the financial cost of an implementation. Implementation is where many organizations that move to electronic medical system may stumble and where Kaiser Permanente experience can offer at least three lessons to others. First, effective system requires engaging people and engagement requires trust, understanding, and people. They need to understand the why. They need to understand how. And they need to understand how it will affect them. For me, part of that understanding is the support of health care reform because it is only through our consistency that we will be able to prove our value.

At the work place level, you cannot expect people to support a change if their job is at risk or their ideas are not incorporated. Kaiser Permanente and other unions negotiated an

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agreement to address the affects of the KP Health Connect on our work force. It provided professional growth and job security for a large part of our organization and added to the flexibility and the knowledge exchange. For example, in patient and out patient record room workers displaced by the new system could choose to be retrained for better positions or placed in a comparable position or they could take a generous severance package. The choice was theirs and it was actually meant to better jobs for many people and a better trained work force for our company.

In Northern California, more than 760 employees have been redeployed so far and fewer than 10-percent have taken the severance package. That validates one of the rules of the Kaiser Permanente Labor Management Partnership to be the employer of choice for health care workers.

The second lesson is that getting it right requires the knowledge and insight of people who will be using the system on the front line. That sometimes sets us apart. The active role of front line workers in our labor management partnership is in day to day operations. I was one of the many coalition of Kaiser Permanente union workers who recently helped to direct and were involved in the validate, design and build process. Front line workers often recommended changes to both the system and our internal work processes. Based on their knowledge of the company's operations and interactions, I want to share one

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story with you here. We have this little tiny, quiet medical assistant and in the ethics system that we had purchased, they indicated that the medical assistants would make their notes under the tab of nurse visits and you know it didn't work. She said I'm not a nurse and we changed that to visit record, so that we can track by license what is happening in the conversation with our patients.

Third, we found the most effective training and coaching. Coaching that really sticks does not happen in the classroom. It happens with our peers. Rank and file members who provide on site peer training and support before and after a launch of an electronic medical record in each department, they brought credibility to the implementation process.

The bottom line is this. Health care innovations require front line participation and support and you won't get that in a climate of fear or mistrust. Front line union workers are smart and they are skilled. If you create an environment of mutual respect and mutual understanding, workers are not part of the problem, they are the solution. What results we've seen in Northern California so far, in my family we use the after visit summary extensively.

Many of us no longer live in our home town. We live out and away. We have requested from our parents the after visit summary which Dr. Madvig talked about which gave us, gives us the plan for our parents and lets us know what they

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will be doing and what their needs are, are xeroxed and mailed to all of us. It takes out a lot of calls to physician offices.

The impact in the clinical settings have been even greater. In our old manual system, this is where we - this is our old manual system and the steps that it took for a provider to order medication in a hospital, all of those steps. This is what it looks like now. We are now in a space where we have the ability to see our steps decreased in making sure that medication is given at the right time to the right patient and at the right amount. What this also means is clutter goes away and quiet returns with fewer conversations and fewer phone calls and what is the largest complaint you have from patients in your hospitals? It is too noisy. The electronic medical record makes a difference to patients and employees.

In terms of patient safety, just the number of steps, every step there's a possibility for an error. When you take the steps down to four, you have created a safer environment for our patients. So we remember that in medication administration, it is the right patient, the right medication, the right dose, the right time, the right route, are all greatly enhanced by having a comprehensive electronic medical record and what does that do? That also increases, decreases cost.

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So what we know is that reductions in the rate of hospital medication errors have happened because of our electronic medical record. Automated reminders are a reduced the number of elderly patients on high risk medications because they get a reminder in the mail that tells them it's time to redo their medication.

We also know that patients who have secure e-mail or an online system which goes directly to the physicians, not to their nurses or a pool, are 7 to 10-percent less likely to schedule an office visit and it makes about 14 fewer phone calls per patient and those who book appointments online are 50-percent more apt to keep them because it meets their schedule.

So patient satisfaction, customizing handouts, making sure we have communication with our families in a different way, is what electronic medical records have done for Kaiser Permanente and for me as a health plan member and a proud member of the United Health Care Workers West. Thank you.

[Applause]

KENNETH THORPE, PhD: Thank you Linda, our final speaker is Dr. Eran Bellin from Montefiore Medical Center.

ERAN BELLIN, MD: Thank you very much. Can we have the first slide, please? Good. So we have to ask ourselves the question now that we've heard all these wonderful presentations, why is health care so expensive? There are some

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general concepts that we have to really understand that are all embedded in what you've already heard and I'll show you how we've dealt with it.

