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ALBERTA CANADA

MAXIMIZING HEALTH SYSTEM PERFORMANCE

Assisted by Evidence, Science, and Information Systems

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Event Proceedings

**IHE Innovation Series
Forum VI**

About the IHE

The Institute of Health Economics (IHE) is a not-for-profit organization committed to producing, gathering, and disseminating health research findings relating to health economics, health policy, health technology assessment and comparative effectiveness. This work supports and informs efforts to improve public health and develop sustainable health systems. Founded in 1995, the IHE provides services for a range of health-sector stakeholders, and is governed by a Board that includes representatives from government, academia, health-service delivery, and industry organizations,

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Preface

The Institute of Health Economics (IHE) Innovation Forum series reflects one of the key goals of the Institute to promote open debate and dialogue on important issues in the health care system among academia, government, health service executives and industry. The Institute believes that the significant challenges facing the health system will only be addressed if all partners work together to support ongoing health system innovation.

The first Innovation Forum held in December 2008 looked at the issue of Paying for What Works, and examined established approaches and those under development to compare different technologies, programs and systems of care.

The second Innovation Forum II, Making Difficult Decisions, was held on May 25th, 2009 in Edmonton, Alberta, Canada. Provincial, national and international senior healthcare, industry, and government decision-makers participated in this event.

The complete speaker presentations can be found on the IHE website at <http://www.ihe.ca/research/innovation-forums/--maximizing-health-system-performance/>.

IHE Innovation Forums

Forum I: Paying for What Works. Comparative Effectiveness of Health Technologies and Programs
– December 2, 2008

Forum II: Making Difficult Decisions – May 25, 2009

Forum III: Maximizing Health System Performance. Cost Containment and Improved Efficiency – December 1, 2009

Forum IV: Innovation and Economics. Investing in the Future Health System – April 22, 2010

Forum V: Innovation and Sustainability in Health Systems – October 14, 2010

Forum VI: Maximizing Health System Performance – Assisted by Evidence, Science, and Information Systems
– November 29, 2012

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MAXIMIZING HEALTH SYSTEM PERFORMANCE — ASSISTED BY EVIDENCE, SCIENCE, AND INFORMATION SYSTEMS

Opening Remarks

Lorne Tyrrell, Chair, Institute of Health Economics

On behalf of the board, our Chief Executive Officer, Egon Jonsson, and the whole IHE of Health Economics team, it gives me great pleasure to welcome you to the sixth IHE Innovation Forum. The topics of previous forums were Paying for What Works, Making Difficult Decisions, Maximizing Health System Performance, Cost Containment and Improving Efficiency, Innovation and Economics, and Innovation and Sustainability of the Healthcare System. These regular forums began in 2008 and are held in conjunction with our semi-annual board meetings. I am very pleased that they have been so successful. They provide a great opportunity for Alberta health system leaders to hear and learn from international thought leaders and experts. They also provide a chance for all of us who are involved in the healthcare system to discuss informally how these lessons might be applied in our province. Good things happen when people get together, and we are very pleased to support these regular opportunities for networking among various organizations in health care.



The IHE is a unique organization because it brings together academia, government, health system leaders, industry, and members of the public and private sectors. The problems that we face in the health system are so challenging and complex that they will be solved only through partnership, and I am pleased to lead an organization that embodies that sentiment. I would like to take this opportunity to thank particularly Egon Jonsson, our Chief Executive Officer, and John Sproule. Under Egon's leadership and with the support of the team, IHE has become a thriving organization that is recognized nationally and internationally for the work that we're doing. Thank you, Egon, and thank you everyone at the Institute.

I would also like to welcome and thank our guest speakers who have traveled from afar to be here today. There are a number of other visitors from national agencies outside of the province. The IHE works closely with partners across the country, and we are very pleased to have you join us here today.

As you know, the title of today's forum is "Maximizing Health System Performance — Assisted by Evidence, Science, and Information Systems." I want to say a few words about science and evidence. We are living in a time when there has been tremendous effort in translation and a focus by funding agencies on supporting research that can be translated. However, I believe that the pendulum has swung a bit too far and that without solid basic science there is little to translate. Major transformations in medicine have their origin in basic science research that has been supported by these same agencies in the past and would not have occurred without their support. I want to highlight some examples.

The first example is one that I have used before, because I think it is such a good example. Today we do less than one percent of the ulcer surgery that we did in 1975, because of a serendipitous finding by Barry Marshall, a researcher in Australia who showed that *Helicobacter pylori* causes ulcers and other gastrointestinal diseases. This has transformed the

healthcare system. Peptic ulcer surgery used to be the most commonly performed surgery in our hospitals. A second example is that life expectancy in HIV/AIDS patients used to be 11 months. Today many patients, particularly those in Western countries, have a normal life expectancy because of basic research. The research leading to discovery of the enzymes involved in the virus and to x-ray crystallography of the structure of the protease and other enzymes led to much improved therapy after 1996.

I want to emphasize two other more current examples. We have been predicting a higher death rate and a marked increase in liver transplantation because of hepatitis C-induced disease. Three weeks ago in San Francisco, we heard from the American Association for the Study of Liver Diseases that remarkable progress has been made in hepatitis C and the word 'cure' is now being used. This is the first case of a persistent viral infection in which we will see a cure in virtually everyone who can afford the medication. This is the result of basic science research, particularly that led by Dr. Michael Houghton who, in 1989, after ten years of work, discovered the hepatitis C virus and isolated the first protease of the virus, on which most of our antiviral therapy is based today.

And, finally, probably the most remarkable advance that I have heard about in the last month is work in the field of epigenomics by three recipients of the Gairdner Award. Every cell in our bodies has the same DNA, but some cells become eyes, some become livers, some become hearts. The only reason that this happens is that there is a way to turn off certain genes and to turn on other genes. It is done through methylation of cysteines in the DNA. This is a remarkable recent discovery that has helped us to understand the importance of epigenomics in disease. You may have heard of a disease called Rett Syndrome, a very severe form of autism that affects females more than males. Children with Rett Syndrome begin to show symptoms at one and a half to two years of age. They often wring their hands incessantly. They gain weight, and they become reclusive. A mouse model that has been developed for Rett Syndrome is exactly the same: mice with this disease will sit up and wring their front paws. They gain weight, and they become reclusive. I have always believed that neurological disease would be the area of medicine most difficult to conquer, but researchers at the University of Edinburgh in Scotland and the Hebrew University in Jerusalem have developed ways to change the epigenome in that disease and convert these mice back to normal. I predict that within a few years, we are going to see the application of this technology to diseases like Rett Syndrome, where the neurons are still healthy but simply have a different fingerprint due to epigenetic modifications.

I will emphasize again that we must not forget about basic research. It, more than any other factor, is what transforms our healthcare system.

I am now very pleased to introduce a long-time associate and friend of the Institute, the Honourable Fred Horne, Minister of Health and Wellness for the Province of Alberta. The minister is no stranger to the IHE Innovation Forums. I believe he has participated in every forum except the first one. He has taken a keen interest in the health sector, and we are very lucky to have his experience and judgment in these challenging times in this portfolio.

Minister Horne was first elected to the legislature in 2008, representing the constituency of Edmonton-Rutherford. He has served as the Parliamentary Assistant to the Minister of Seniors and Community Supports and the Minister of Health and Wellness. Minister Horne also co-chaired the Minister's Advisory Committee on Health. Through that initiative, he has in recent years probably spent more time than any person has in speaking to Albertans in all parts of the province about the current health system and the promise of the future. I have had a chance to introduce Fred at many IHE forums in the past. It gives me great pleasure today to introduce him as the Honourable Fred Horne, Minister of Health and Wellness. Join me in welcoming the minister as he provides some introductory remarks to today's forum.



Honourable Fred Horne, Minister of Health and Wellness, Government of Alberta

Thank you very much, Dr. Tyrrell, for a very gracious introduction. It is my privilege to be here this afternoon, ladies and gentlemen, and on behalf of our Premier, the Honourable Alison Redford, to welcome to Alberta those of you who are from outside our province, in particular, our guest speakers.

As Lorne said, I am not a stranger to the Institute of Health Economics. I have been a fan of the Institute for many, many years, and I have certainly learned much more from the forums than I have contributed. I now have the distinct privilege of calling the Institute a partner, and a very valued partner, in the work that I am about to undertake on behalf of the citizens of Alberta as the Minister of Health and Wellness. Those of you who have attended past forums know that this is an opportunity to hear some extremely interesting and timely presentations, but what I always value most is the dialogue, the question-and-answer sessions, the opportunity to exchange views with people from various backgrounds. Most important is the role that the IHE plays in helping us focus on what I call the big picture of health care. As Minister, much of my hope for the future is invested in the sort of program that you are about to have the privilege of experiencing today.

The theme today, "Maximizing Health System Performance," is particularly timely and something that we talk about regularly. Over the years, we have brought in experts from other countries to talk about the key strategies that contribute to their high performance. That is very important, but I think that we have evolved in this discussion from the search for the big fix — that one elusive strategy that is going to change everything — to a much more sophisticated dialogue and a greater appreciation that the hope for the future lies in our ability to apply science, evidence, and information systems. That is, to develop tools that support incremental improvement in our healthcare system, based on measuring and monitoring our performance over time, and then, of course, taking that learning to forums like this and applying it strategically in order to improve health outcomes.

I had the opportunity at lunch today to host a group of policy interns in my office. The people who develop the big picture, those who work in public policy, are often unacknowledged, and I was certainly heartened by my discussion with this particular group. What I want for them and what I want for you — and particularly those who work in the delivery system — is, in my role as minister, to create regular opportunities like this to stand back, to take a breath, to think about what we need to be doing for the future, and in doing so feel a sense of ownership in the future we are creating.

I have always believed that progress in health care in this country is going to come not from using evidence, science, and information systems to automate old ways of doing things, but from truly enabling new processes. I think you will have an opportunity to discuss that today. I have also always believed that the purpose of a publicly-funded healthcare system is to deal with the issues of the day in our population, whether we are talking about chronic disease or surgery or wait times for specialists. Those issues are important, but what is very, very important is that we use this treasured resource, our healthcare system, strategically to ensure that the health status of future generations of Canadians, and Albertans in particular, is better than the health status that we enjoy today. I know that many of you share that vision for the future. I know that we have to deal with brass tacks in order to get there, but I hope that you will take heart in the fact that I and my Deputy Minister, Marcia Nelson, are thinking about that future. We want to develop plans and strategies, but we need advice from people like you in order to implement them.

I will conclude by once again saying thank you. It is a privilege to be here with the IHE again. I look forward to finding out what else I can do to support you and your organizations. Please make the most of the experience today;

and when you have had a chance to think about what you have heard and to discuss it with your colleagues, please send me your ideas about what I can do to move some of those strategies forward. Thank you very much. I hope you will enjoy the rest of the day.

Keynote Presentations and Discussion

Chip Doig, Moderator: On behalf of the IHE board, let me say how grateful we are for the two guests who are joining us today. The first is Dr. Martin McKee, a Professor of Public Health with the London School of Hygiene and Tropical Medicine. He is an extremely respected author and commentator on health systems, having published over 550 scientific papers and 38 books. Currently, he is the head of research for the European Observatory on Health and co-director of the European Centre on Health of Societies in Transition, a WHO Collaborating Centre.



Our second guest is Ms. Terhilda Garrido, Vice President of Health Information Technology Transformation and Analytics with Kaiser Permanente in the United States. Kaiser is held up as a gold standard in the use of information and evidence to create a high-performing system. Ms Garrido's team is responsible for maximizing opportunities for Kaiser's pioneering electronic medical record, and she facilitated the development of the Kaiser Permanente Blue Sky Vision, a vision of their future care-delivery model leveraging clinical IT investments. She brings a diverse background in operations, planning, medical economics, statistics, and financial analysis.

Maximizing Health System Performance



Martin McKee, Professor, European Public Health, London School of Hygiene and Tropical Medicine

I have been asked to talk about maximizing health system performance. That is an enormous canvas, and so I will have to be rather selective. I thought that it would be useful to go back to *The World Health Report 2000*, as that was when the issue of health system performance really got onto the agenda. The report was an attempt by the World Health Organization to rank the health systems of the world in order to answer the question that we have all been asked for years and years: Who has the best health system in the world?

The report identified three goals that any health system should be seeking to attain. First and foremost were health outcomes. Healthcare systems should keep people alive, should increase the probability that they will survive illness, and should do so in a fair way so that everyone benefits. The report ranked health outcomes by measuring the level of health improvement and the distribution of that improvement.

The second goal was that health systems be responsive to people's legitimate needs. When you go to a health facility, you should not be abused. You should not be insulted. You should not be tortured. There are health facilities in many parts of the world where people are tortured even today — sterilized, denied pain relief, and so forth. Again, both the level and the distribution of responsiveness were measured.

The third goal was fairness of financing, which is not an issue in Canada, but is in many parts of the world. I have been chairing an evaluation of the Chinese reforms in which this is a key issue. Large numbers of Chinese are earning money, and instead of spending it, they are saving it, because they know that if they have a catastrophic illness they will need that money. That has global macroeconomic consequences and is reflected in the global economic crisis that we are all facing today.

Those were the three dimensions that the World Health Organization looked at in ranking the healthcare systems of the world. And you all know the answer. Who has the best health system in the world? France. [See slide 5: “Ranks on overall performance: uncertainty intervals for countries 1–25.”] The report was highly controversial, and was challenged by a number of countries, particularly Australia and Brazil. Canada does not appear on the list, but that has much more to do with the methodology than with the qualities of your health system. That was the report that started it all.

I will spend the rest of the talk in looking at issues of health system performance. But I have a challenge: What is the point of bringing somebody from the United Kingdom to Canada to talk about this? You already do so much in this area. The reports here in Alberta and the work done by Statistics Canada contain a wealth of information, whereas in many of the countries I go to it is almost impossible to find out anything. Here there are pages and pages of data. There are structures. There are conceptual frameworks looking at effectiveness, access, capacity, safety and so on. What more can we possibly think of?

As I looked through your quality reporting and other material, I tried to pick out a few things that are not there but are possibly worth thinking about. But before I discuss those, it might be helpful to ask for whom are we assessing health system performance. [See slide 6: *Maximising performance for whom?*] Do we need a single global indicator of health system performance? Do we need five indicators? Do we need a hundred indicators? What do we actually need? It depends on who you are.

If you are a government, you will want to know if the health of the population is improving, if the regulatory system is working, and if money is being spent the way you intended it to be spent. If you are a regulator, you might want to know about patient safety. If you have a market, you might want to know if it is functioning. As a taxpayer, you will want to know that the money is being spent in line with what you voted for. Purchaser organizations are interested not only in the people who are attending a health facility, but in those who are not — in reaching out to the hard-to-reach populations. Physicians will be interested in the provision of high-quality patient care, in knowing whether their patients are benefiting to the maximum extent possible. Patients are interested in being able to go to a provider who will meet their needs, who will offer them the care that they expect. And citizens are interested in holding the government to account. Even if they are not patients, they have an expectation that the service will be there when they need it. That highlights the complexity of looking at the performance of a health system. All of these are aspects of health system performance, and all of them have measures and indicators. What you measure depends on who you are, and roles often overlap. Citizens are taxpayers and patients, and they may be physicians as well. Everyone will have a different take on the system.

Let me start with a government perspective on an issue that is discussed a great deal in Canada: avoidable mortality, or the ability of health systems to prevent people from dying. Concern about this goes back all the way to Florence Nightingale, who pointed out that in those days going into a hospital significantly *decreased* your probability of survival. You were much better to avoid going into a hospital because of the risks of infection. What we have done to operationalize the concept of avoidable mortality is to identify conditions that people should not die from if they receive timely and effective medical care [see slide 9, “What was included (examples)”]. Some of these are conditions that people rarely die from nowadays, such as measles, tuberculosis, infections, pneumonia, and influenza, and there are a number of cancers and cardiovascular diseases for which the death rate has fallen remarkably in recent years. We compare healthcare systems in different countries according to their ability either to prevent people from dying from these conditions or to reduce mortality significantly.

There are challenges in tracking how a system is doing over time [see slide 10, “But some challenges”]. For example, we regularly need to revise the list of illnesses that are amenable to medical care. New diseases arise, such as HIV/AIDS. New treatments emerge for those conditions, such as anti-retrovirals. Some conditions, such as smallpox and polio,

may have been on the list once but are there no longer because the number of deaths they cause is nil or negligible. Finally, it is a challenge to interpret the numbers in small populations, because of the random variation.

How do we do? These are the death rates from causes that are amenable to medical care [see slide 11, “Deaths from causes amenable to medical care, 2007 or nearest year”]. You can see that Canada is doing significantly better than the average among other industrialized countries — not up to the level of France, but still doing well — whereas the United States is lagging further behind.