You have the forgotten patient, you have the invisible patient, you have the patient whose care deviates from some new standard of care that has happened in between patient care visits, you have the wastefully treated patient, and then you have the poor patient who has had bad outcomes over the years but the doctors just haven't recognized it.

Let's go over each one individually. What is the forgotten patient? The patient has been lost to follow up and no one is responsible for reaching out to that patient and bringing him back to care. Who is the invisible patient? It is the patient who is seen but his problem is missed because the physician is too busy with other competing care issues to notice him or alternatively and as patients we all participate in this, we collude with our physicians to down play the significance of our problems. My blood pressure is out of control because I'm angry. I'm going to be better next time. And we collude with our physicians to convince them not to engage the problem.

What is deviation from new standard of care between visits? Let's say a new study comes out and the study tells the doctor how they should be managed, but the patient doesn't come back in since the study has been done. Now who knows if

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the patient needs this change done? As a result there is a cost. The bad outcomes can't be prevented and the intervention can't be given.

Failed detection of bad outcomes, years go by, bad outcomes happen but they happen so distributed in the population that nobody notices them and the patients suffer and costs continue.

So what are the prerequisites for a solution to all this? First of all you need a culture in medical care of longitudinal care responsibility, somebody who is responsible for following up the patient's care across time. You absolutely have to have a unique identifier to track the outcomes and results across time and space. There is no substitute for this. The National Health Care Identifier or at least a regional health care identifier will be required to protect confidentiality and to allow the records to be connected. You have to have tools to allow the doctors, nurses, clinicians, to aggregate patient data across time and space. That software must empower clinicians to solve the previously mentioned problems and then you have to motivate the clinicians and motivate the patients to engage with such systems.

So to concretely understand these issues, let's work through three examples using clinical looking glass, a piece of software that we use in Montefiore Medical Center that we have

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developed to show how we have embraced these challenges. First let me tell you a minute about Montefiore Medical Center. It is a large, urban medical center in the Bronx. We have three hospitals, 21 clinics, 61,000 discharges, about 2 million clinical visits of which 750,000 are ambulatory care visits, there are 150,000 covered lives, there are about 210,000 emergency room visits, making it probably the fifth largest emergency care center in the country.

Let's consider first how an analysis is done to look at any of these problems conventionally today and I'll speak to this in the most optimistic tone. So, this is obviously not true. It doesn't happen this way. The essence of the QI quality improvement effort that you want to do, you thought about it and you assemble your team and your team will have a clinician expert, an analyst, a statistician, maybe a database programmer, and it will happen magically in two weeks.

You are then going to ask for the charts and those charts will be all assembled and collected and reviewed in three weeks' time. You will then analyze the data one week, and then you'll distribute the results in one week. This is a six to eight week cycle and it doesn't happen anywhere. More than likely it is a four to five month cycle. It is expensive. It is time consuming. It is inflexible. It is not scalable, and most importantly it creates a data priesthood, all the intelligence that are in your doctors or your nurses can't

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reach out to engage problems because they have to go through this very slow process to ever get anything done or ask any question at all. You are denying yourself the intelligence of your distributed work force.

How do we deal with it at Montefiore? We have what is called clinical looking glass. This software nightly loads clinical data repository. The user, and when I say user I'm talking about a doctor, a nurse, an administrator, is able to create patient groups, defining the criteria, having studies and control groups. The users can build those cohorts and share the analytic objects with others.

Looking glass retrieves patients quickly, it identifies, allows the user to identify the target clinical outcome whether it be death, use of medication, time in therapy, readmission, and looking glass searches for the user defined outcomes in the clinical data repository and sends the data to a statistics engine and presents the user with the study results.

The tool completely self documents so after you are finished you have an artifact in your hand that is fully documented and you can share with other people. QI studies are executed in minutes, not weeks, and if we had internet connection I'd show you how we do it right here as I have shown some of you in the audience in the past.

How about privacy? A very important issue for us. By default, all studies are executed without personal health

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identifiers. Users must have documented authority to obtain PHI data. Each time the user who has authority requests PHI data, they are challenged and they must at the time of the request document a QI project name, an IRB number, or some other legitimate authorization and the system will then document the date, the time, the question, and the authority they have invoked.

Let's do three examples, if we have enough time, relatively quickly. Let's look at diabetes. These are actual analyses that you can run. This is what the application looks like. I've got too many monitors so I can't point with my screen but you can see the drop down menu. It's very user friendly. We are first going to identify the cohort.