It is not only the level of avoidable death that we consider, but also the trend. [See slide 12, “Percentage change in avoidable mortality: 1997-2007.”] Obviously, if you are doing very badly, it is easier to improve because you have more to achieve than a system that is already doing well. Canada is doing well: its overall level of avoidable mortality is not high, and the trend is downward. It may not be improving as much as some other countries, but it is doing it from a good starting position. The United States is doing rather less well.

Of course, we need to interpret these raw figures. You have seen that Canada is doing well and that the United States is not doing as well. You can draw your own conclusions from this, as other people have: “the best medical care system in the world” (Governor Bob McDonnell, R-Virginia); “the best [system] the world has ever known” (Senator Richard Shelby, R-Alabama); “Democrats must not destroy the fundamental market system that’s made the American health care system the best in the world” (Representative Joe Barton, R-Texas). The point is that you need to be careful when you present data. You may think that the answer is very clear — as we see, the United States has barely improved at all in the last few years — but other people see it differently. Of course, as the economists among you know, we need to look at revealed preferences. We must look beyond what they say, at what they actually do as a consequence of seeing the data. As we now know, when Sarah Palin needed health care in the past, she came to Canada.

How do we interpret these differences between healthcare systems? We can think of improvements in health outcomes in three dimensions: innovation, quality, and coverage [see slide 15, “If differences are real, what do they mean? Different ways of creating better health”]. Innovation is the focus of much of the work that you have been doing here. When new drugs and treatments become available, lives can be saved, but another dimension is the quality with which that treatment is provided. New treatments are introduced by people who have very little experience in using them and are unaware of the side effects and indications, but that improves over time. The third dimension is coverage. There is no point in having an innovative treatment like the treatment for hepatitis C if you can you cannot afford to give it to anybody.

Innovation is quite difficult to detect in the data. Occasionally, we do get magic bullets, but very, very rarely. This was the age-specific effect of streptomycin on tuberculosis mortality in England and Wales between 1945 and 1955 [see slide 16, “Innovation: magic bullets are very rare”]. Among young people, there was a spectacular improvement over a decade as treatment was introduced, but that is very rare. More often, it is difficult to understand what is happening because we do not see spectacular improvements. We see progressive gains in the effectiveness of treatments, progressive improvements in safety and reductions in side effects, and progressive experience with using the treatment and expansion of the indications. Looking at hypertension as an example, in the old days with drugs like reserpine there were many side effects and complications, and we treated only those people with the most severe degree of hypertension. We talked about treating people when their systolic blood pressure was 100 plus their age. We now have lowered the threshold for treatment and we have much safer drugs.

It is also difficult to ascertain the effect of any particular innovation, because randomized controlled trials (RCTs) compare the innovation with the best existing treatment, not with no treatment; and they tend to be undertaken on highly-selected subjects by highly-selected practitioners in highly-selected centres. RCTs rarely have mortality as an

outcome. They have intermediate measures, and there may be variable lag periods between innovations and reduction in mortality. Coverage is also important. If we look at the measures of amenable mortality and insurance coverage in the United States, we can see a clear association [see slide 18, “Coverage: Association between insurance coverage and amenable mortality in US”].

Again, it is often difficult to ascertain what is going on with individual innovations. We have seen remarkable improvements in the outcomes of surgery over the last few decades [see slide 19, “Safer surgery”], but part of that is better surgical technique and part of it is safer anesthesia. Innovation clearly has been a major factor, but so has quality, and differentiating the various factors can be challenging. Another example, from an in-depth analysis published in *Lancet* (Lecky et al., 2000), is improvement in the outcome of major trauma in the United Kingdom. This is not the result of a single magic bullet, but potentially due to more patients being seen by a senior doctor, more staff having advanced life-support training, better coordination of services, and the introduction of an audit system.

To summarize, avoidable mortality is a useful concept. It has been adopted by the UK Department of Health, the Commonwealth Fund, and the OECD, and the Canadian Institute for Health Information is about to publish a report on the performance of Canadian provinces and territories. It is a start, but we need to be careful about data artifact. When we see changes or poor performance, is it because of innovation or its lack? Is it because of coverage or its lack, or is it because of quality or its lack? Avoidable mortality is a pointer that helps us begin to understand whether the system is working.

I will now go from the macro level down to the micro level and look at how you might assess a health system from the point of view of a physician using patient-reported outcome measures (PROMs). These are measures of health status obtained by asking patients how they feel, ideally before they have a treatment and again after treatment, and comparing the two responses. Essentially it answers the question: Are you feeling better since your treatment? But it does so in a rather more structured and systematic way.

The challenge is deciding what instrument to use for PROMs. In a review of English-language literature published in 2007, it was found that over 3,000 instruments were reported in that single year. Some instruments are generic, asking about conditions in general. Some are disease-specific and not generalizable, so they will not allow you to compare the outcomes of, for example, varicose vein surgery and cataract surgery. And some are patient-generated, in which the patients themselves identify what it is that they want to improve as a result of the treatment. The three types are different, but they are complementary. How do you choose? There are a number of parameters:

- *Reliability*: Are the instruments internally consistent? Are they reproducible? If you ask the same people the same questions after a short interval, do they give you the same answers or do they give you different answers every time?
- *Validity*: Do the instruments agree with some gold standard, if you have a gold standard, which is rare? Do they measure what you expect them to measure? Do they have construct validity; that is, are they consistent with some theory of how the condition should change as a result of treatment?
- *Responsiveness*: Do the measures change as the patient’s condition changes? They may not. You may find patients that are insensitive to being treated.
- *Precision*: Are the measures precise? Do they capture the full spectrum of severity, from people who have a very severe condition to those with a very mild one? A frequent problem is that measures capture what are called floor and ceiling values, which make it appear as if a large proportion of patients either cannot get much worse or cannot get much better.

- *Timing:* When do you assess outcome? If you ask patients about pain immediately after an operation, clearly they will have pain, because you have just cut them open. If you ask them about it a few weeks later, they will no longer have it, provided you have not cut the wrong thing. Timing is essential. Many studies have looked at varicose vein surgery, where you get quite different results if you ask at a few weeks compared to a few months. The timing will often be specific to the condition.
- *Interpretability:* Can you interpret the data? What does a change in the score mean? If the score is two units better or worse, what does that relate to? Sometimes people try to compare the change with a major life event, such as bereavement. If you move from five to ten, is that the equivalent of losing a close relative? You need to have a frame of reference. Otherwise, the numbers can be quite meaningless.
- *Acceptability:* If these measures are used, will patients accept them? A challenge in multi-ethnic populations where there may be literacy and linguistic problems is determining how to address the cultural sensitivities of these issues.
- *Feasibility:* Have you a system by which this instrument can be used in practice? This becomes more and more challenging as hospital stays are shortened. Can you find a time to give patients the questionnaire before they are treated and also follow them up later?

I will give a few examples of how patient-reported outcome measures are being used. Work that we did on assessing outcomes of cataract surgery with one of the major private insurers in the United Kingdom highlights the importance of getting the right measure. Initially, we were using the Short Form 36, a battery of 36 questions that captures a wide range of domains, such as physical and mental status, pain, discomfort, mobility, and so on, and is very good at monitoring change in health status. We expected that patients' overall quality of life would improve as a result of cataract surgery, but it didn't always. Some actually reported worse outcomes after treatment. What we discovered was that, now that they could see properly, they were doing all sorts of things they had not been doing before, such as climbing stairs and going out for long walks. This exercise was great for them, but they had arthritis and mobility problems that had previously been masked. They were now feeling their age as they never had before when they were sitting watching television.

We are not suggesting that you should operate on people in order to put them in greater pain. But here is a case in which you could at least tell people that removing their cataracts may have consequences for their physical functioning and they need to think it through. It also told us that we needed an alternative measure for assessing the outcome of cataract surgery. When we used a disease-specific 14-answer visual function question, it showed that most people benefited, in that their visual functioning improved as a result of the operation. But, crucially, it showed that not everybody benefited. It also made us realize that a significant number of people were being operated on even though they had relatively good visual acuity and were coping well. They did not get any improvement because they had no scope to improve further. They were already functioning as well as they might do, which raises the question of why they were being operated on in the first place.

Another example to illustrate the point is work looking at varicose vein surgery [see slide 25, "Varicose veins"]. Here we see three complementary sets of questions. One used a generic health status measure, the EuroQuol 5D, which showed that 53 percent of patients having their varicose veins operated on had improved scores after surgery. But 33 percent reported no change in their general quality of life, and 14 percent reported that their overall quality of life had gotten worse. In contrast, when they were asked questions specifically about their varicose veins, pretty well everybody reported improvement. Those questions, too, showed that there were people being operated on who were doing quite well before the surgery and had limited scope to benefit further. (All of these measures tend to

show a gradient whereby some people are operated on when their conditions are very severe and some are operated on when their conditions are very mild. I am not going to go into that here, but it does raise all sorts of questions.) A third question asked patients to report their operative results as excellent, very good, good, and so on. That was a very simple question that did not focus on specific varicose vein symptoms, but only on their perception of the surgery. You can see that the results are complementary. They tell you different things, but overall they give you a picture of what is happening.

PROMs are being rolled out across the National Health Service in the UK. However, we recognize that there is skepticism among practitioners. Physicians, nurses, and others are concerned about their reliability and validity, sometimes with good cause and sometimes not. They also are concerned that PROMs add very little to what they already know. That is, if they have a dialogue with the patient, they know how the patient is doing, so what more do these measures tell them? And there are concerns about how to interpret them. They see an improvement in the score, from six to seven, but what does that mean?

Other physicians have complained about logistical barriers — the time that it takes to administer the instruments, to interpret them, and so on — and they are concerned about whether they will have enough administrative support in hospitals. There is skepticism in many places because of the failure of information technology programs to deliver what they have promised. And there is concern about the cost of doing this in times of financial austerity: one UK study suggests that it costs about CAD\$10 per patient. While advances in information technology and automation could help address these barriers, the concerns about interpretation and application remain, and response rates from patients are often low. One of the big challenges is extending the use of PROMs beyond elective surgery, where they have been used widely, to chronic diseases where often there is no intervention that can be monitored. You cannot administer a before-and-after questionnaire in the same way.

What do we know about using PROMs? Do they make a difference in practice? There have been a number of trials. In one study (Kazis et al., 1999), physicians were randomized to receive PROMs from patients with rheumatoid arthritis. Physicians who got the information valued it, but there was no difference in the processes or outcomes of care. In a randomized controlled trial of doctors in outpatient palliative care, those in the intervention group were given graphic summaries of patients' quality of life from a cancer-specific questionnaire, and the consultations were taped. Doctors who were given the data were found to spend more time discussing quality of life with their patients and to identify a higher proportion of health problems (Detmar et al., 2002). In another RCT, the patients who were given cancer-specific questionnaires had more discussion of quality of life, as in the other trial, and those who discussed quality of life with their physicians had greater improvements in quality of life (Velikova et al., 2004). There was a suggestion, however, that PROMs were most effective where patients were seeing different doctors, where there was a lack of continuity of care. This raises the possibility that PROMs may be of less value in cases where a patient and a physician know each other well.

I think that the key value of using PROMs is the value they add to the interaction between the patient and the practitioner. But, of course, there is inevitably a tendency to aggregate them in order to look at the overall performance of a clinical team, of a physician, of a hospital, or whatever. My feeling, based on work going back over 20 years, is that this is fraught with problems because there are always difficulties with risk adjustment. There are also problems with the characteristics of the measurement. A study published relatively recently looked at the very familiar funnel charts that most of you will have seen. Of course, the dispersion of the values is related to the size of the unit. With a very small unit, or a physician treating very few patients, there will be random variation, and that must be taken into account. Conventionally, we use standard confidence intervals, but this study used a different method, boot strapping and multiple simulations, to generate a different set of intervals. This produced different

numbers of outliers. So when we aggregate PROMs to look at the performance of physicians or of institutions, we need to be careful.

And we need to be careful about allowing our enthusiasm to run away with us. The UK Department of Health has proposed monitoring the performance of the National Health Service in a number of ways. Looking at avoidable mortality is one, but another is obtaining regular population-based measurements using the EQ-5D, a generic quality-of-life measure. The problem with this is that we have very little evidence of the association between health care and EQ-5D scores in the general population. This is not the same as looking, as we did earlier, at the change in the EQ-5D scores before and after varicose vein surgery. This is comparing the scores on January 1 of one year with those from January of the previous year. Do scores vary over time? Do they vary with the time of the year, with the phase of the moon, with how you feel, and so on? Can you adjust for case-mix variables? There is potential for perverse incentives, which is, of course, a problem with all health targets. The obvious way to improve the health of your population would be simply to put Prozac in the water. It would make everybody feel a lot better, but it may not necessarily be the right thing to do. Of course, in some parts of the world there effectively is Prozac in the water, since so many people are taking it. You might know that there have been wonderful studies looking at the amount of cocaine flowing into Italian rivers and extrapolating backwards from that. I think that while PROMs can be very helpful, we need to be careful that we not get carried away with them.

What about publication of performance data? You do publish dashboards, but there is a great enthusiasm in many places — and it happens, of course, in the United States — for publishing provider-specific data. What do we know from the evidence on this? There is remarkably little evidence that patients select their providers or that the market share changes as a result of publication. Many of you know the famous story of Bill Clinton going to one of the poorer performing cardiac surgeons in New York for his surgery. His decision was clearly not driven by the publication of mortality data. There is some evidence, particularly from the United States, that publication of data does stop some surgeons from treating people, but typically these are surgeons who perform only a handful of operations every year. There are entities called hospitals in Texas, for example, as reported in *The New York Times* a few years ago, that look to all intents and purposes like bungalows, because, of course, they are bungalows. In one case, major cardiothoracic surgery was being done in a garage that was labeled a hospital. It closed down as a result of publication of data, but generally publication has relatively little impact where the surgeons are doing more work.

On the other hand, publication of data certainly does seem to shape the views of people who work in healthcare facilities. It seems that if you want to publish the data, you have only to put it on paper and post it around the hospital. This is more effective than putting it on the Internet because when the physicians, nurses, and others who are generating this data can see it, it stimulates discussion. People think about it as a result. Consequently, the use of comparative data within a system of supportive peer review seems the best approach.

Does publication of data lead to better outcomes? Probably not, but this is heavily contested. The evidence that exists is mainly related to cardiac surgery, and, as I have said, that is largely a matter of stopping people who are doing half a dozen operations a year from doing any at all. You do not need to publish mortality data for that. There is, of course, some concern about unintended consequences, again quite controversial. For example, physicians and managers believe that mortality data changes their behavior, and not necessarily for the better: there is some evidence that patients are discharged from hospital to die at home.

When you look at other measures, we have wonderful examples from the United Kingdom of the abuses of targets, my favorite being the clash between the target to get everyone out of the emergency department in 4 hours and the target to get ambulances to respond within 12 minutes. A problem arises when ambulances bring patients to the hospital too quickly. This was resolved in one hospital by creating a target-free zone in the car park, where inflatable

tents were erected so that ambulances could get people to the hospital, get emptied, and get back to meet their 12-minute target. The emergency department did not have to start the clock ticking until the patient actually got through the front door. Meanwhile, the government hadn't thought of a target for the tents in the car park. That did actually happen, and we have published a book on health targets. There are many other examples of that.

I now want to move a little bit beyond the numbers, because I think that we do need to be careful when we are looking at health systems. In 1956, Sir Theodore Fox, the editor of the *Lancet* at the time, said, "If I want to understand the performance of a hospital, I should just walk into a ward, look around me, pick six case notes at random, and read them." What he was saying is just what Einstein said: "What can be counted does not necessarily count, and what counts cannot necessarily be counted." The following examples, while not typical, were given by a National Health Service researcher writing anonymously about her experience in an English hospital:

In four days, my bedding was changed only once. It was soiled by blood, IV fluids, and a leaky catheter.... Despite high fever and being constrained by an attachment to an IV, my sheets were never even straightened.... Three staff nurses remarked in a 10-minute period on how I was due for paracetamol, but none returned to give me the tablet.... Perhaps the most telling example, though, was the struggle over my attempt to get discharged. The only reason for detaining me was that I was receiving IV antibiotics. I pointed out firmly and repeatedly that this was absurd, as I could easily come and get these as an outpatient. Junior clinicians told me it was organizationally impossible, but the consultant let slip that the problem was that they would have to ask the nurses to do them a favour by agreeing to manage the infusion.

This is not an attack on nurses, I stress. It is an issue of clinical leadership, which is often lacking because of a focus on the measurement or the targets. We need to stand back and observe the performance by just looking around us rather than being fixated on the numbers. In this case, the researcher concluded that "Care was being delivered by a group of professional and semiprofessional workers, each of whom occupied their own silo, occasionally picking up information from others to initiate some action but not seeing how they form part of a whole system." (Anonymous: Four days in a strange place. *J Health Serv Res Pol* 2006).