The cohort here, the group of patients we are going to study, are patients who have hemoglobin A1C, that is a measure for how well the diabetes is controlled from the God awful range, okay, 9.5 to 25, no one would disagree that is a diabetic, a very bad diabetic. We are going to look at all the outpatients from 6102 to 6103 and we are going to first collect them and then ask how many of them actually achieved a target of 0-7? Those are the real ranges you want to get. The HEDIS scores hover around 9.5 or 9 but this is really where you want people to be.

There is something called a risk window that as we give the doctors 365 days to accomplish this task and we have a

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black out period of 180 days, that means we will not look at the result in the first 180 days because there is not enough time for the patient to get better.

We are going to compare two groups here, the greater than 65 and less than 65 groups, only so I don't have to show you individual clinics that we could do this on. And you run it. It takes about 45 seconds to go through 1.8 million patients and all the other information I've given you and it now gives you and here you have in front of you the tabs, a full documentation of what was the question; the date range, the hemoglobin A1C and the age.

Method section is completely documented so if you want to publish you know what's been done, the demographics, so keep in mind there were 750,000 primary care visits in Montefiore in this time period, 2 million ambulatory visits and from that group there were 867 old people who had this God awful hemoglobin A1C. There were 2,758 people who had this really awful hemoglobin A1C and you see the breakdown.

Males are about 41-percent in the young group, 33-percent in the old group, and I point out to the medical students, this is a result of men dying faster when they have chronic diseases, you actually can see epidemiologic results now in the information system.

Here are the results. This is back about three or four years back, it's not particularly pretty but it is important

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for us all to look at. There were 867 patients in the old group. There were 131 successes, and 131 people actually achieved the target value we wanted. There were 443 failures that didn't achieve target. There were 257 lost to follow-up. We didn't even repeat the blood test on them in that time period. If you put, and censored means they died, if you put success over success with failure, we had successes only 22-percent of the time and if you include lost to follow-up, it's only 15-percent.

We can spend a lot of time talking about the difference between the old and young but no matter how you look at it, this is pretty awful. So why is it so awful? Why is it when you read an article in the *New England Journal of Medicine* everybody is getting better? [Laughter] Are we uniquely bad? Well, it could be but I don't think so. In fact, if you look at the method section of these articles, you're going to find that the patients came every time, no loss to follow-up. They were called by their nurses every day. They took all their medication. Their mem caps were opened up and they're always reporting on the very compliant patient.

These are all the patients, unselected. This is what is happening in your medical systems right now, and these are the people who are not getting better and are hidden in the larger numbers. If you actually want to take a look at the individuals, you can look at them here and you can see what

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percentage of them actually get better. They get in the green zone, but we have more than a report card. We have the tool and this tool actually allows you to generate a list of those patients so you can call them up in follow up.

And suppose you want to see what happens subsequently? You can actually take that population and look at them and you can see that across time at 365 days there is about a third reduction in rehospitalization if you get them under control, because there is a real physical difference if you get people under control or not and you can do that study on the fly at Montefiore.

So, as time is running short let's go to another problem, erythropoietin, a very expensive drug that helps you take care of anemia in patients. This drug has been available for many years. There have been ten years of randomized studies, all of them showing that if you push erythropoietin to get normal blood counts, you end up with higher mortality, but doctors keep on doing it anyway.

So what is a clinician supposed to do if he discovers that pushing it too high causes increased mortality and costs a lot of money? What tool does he have to actually track and identify which patients he should change from this expensive therapy so they can actually cost less and get better outcomes?

Well you could go to the medical record and then just pull the last blood count on each patient but that doesn't do

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you any good because blood counts go up and down, up and down, how are you going to make a decision on one single count?

What you really want to do is you want to figure out what percentage of time each patient is in the bad range, which is greater than 32 or less than 29, and what percentage of time they are in the good range. There is no tool out there that will do that and this is what it actually looks like in terms of cricks going up and down. So what you can actually do is you can interrelate. You can draw lines between them and then you can count the number of days that everyone is in the different ranges.

So count the number of days people are greater than 32, the number of days they are less than 29, and just add them up. And our automated system actually can do that, creates an output and you then discover that 15-percent of our patients spend their time in the good range and about 50-percent of the time they are spending it too high. Not only are you spending more money, but you are actually not going to get a good outcome of that.

One last example, here is an example of what we call lurking danger, something that has been hanging out there for a long time, not detected. There was a study in the *New England Journal of Medicine* that showed that gatifloxacin caused high or low sugar in patients. Everyone knows about that but how

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would you establish that in your own patient population if you had a suspicion?

Well, you could build the population, you could build a group of patients on gatiflox as an outpatient medication antibiotic and you could build a comparison group. You would actually look at those outcomes across time and see what the sugars actually look like and then you could actually see, in our population alone the very thing that you had to wait for nine years in the *New England Journal of Medicine* to come out could be detected, that is patients who were on gatifloxacin are 7-percent likely to have this problem than patients who are on the control medication, only 1.7-percent.