Performance measures are not value free. You choose what you want to measure for particular purposes. For example, the Euro Health Consumer Index produced by the Stockholm Network is widely quoted in the media in the United Kingdom by an organization that is heavily funded by the pharmaceutical industry and heavily criticized by many researchers. You do need to be careful, particularly where there is a great deal of media attention on performance measures. Why are they being collected, by whom, and for what purpose?

So far, we have been looking backward. The performance of a system is not only what it did in the past, but what it is going to do in the future. We need social entrepreneurs in health care, people who understand the next set of needs and issues, who can creatively innovate to find new solutions. The challenge in health care has been expressed very well by this policy expert:

There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns, the ones we don't know we don't know. — Donald Rumsfeld

It is the unknown unknowns that are the problems, and, of course, they affect health care as much as they do politics. It is easy to overcome this if you have the right equipment, such as a crystal ball! It is not as if this is an insoluble problem, but it is difficult.

I will very briefly try to distill a few lessons. Very recently, we published a book, *Good health at low cost: 25 Years On — What makes a successful health system?* It is an update of Rockefeller Foundation work that, 25 years ago, identified

four healthcare systems that delivered much better health care than one would expect, given the resources they had available. These were in Kerala (India), China, Costa Rica, and Sri Lanka. We looked at those original four systems and five additional ones, in Bangladesh, Ethiopia, Kyrgyzstan, Tamil Nadu (India), and Thailand. What we found were four ingredients of success:

- *Capacity*: Inspirational individuals and institutions providing leadership. Whether it is health ministers, senior officials, or others, there is somebody that has a vision of where they want to be and can make it happen.
- *Continuity*: Stable bureaucracies; bureaucracies as in Kyrgyzstan that can outlive coups and revolutions.
- *Context*: Understanding what you are trying to do and where you are trying to do it, rather than trying to introduce reforms and innovations that are completely out of context and do not take into account the values, the history, the level of development, and so on.
- *Catalysts and windows of opportunity*: Taking opportunities as they present themselves.

This is the recipe for success that we distilled from those very poor or low- and middle-income countries, but I think they apply almost everywhere.

We can see the need for innovation when we look at how things have changed. Consider the hospital of the past [see slide 43, “*The hospital of the past*”]. This is the traditional model of hospitals that are still being built in many places, with the traditional departments: the accident and emergency department, outpatients, radiology, medical wards, surgical wards, the geriatrics out somewhere at the back where they are forgotten about. It is the classic design of a hospital. What have we done in the last hundred years with that hospital design? One hundred years ago, the green line up the middle would be a corridor, and nowadays in many countries it would be an elevator shaft. Essentially, we have taken the design and turned it 90 degrees. We have done nothing else. We have kept exactly the same design, whereas what we need are facilities that are organized in different ways [see slide 44, “*The hospital of the future?*”]. We need to have much more care provided outside of the hospital. We need to change the emergency department from a place where people are mixed together regardless of their needs and where children who are struggling with their asthma are brought into scenes that would be adult-rated on television. New advances in imaging and pathology need to be taken into account, and yet often we are not doing it.

What have we learned from our work in innovation? We have identified the need for leadership, the need for foresight, scanning the horizon, identifying opportunities, and innovating, but not — and I repeat, not — jumping on any passing idea. There is a tendency to do that, among advisors of politicians and consultants in particular. There are a number of major consultancy companies who revel in the idea of creative destruction where you have to have complete organizational turmoil every few weeks in order to keep everyone on their toes. It is analogous to the idea that emerged from the Vietnam war that “to save this village, we had to destroy it.” There are people who will try to sell that sort of thing. Be careful. We have also learned that we need a supportive framework with zones of stability and a sustained investment in resources.

If we are to maximize performance, we must begin by measuring it. But we also should realize that once we have measured what can be measured, there are other things we need to know, and we can often get those simply from looking around us. By the time that we have measured things, things will already have moved on, so we need to be anticipating the next developments. Thank you all very much.

Using Information to Drive Health System Improvement

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I would like to talk about a few elements, particularly to do with information, that have contributed to transformation at Kaiser Permanente. I want to share my perspective from observing and studying, as well as leveraging and being an actor in the system, in order to give you a view of how we are doing what are doing. To do that, I will give you a quick introduction to Kaiser. Many of you are familiar with our system, but I want to make sure that we all have a baseline understanding of the fundamental building blocks. I will spend the preponderance of our time talking about information driving reform, and then will close by talking about our Blue Sky Vision for the future.

First, I'm going to tell you a secret: Kaiser was not always great. We were, for many years, fair to middling, fair to good, occasionally good. We tried very hard, but we were rooted in traditional systems and traditional approaches to work. What is heartening — and I would think heartening for you as you think about how to move a large healthcare system forward — is that we have been on a trajectory of improvement [see slide 3, “Kaiser Compared to US Market”]. The transformations and the mechanisms that I am about to speak of are proving themselves. They are making a difference. They are differentiating us in the market and, most importantly, improving care for our patients. And although I would agree with Professor McKee that the bar may be low in the United States, we nonetheless take pride in that trajectory and that improvement in performance.

In NCQA [National Committee for Quality Assurance] rankings, six of our Kaiser Permanente regions are in the top 50 among hundreds of commercial health plans. Medicare Star Ratings is a new means by which the Centers for Medicare and Medicaid Services, the administrators of Medicare in the United States, rate the quality of health plans. Of 660 plans in the United States, 440 applied for star ratings and only 9 plans received five stars. Four of them were Kaiser Permanente. Ten of our hospitals have been recognized as top performers by the Joint Commission, and so on. On the patient-satisfaction side, *Time* recently noted that in the Consumer Report's national rankings we were “head and shoulders above other large insurers,” and they asked, “What makes Kaiser Permanente so different?” That is the question I am going to dig into a little further.

Kaiser Permanente is the largest nonprofit health plan in the United States. It is an integrated healthcare delivery system composed of three parts. The first is health insurance for patients. The second is a hospital system comprising 36 hospitals. Third, we have mutually exclusive partnerships with eight independent physician organizations. They are not employees of Kaiser, but they are partners in how we move health care forward. We currently have 8.9 million members in nine states and the District of Columbia.

Because we are integrated and our incentives are aligned through partnership between our hospitals and physicians, we know that we are arm-linked into the future. So we try to optimize overall as one organization, as opposed to within silos, or separate components of the healthcare system. That is one building block.

The other building block is our investment in technology. We have the world's largest and one of the most advanced non-governmental deployments of an electronic health record. It is our only system of recordkeeping; we do not have paper charts at Kaiser. All of our members have a single medical record that covers their health care across the continuum, from hospital admissions to outpatient services. You can, for a given patient, double click and look at the last hospital admission, double click again and look at the last office visit. The record integrates billing, scheduling, admission, discharge, transfer, et cetera. Very importantly, it includes ancillary systems, such as two-way real-time

interfaces, pharmacy, and labs. That is a critical feature. Sometimes in electronic health record systems, those ancillary systems are separate, requiring logging into different systems. But the point of electronic health records is to make information available and easy to use, and so we felt very strongly about having a single system and having the ancillary systems be part of that system. Another transformational element of the system is that members have online access to their personal health records on the Kaiser Permanente website, kp.org. Called My Health Manager, it is a portal to a subset of the information that a clinician would see.

A single data model underlies all of the electronic health record components [see slide 7, “The features of health IT”], and we have only just started to tap into the transformative potential of that. What we have achieved so far with the electronic health record is improvement in our operations, insights into care, and transformation of the care processes. Someone earlier today said that it is one thing to have new technology, and another thing to have technology that changes the care process. The electronic health record is doing that, and the future will be about how to use that data to continue to improve care.

As you know, information is power: power to know what the problem is; power to know where to act; and power to know what to change. I will talk about five levels of information, all enabled by the electronic health record data, that are working together to drive reform at Kaiser [see slide 9, “Information is power at many levels”]. The first level is healthcare knowledge, which includes research and guidelines and is very broad in scope. The next level is the system or organizational level, which, to some degree, hits at some of the themes that Professor McKee touched on: What do you focus on as a system, as an organization? The next level is the patient population level, and many of our clinicians would say that this is where we are getting the most benefit from information driving change. Fourth is performance feedback at the physician and provider level, which is different from the public reporting that was mentioned previously. It is using performance feedback to help physicians understand what is having an impact on their patients. Finally, I will talk about the patient level and what I call empowerment of the patient.

A fellow named Dave deBronkart, who goes by the moniker “e-Patient Dave” and is an advocate for patients’ access to health information, has noted that the patient is one of the most underused healthcare resources in the system, that we have not tapped into that resource to the degree that we can and should.

1. Healthcare knowledge level: How do we get evidence? How do we get new knowledge about what is the right thing to do? What’s the right medication? What’s the right process? What’s the right protocol? To give you an example of some of the things that we are doing at Kaiser, I will tell you a tale of two studies [see slides 10–12, “1. Healthcare knowledge level: A tale of 2 studies”].

The first study was a classic randomized controlled trial, the Antihypertensive Lipid Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). The University of Texas played a central role, although there were many players in this study. It was a very large study that involved 42,000 patients, cost \$120 million, and was conducted over eight years. Adding the time required to organize the study, obtain funding, get Institutional Review Board approvals, and publish the results afterwards, it was a decade-long endeavor for these folks. The good news is that they got some wonderful results. They learned that thiazide-type diuretics are the most effective at controlling hypertension. The study therefore answered a basic question about what kind of treatments are most effective in preventing heart attacks. A nice additional benefit is that this is a very low-cost diuretic, and thus they postulated that more than \$3 billion would be saved over ten years with the use of these drugs. It was good news all around. The work was very worthwhile and filled an important gap.

Meanwhile, however, a physician researcher at Kaiser in our Colorado region, Dr. David Magid, looked at the results of the ALLHAT study and said, “That’s great, but some of my patients don’t respond to those diuretics. In fact, a lot of them don’t. So what’s the next best choice?” He then did a study with four million patients over a period of 1.5

years at a cost of \$200,000. His results showed that for the 60 percent of patients whose hypertension was not effectively controlled, ACE inhibitors and beta-blockers were as effective as second-line medications. That is very useful information. Clearly, there is a patient population that needs alternative treatments, and the study showed the most effective alternative.

Now, let's compare the two studies. The ALLHAT study was a randomized controlled trial, the gold standard for eliminating patient bias. The Magid study was a retrospective and observational study in which patient bias was adjusted for with matched case-control. For that, you need large databases, because you have to match against every factor that you can think of in order to try to avoid patient bias. The question is how do you adjust for it and let the true data come through? There are techniques such as propensity scoring, but what you are really doing is matching patients very, very specifically. You need those four million patients so that you can do your propensity scoring and have a large enough sample to be able to make statements about that.

Having an electronic health record allows us to conduct studies that are not completely reliant on randomized controlled trials. This is a subject of controversy, and you can go back and forth on the pros and cons of randomized controlled trials and retrospective observational studies. Dr. McKee spoke about limited target groups, which are often very specific and very controlled, whereas a retrospective observational study with four million patients reflects real-world conditions. Is one better? In some cases, yes; in some cases, no. The debate continues. However, a retrospective observational study offers an alternative means of obtaining new knowledge and developing a point of view. I think it is said that only 7 to 15 percent of what is done in medicine actually has an evidence base. Knowledge is growing. Medications are increasing. Technology is increasing. How do we know what is effective? I am suggesting an alternative method of answering that question, based on information in the huge data mines to which we have access in the electronic health record.

2. *Organization level*: How do you decide what is important at the organizational level? Our Senior Vice-president for Quality had the job every quarter of presenting to the board a huge tome of statistics that represented all of the metrics of patients. We used to joke that there was data, data everywhere, but not an information drop to drink. It was overwhelming. The mind boggled attempting to make sense of all that data.

Working with the Institute for Healthcare Improvement, we came up with what we call a balanced-scorecard approach [see slide 13, "2. Organization level – Big Q"]. We selected as our North Star the following high-level system metrics that we look to in order to gauge and improve our overall performance: clinical effectiveness, safety, service/patient satisfaction; cost efficiency, and equity in care. We do have other metrics that augment these, but these outcome-oriented metrics currently serve as our compass for overall organizational investment.

For measuring clinical effectiveness in inpatient care, we use the Hospital Standardized Mortality Ratio and the metrics of The Joint Commission, an organization that evaluates and accredits healthcare programs in the US. The Joint Commission index collapses assessment of many evidence-based interventions to the question: Is it happening or is it not happening? On the outpatient side, we use the Healthcare Effectiveness Data and Information Set (HEDIS) of the National Committee for Quality Assurance, an index that collapses many of those measures together to give us a sense of overall improvement. This stops short of being a total health assessment view, and we are continuing to develop our measures further.

In assessing safety, we look at serious reported adverse events. For gauging service and patient satisfaction, we conduct surveys among both inpatients and outpatients in order to hear directly from patients about their experiences. Cost-efficiency has to do with resource stewardship and our overall cost per member per month. In looking at equity in care, we separate our quality measures according to racial, ethnic, and language groups, and then measure the gaps.

That is a broad view of the metrics for assessment at the organizational level. While it may seem to be too much, it is in fact a vast reduction, or distillation, of the many measures that we struggled with. It gives a high-level view of where the system is going.

3. *Patient population level*: Patient information is provided on the Panel Support Tool [see slide 14: “3. Patient population level”]. Information can be displayed at a regional level, a medical centre level, or a physician level. Each row is one patient’s record. The columns show the patient’s medical record number, age, sex, most recent visit, and chronic diseases, which include diabetes (DM), cardiovascular disease (CVD), congestive heart failure (CHF), hypertension (HTN), and CKD, chronic kidney disease. The colours in the columns signal whether or not the patient has a care gap for a condition. When was the last time this patient came in to have their hemoglobin A1c measured? Is their hypertension under control? Red indicates that there is a gap in care for that condition. These gaps are quantified in the “Gap” column, and the listing of patients is ordered accordingly. Patients who have large gaps need to come in for a conversation with their physicians and/or to have tests. You are probably familiar with the study by Elizabeth McGlynn of RAND Health, which found that the likelihood of receiving recommended evidence-based care is only 55 percent on average in the United States. The Panel Support Tool indicates clearly, for those chronic diseases, where there are gaps and where action needs to be taken. Our clinicians and clinician leaders love the population-support tools because they allow them to be very proactive and thereby help the patient prevent further problems.

4. *MD level — performance feedback*: Physician leaders, for the most part chiefs of departments by specialty group, determine where they want to focus and what indicators they would like. Analysts then extract data and craft reports to reflect that focus.

For example, we did some work with primary care physicians, by location, looking at the incidence of “untouched messages” about abnormal lab results [see slide 15, “4. MD level: Performance feedback loops”]. In the electronic health record system, when the physician orders a lab test, the order goes to the lab and the patient shows up and has the test. The results are then sent directly back to the ordering physician, and, ding, they show up in the physician’s inbox. The question is how long does it take the physician to act on the lab results? We know that failure to act or failure to diagnose and treat patients is a frequent cause of adverse events and, oftentimes, malpractice suits. We want to avoid those situations and to avoid practices that allow patients to fall through the cracks. How do we monitor what is happening to our patients at this stage so that physicians are given information about what they can do?

With the electronic health record, we can extract data and identify anything systemic that is preventing abnormal test results from being acted upon in a timely manner. We did not have this view before. In the past, pieces of paper would float into the medical record (or not, since sometimes the pieces of paper got lost), and physicians would look through those pieces of paper and then decide the next steps. We now have the ability to find out how long it takes physicians to act upon abnormal lab results. If there is a delay, maybe it is a coverage issue. Maybe the physician has left the practice. Maybe it is an issue of the physician’s not knowing how best to use the system to act on those abnormal lab tests. There are many questions. The key is that the department chiefs are now armed with information and can go to the physicians to talk about how they are doing compared to their peers. It is not publicly recorded. It is done within the department, but the expectation and the hope is that performance will improve, and that is what we have seen.

In the graph, you see the results for a region in which reports were produced and the department chiefs started sharing them with the physicians and talking through the issues. There was a 70- to 90-percent decrease in the incidence of abnormal lab results going untouched for 14 or more days. The next step is to determine the focus of the next iteration. It is a continuous improvement cycle, based on what physicians see as important indicators that can improve their practice.

5. *Patient level — empowerment*: The last level of information is at the patient level, where information is patient empowerment. One of the critical pieces is the online patient portal, My Health Manager, which gives members access to their personal clinical health records. They can schedule appointments; see their lab results and the medications that they have been prescribed; refill their prescriptions; view after-visit summaries of the diagnosis and any instructions that the physician entered; and use secure email to contact their physician. This has been very popular with members: there are 3.6 million registered users of My Health Manager in the Kaiser system. Together, they have logged 52 million sign-ons, sent 10 million secure emails, viewed 25 million test results, and filled 6.8 million prescriptions.