So the idea is we need tools. We need tools that are widely accessible to doctors, to nurses, to practitioners. I also need a clicker that will move forward. Okay, we've stopped moving forward. We need tools that can allow the doctors and physicians and nurses to actually look at their patient populations to identify who needs to be helped and do we have this in place? We do already. At Montefiore we have 250 users right now in clinical looking glass.

We have 2800 analytics run per month. You have 25 QA projects running, 50 IRB projects, it's now part of the required training of all our medical residents to use this tool and we are developing a notion in our trainees of a culture of longitudinal responsibility and giving the tools to actually

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ask and answer these questions. All the things you've heard of before are wonderful and they are all going to be part of the solution. Part of the solution is also going to be to allow the doctors to discover new problems and answer them directly in their own practices. So thank you very much for the opportunity to talk to you. [Applause]

KENNETH THORPE, PhD: Well, thank you for those four outstanding papers. I think you can see that there are some opportunities for doing things differently here and there are some common themes dealing with issues around information technology, redesigning the system, incentives, engaging patients and physicians, things that are going to be major challenges for us moving forward.

We do have some time for some questions so if people in the audience do have a question, please raise your hand. We have mics in the back so don't be shy.

MALE SPEAKER: Well, for me the question is to see how we can raise the quality of care but how we could control the costs [inaudible].

ERAN BELLIN, MD: The two examples that we had here, one was the example of erythropoietin which is a very expensive drug and by looking at its actual use we found we were overusing it. That is millions of dollars in the outpatient could be retrieved on just that alone. On the diabetics, the diabetics who are hiding, not purposely but not being seen,

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they are driving the costs of hospitalizations and surgeries that could have been prevented if their failure to get better could have been found and these patients are lost like needles in a haystack.

Unless you have these systems that can reach out and find them, they don't manifest themselves until they start costing you money so I think the way we are going to save money is we are going to empower the clinicians to find the people who are failing, intervene before they get into a lot of trouble, and thereby save money. We will also empower the doctors and nurses if they have the suspicion that something is going wrong to actually look into the information system and find what is going on before it has to go on for a decade until you discover it that way.

PHILIP MADVIG, MD: Dennis had one of the key questions here because as you've heard one of the bottom lines is going to be not only better quality but how does this affect what we spend in health care? And I think what you've heard here and what is going to be very helpful moving forward is what are the key design features of these interventions that really makes them effective and what are the commonalities that you've heard here across these different systems that really gets at the issue of early prevention, early diagnosis, effective treatment that keeps patients out of emergency room, out of the clinic,

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out of the hospital, reduces amputations, that really changes the delivery model in a way that is more proactive.

And I think one of our challenges not only as clinicians but as people interested in policy is to try to take this information that you're going to hear throughout the day and understand the key design features of really what makes these different approaches effective and find ways of reproducing them and replicating them both in the public and private sector so I think Dennis' question got right to the heart of the issue very quickly. Linda?

LINDA BECKMAN: I think that there is a real practical piece here that people forget to look at and that is number one is the more paper that leaves our organization not only does it increase our quality but it takes care of cost, paper cost, every lab slip and multiple pieces cost, every piece of paper had to be filed so there is a recouping of geography within our medical centers and places and ways to do business so we don't have to add or expand in the same way at the high cost that we have in the past.

But I tried to find just how much paper is no longer ordered in our system and I believe that is a huge amount and I don't think that you can put dollars and cents around 50-percent of your visits to a health care provider at a very high cost are actually patients walking in the door and being seen, that is huge because that is down time for physicians that

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we're not paying for so when you look at health care and you are looking at this, if you look at what it really provides in service and what it really provides in the decrease of resources, it's huge.

KENNETH THORPE, PhD: I'd like to add that you see the challenge that we face, you've heard great examples from three closed systems, relatively speaking, Montefiore, Mayo and Kaiser, and if you look at these opportunities for taking these experiments nationally, we have a very fragmented system that perhaps 20 to 25-percent of primary care physicians have this capacity right now today on their desktop so the opportunities are substantial. How we go from here to there is really a major challenge I think moving forward. Other questions?

FEMALE SPEAKER: I have a question. I'd like to know if the Montefiore model you are using for your looking glass, is that software available in the public domain?

ERAN BELLIN, MD: It's not a public domain software. We have used it at Montefiore and we have a proof of concept at the Dept. of Defense right now to show that it can work there as well and we ultimately hope to make it available in a more commercial fashion in the near future but it's not a public domain. It is a complex system of computers and software.