Aside from popularity with patients, what results that we have seen? [See slide 17, “Patient level: Empowered!”] First, efficiency and convenience have increased. Patients who use secure email to correspond with their physicians are 7 to 10 percent less likely to schedule routine office visits. Office visits are, of course, more resource intense; and while we do not see a one-for-one replacement of office visits, we do see some replacement effect. Secure email also offers an alternative to synchronous telephone contact: patients who use secure email make about 14 percent fewer phone calls to their physicians. In addition, those who book appointments online are up to 50 percent more likely to keep them. Quality of care has also improved. In a matched control-case study, secure email contact was associated with a 2- to 6.5-percent improvement in performance on HEDIS measures, such as glycemic (HbA1c), cholesterol, and blood-pressure screening and control.

What we hear from patients is that they feel more connected and empowered. My Health Manager provides them their own personal feedback loop. As a patient, I can look at my lab results, and I know that if I behave in certain ways or take my medication, I will likely see the impact of that in my test results. This engages patients in a way that many have not been engaged before. Patient satisfaction is high, with 85 percent rating their encounters with Kaiser at 8 or 9 on a 1-to-9 scale.

All of those layers of information work together to propel the organization forward. We are far from perfect, but our trajectory is developing a culture of improvement and of reliance on data to determine the next step.

I will conclude with a few notes about our Blue Sky Vision for the future. As we were implementing the electronic health record, a question that arose was where were we heading with this? Clearly, implementing the system had many advantages — replacing the paper, having information available 24/7, enabling providers to access information at any point in time in the process. These were some obvious advantages that were apparent to everyone, but the question was where were we heading with that?

To answer that question, we put together a group of broad thinkers, both internal to Kaiser and from the broader healthcare arena, who came up with some themes that would characterize the care model that we wanted to be driving toward. The postulated, idealized, view of where we want to go is expressed as follows:

In 2015, the care delivery model is a consumer-centric paradigm where the consumer presumes choice. Members will characterize KP as providing customized and fully integrated/leveraged services with secure and seamless transitions from person to person with care that can occur in their homes for an affordable cost.

That was the basic premise. There are four key elements of this vision.

1. *Home is the hub*: An individual’s care delivery support system will expand to explicitly include other community and family resources. This idea is that it is not only in a hospital or in a doctor’s office that care can be delivered. Our patient portal is only one element of that expansion. We are working on telemedicine and on biomedical devices that can be used by patients in their homes. The idea is to provide care where and when patients want it.

2. *Secure and seamless transitions.* We describe this as “warm handoffs,” which entail having the human skills and operational processes to deliver care and service effectively, efficiently, and compassionately. Health care is a continuum; it does not take place in a silo. And it is in transitions through that continuum that we encounter many issues and dangers. Our electronic health record enables information to go back and forth, but some aspects of those handoffs we are still working on. In particular, the hospital-to-home transition is still remarkably thorny.

3. *Customization.* Patients are not all the same, and the system needs to accommodate and include the specificity of care that each patient needs. Customization of care can occur at any level: in choosing health plans, cost sharing, individual care pathways, and communication modalities.

4. *Integration and leveraging.* Medical services are integrated with wellness activities. Care delivery is integrated with health plan operations. With the increasing illness burden of the aging population, physicians and nurses will be increasingly taxed. Using technology can enable us to leverage our scarce resources, which are those clinical staff.

In closing, I will quote science fiction author William Gibson: “The future is already here; it’s just not evenly distributed.” Thank you for your attention.

Questions and Answers: Martin McKee and Terhilda Garrido

Audience member: My question is on your organizational metrics reporting. How frequently do you submit or distribute those reports, and who sees them? Is it just administration? Is it individual physicians? How do you work them?

Terhilda Garrido: It depends. Our senior executives have those metrics on a dashboard, and there is a formal quarterly review among physician and health-plan senior leadership. Our board sees the reports twice a year, but as you can imagine, these metrics are collapsed and highly summarized for them. As for viewing a breakdown, I would say that hospital leaders are probably looking at their Joint Commission scores monthly, if not weekly. Further down in the system, there is probably more looping through, depending on the focus.

Tracey Bailey (Health Law Institute): Thank you for that excellent presentation. I am the Executive Director of the Health Law Institute here in Edmonton. We are currently working on a project with electronic health records. My question is whether or not there is any mechanism for patient control of information? Is everything put into your electronic health record, or is there an opportunity for patients to say that they don’t want a certain piece, for example, entered into the record?

Terhilda Garrido: That’s an interesting question. I have never thought about that. The analogy in the paper system would be a patient saying, “I don’t want you to put that slip of paper in my paper record.” Patients can choose not to view their personal health record, but no patient that I am aware of has opted out of the electronic health record.

Terri Jackson (University of Alberta): I was struck by Martin McKee’s examples of interventions that were presumed to be always beneficial having variable outcomes for patients.

We currently have a discussion in Canada about the risks and benefits of mammographic screening and whether longer intervals of screening would better balance the risks and benefits. I am wondering if you have thoughts about how to begin a public conversation about the risks versus the benefits.

Martin McKee: We are having that conversation as well. The Nordic Cochrane Centre’s challenging of screening has been quite a stimulus, and a panel of inquiry in the UK is reviewing our position on that. Those who have been reading the *British Medical Journal [BMJ]* will know that this has been quite controversial in the last few weeks. It is a challenge, because it is not always obvious in advance who will benefit from an intervention and who will not.

Clearly, there is a debate to be had about why people who have very minor symptoms are being operated on in the first place. Many economists talk about moral hazard, the idea that free health care is leading people to have unnecessary surgery. I am not terribly convinced that people actually think, Well, I've got nothing else to do today. I'll just have my appendix out because it's free. There are clearcut cases of treatments that just should not be given because they are completely useless, but most of those treatments are no longer given. There was a wonderful paper by Paul Gleason about 40 years ago looking at treatments that are no longer used, such as rolling cannonballs over people's abdomens. My favorite example was one that arose after x-rays were introduced. Anatomy textbooks had shown people lying horizontally, and suddenly when doctors took x-rays of the abdomen they found the kidneys were a little bit lower. There were operations to stitch the kidneys up a little bit, ignoring the effect of gravity. We don't do those things anymore, thankfully.

I don't have an easy answer, except that we need to think on a case-by-case basis. Can we predict who will benefit? We should not assume, just because we can show after the event that someone did not benefit from a particular treatment, that we can predict in advance whether or not they will. The two are quite different things. It is not easy.

Steve (Alberta Health and Wellness): I have a question about individual choice, or "consumer choice," as a driver of improvement. It seemed that you were making the point strongly that at Kaiser it is professional responsibility that drives improvement in direct care — that is, giving physicians information about what works and then having them use that information to improve their own practices. It occurs to me that since Kaiser competes against other providers, you might be better off looking at it from a different level of analysis. Does consumer choice in the selection of healthcare plans drive improvement in the US healthcare marketplace (as opposed to the consumer's choice of doctors, which I think is a much more difficult idea)? I mean, the last time my wife was in an ambulance, I don't recall stopping the attendant and saying, "Oh, wait. We should talk about which hospital we want her to go to." Consumer choice in health care is a funny idea. As a driver of improvement, what does it look like?

Terhilda Garrido: The way we currently think about it is that our system is a choice that we offer in the marketplace. It is at the point of purchase, at the health plan level, that we try to distinguish ourselves. That is where we pull out the fact that we have five Medicare stars for quality, to try to impress and reassure patients that they will, in fact, get good care. Another example of consumer choice is that physicians have their own Web pages, and patients can, within the system, choose among physicians who are not already booked. The webpage information is not as much to do with the physicians' performance as with their personal characteristics (e.g., Here's a picture of Dr. Smith. He speaks Spanish and he likes to ski.) There are different elements to consider in consumers' choice of providers, but we tend to focus on the system and on what it can bring to the patient as a package.

Martin McKee: You raise a very interesting point. Choice has somehow been elevated to the supreme goal of the health system by British politicians of both parties over a number of years for reasons that were at first mystifying. But then research identified that within the public there are "choice maximizers," the sort of people who go home every evening and change their bank, change their utility, their gas and their electricity, and maybe do it three times a day on their iPhone; and then there are the "satisficers," the vast majority of the ordinary public who, like me, have had an account at the same bank for 40 years. The choice maximizers are concentrated among politicians and their advisers. There is empirical research showing that they gravitate towards think tanks and so on. The problem is that they believe that everybody thinks the way that they do, but they don't.