KENNETH THORPE, PhD: Other questions? I'll just throw out another comment, again the challenges here, you've just

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heard again three different systems here. Moving forward how do we get them to talk to each other?

So I think the opportunities in terms of what you have heard about system redesign and technology is the wave of the future and to me there is no question that dealing with affordability and quality really deals with our ability to redesign the delivery system, put the information technology tools in place and change the way we pay, but we are going to have to have some real thought leaders and some leadership nationally and at the states to really figure this out about how to more quickly diffuse this technology outside of more closed systems and how we can assure that all these systems as they move forward are all interoperable.

PHILIP MADVIG, MD: Let me make one point on that which is that I think you've seen examples of fairly sophisticated systems but before we had sophisticated systems we had fairly rudimentary information technology tools that probably got the bulk of the work done and I think the key thing is having essentially the registry, knowing who your patients are and what situation they are in and once you know that, you don't, you can gain by adding functionality but you've got the most fundamental improvement building block by simply knowing who the patients are that have these conditions and what their status is and then if you can manage to add a lot of additional

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functionality, you do better, and I think you can probably get three quarters of what you need from just that simple step.

ERAN BELLIN, MD: I think it's important not to be scared off by technological gee-whiz, the point is well taken that if you have an organized system, you take responsibility, you put in your systems attracting people, you can get a lot of benefit here. There are though additional benefits but we are so far removed from that acetone that we would do well to get the universal identifier and some of those registries in place.

KENNETH THORPE, PhD: Other questions? Wendell?

WENDELL: I guess I've asked this question before, and that is if you look at diabetes or asthma, what does it mean for pain reform under either medicaid or medicare? And legislation is kind of a very crude instrument, how do you use that very crude instrument to achieve some of the outcomes that you've talked about in these four papers?

KENNETH THORPE, PhD: Why don't you just identify yourself?

MALE SPEAKER: [Inaudible] was the speaker.

PHILIP MADVIG, MD: So if I can take a minute for that, first you have to ask yourself how are you going to incentivize all the players to do what needs to be done? Even to sit at looking glass to ask the question of your patient population takes time away from the doctor. That is not going to be fitted in, in the 15 minute visit. That means you have to say

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to the doctor once a year you are going to look at all your patients or as the Kaiser group did they have a regular sit down and they are going to review their patient panel and you've got to incentivize that somehow. We are going to pay you for that activity, number one.

Number two, when you find the patients who aren't doing well and you identify them, we give you a premium for identifying them. Number three, you bring them under control and you define what that control is within a year's time and there is another bounty built in and then you can actually make these things happen, but I think it's that level of attaching incentives to the quality of care that will get you where you want to be.

If you use generic descriptor as a diabetes you are going to discover that every American is a diabetic. That is already happening by the way as a diagnosis of diabetes is increasing as we drop the blood sugar cut off that makes you a pre diabetic so if you really want the outcomes you have to specify what degree of severity you want to identify of the disease, what outcome you want, and then incentivize it directly.

MALE SPEAKER: If I understand your question is what is [Inaudible].

PHILIP MADVIG, MD: I think are pretty big deals, one is I think if medicare were to pay primary care physicians, if

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the payment system would be to shift much more strongly in the direction of favoring primary care physicians, that would make a big difference because most of this care is in their hands and there is ample research that shows that patients who are managed by primary care practitioners, nurses or doctors, have better quality outcomes, then the care is more efficient.

The other thing I think where a lot of money is to not pay for care that is not productive or to not pay for technology or pharmaceuticals that don't offer an advantage over existing other options so the conversion to generic drugs for example or the use of, conservative use of technologies offers a huge opportunity to save money. When you look around the country and see the variation, even the variation that I showed, you know that there is a lot of room for improvement and through payment reform if we can guide the practices towards the more effective and efficient care practices; there is a lot of money to be saved.

MALE SPEAKER: There is also a fundamental need to understand the second part of this is that [inaudible].

KENNETH THORPE, PhD: Issue because you have heard some great models of what the future could look like with these proactive integrated delivery systems that have sophisticated and even in some cases not so sophisticated information technologies. There is a reason why these models have not more widely diffused outside of these closed systems and it's

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largely because the financial model and the payment systems, primarily through the medicare program, have not facilitated the broader development of these models, so as we go through the day, as you think about this trilogy of system redesigned information tools, payment reform, and the fourth one, throw in the mix about primary prevention of rising rates of chronic disease, we are all going to be spending the day trying to find good examples of how we can move forward on all these in a bipartisan and in a productive way.

So, could everybody join me once again in thanking the panelists. [Applause]

[END RECORDNG]