We have a problem in the UK, which is that the OECD country comparisons show that a high proportion of the adult British population is functionally illiterate. The idea of choice, then, is a bit puzzling. We are about to introduce personal healthcare budgets for people with long-term conditions — just as the Netherlands is abandoning them. The preliminary evaluation, which the government has chosen to ignore, showed that people were puzzled by this. Then

the evaluators looked to see what people were spending their money on in the pilots, and they were spending it on reflexology and Reiki and on mobile phones and personal organizers. These are healthcare budgets. If you give people a choice, they will choose things, but not necessarily what you might want them to choose in a cash-limited publicly-financed healthcare system. Choice has been elevated to a value above and beyond effectiveness, efficiency, equity, and humanity, which we used to think of as important. But choice is not the supreme goal among patients. When we ask people, they say, “Actually, I don’t want choice. I want to have good hospitals everywhere.” It is not that we want to choose: it is that we want things to be dependable and reliable.

We could take it from a political science point of view and ask why it is that these issues have been put on the agenda. Who is controlling the media? Where are the messages coming from? What is the role of the marketing companies? Who is paying them, and so on and so forth? That is probably a more relevant discussion, but maybe beyond what we can talk about here.

Ruth Collins-Nakai (Alberta Health Services Board): Professor McKee, you mentioned the cost of PROMs in one trial. I am wondering if there is any information on the cost of the IT systems used for monitoring as compared to the cost of frontline delivery in these various systems. It seems to me that monitoring costs have been increasing. I distinctly remember a point in my clinical career when I had somebody following around behind me and determining how much time I spent doing everything all day. I am wondering about the cost of the systems that we put into place to try to measure whether or not we are improving.

Martin McKee: I am probably the last person you should ask about this, because I live in England where we have just abandoned, after spending many billions of pounds, an IT system that delivered absolutely nothing. There are certainly problems. There is an issue of the health professional’s time in filling out information. There is an issue for the patient. There is the question — one that we face in London, in particular — of who is going to analyze all the data. Our biggest problem is that we pay public-sector wages, and despite what our government would tell you, they are significantly lower than private-sector wages for equally qualified people. We are competing with Goldman Sachs and the large financial enterprises. As a result, we cannot get analysts to do this work in London. Maybe you can elsewhere, but it is context-specific, so you cannot extrapolate from one place to another.

I think we need to do more monitoring than we are doing at the moment. Elective surgery does lend itself to it. But there is a danger of information overload. Sometimes I wonder if we are drowning in data. Do we get anything out of it, or are we just spotting things that everybody knows already? I am somewhere in the middle. I think we can do more than we are doing, but we should not be overly enthusiastic that this will be the salvation.

Terhilda Garrido: An organization that I think does a very good job of focusing their metrics is Intermountain Healthcare in Utah. They are very purposeful about what metrics they go after. Kaiser is still trying to sort through that question, and we, too, struggle with finding enough analysts; but Intermountain is very purposeful in determining what it is they want to improve and building just enough infrastructure to get there. That might be a place for you to get better answers.

Chip Doig, Moderator: Thank you. A final question.

Lois Macklin (Alberta Innovates – Technology Futures): As digital connectivity allows patients to access a global healthcare system, which I think is emerging among a number of the publicly-funded and privately-funded healthcare systems, how will the British National Health Service interact in the global healthcare system, and how will the information that Kaiser is collecting be connected to a global healthcare system?

Martin McKee: We already have a European health system, in the sense that any British patient can go anywhere in the European Union for treatment (with only a few minor qualifications). The reality is that they don’t, because most

people want to be treated near their home. A number of American insurers are now requiring their patients to go for non-urgent surgery to India. It is the insurers that are pushing people to travel long distances rather than the patients wanting to do so. There are exceptions, of course, where people get a package that includes a vacation and recovery on a beach somewhere in the tropics. An issue that we are facing at the moment is that people are traveling to Hungary, in particular, to get cosmetic dentistry. Brokers in London do the initial examinations and then people go to Hungary to get their veneers and such things. We are experiencing quite a number of problems in picking up the pieces afterwards. So, yes, the National Health Service is part of a European health system and part of a global health system, but it is not as much of an issue as some people might think.

Terhilda Garrido: The United States has “meaningful use” legislation. Part of the healthcare agenda is to provide incentives not only to go digital, but to increase the meaningful use of the electronic health record, to use the EHR to achieve significant improvements in care. Work is currently underway in the area of health-information exchange to determine the minimum set of patient information that can be transferred from one place to another. My guess is that once there are national standards, they can potentially be parlayed into international standards that will allow for more movement of patient information across borders. However, some would abandon that idea and say that the information should be given to the patient. I have a flash drive that contains my personal health record in PDF form. I travel around with it and can print it out. I can also scan records and bring information into my personal health record. Those who push for making the patient the means by which information goes back and forth say that it is not about the organization. It is about patients’ having access to their health records and being able to choose who is given access to that information.

Chip Doig, Moderator: Thank you very much. This concludes the first portion of our program. We’ll take a very quick ten-minute break and then reconvene with the panel, but before we do, I hope the audience will join me in thanking both Ms. Garrido and Dr. McKee.

Panel Presentations

Moderator: Marcia Nelson, Deputy Minister of Health and Wellness

Panelists:

Chip Doig, Head, Community Health Sciences, University of Calgary

Anne McFarlane, Vice President, Western Canada and Development Initiatives, Canadian Institute of Health Information

Mary-Anne Robinson, CEO, College and Association of Registered Nurses of Alberta

Lorne Tyrrell, Chair, Institute of Health Economics: It is my pleasure to introduce the moderator for the next session. Marcia Nelson is our Deputy Minister for Advanced Education and Technology and the newest member of the board of the Institute of Health Economics. We are very pleased to have you on our board and look forward to your moderating this session.



Marcia Nelson, Deputy Minister of Health and Wellness, Panel Moderator

I am very honoured to have received the appointment of Deputy Minister for Alberta Health and Wellness. One of the things that I am enjoying in my role is having the opportunity to meet with some of our major partners, stakeholders, people in the industry, and terrific groups like the Institute of Health Economics. I had the opportunity to meet with Dr. Tyrrell and Dr. Jonsson earlier this week to talk about the board, the operations, and the research and other opportunities that are being pursued by the Institute. I am looking forward to being a part of that work.

Before we get started, I would like to offer a few introductory comments building on what the minister shared from an Alberta Health and Wellness perspective. Minister Horne gave a good sense of what his vision for the future is. I think you heard themes of partnership, continuous improvement, and enabling innovation, the ultimate goal being to improve health outcomes for Albertans.

Another thing that he stresses routinely — and it generates applause in almost every audience that I attend with him — is the theme of stability. From his perspective, there is an opportunity in Alberta to strengthen our healthcare system, but it involves focusing on creating stability and growth from within the models that we currently have. He has also talked about his policy priorities, and I don't think they will surprise anyone. His is a back-to-basics agenda with a focus on strengthening the fundamentals across three areas: primary health care, continuing care, and mental health and addiction services. Of course, I know and you know that advancing success in any of those areas is going to depend on improved collaboration and meaningful partnerships with people like you. I am very pleased that so many of you were able to take the time to join us here today to talk about maximizing health system performance.

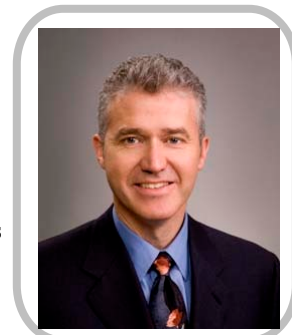
Our first speaker is Dr. Doig. He is a physician, a healthcare researcher at the University of Calgary, and a member of the IHE board.

Chip Doig, Head, Community Health Sciences, University of Calgary

Thank you very much. I very much appreciated the talks of our two distinguished speakers earlier. I will make three quick comments. The first is that I think we are very fortunate to have the riches that we have in this country and this province, in that we have some very good data collection at the public health level and a good starting point for collaboration between provinces on measurement. That is very fortunate because it will not only move provincial systems forward, but will move a national system forward.

When I first started clinical practice in 1995, I was tasked with implementing a clinical information system for my intensive care unit at Foothills Hospital [now Foothills Medical Centre], a system that we made region-wide in Calgary in 1997–1998. Certainly, I have seen in my own clinical practice the benefits of such a system. Our focus when we implemented the system was to bring information to the bedside rather than having the clinician leave the bedside to get data. On that practical level, we thought there were improvements in patient care. But we could also measure improvements. We have been able to track and implement a number of patient-safety quality-improvement initiatives, such as the monitoring of bloodstream infections in important nosocomial infection in the ICU. The clinical information system is also important in research. Dr. Tyrrell mentioned the importance of basic science research. I am part of a team that involves Pillar 1 through Pillar 3, and perhaps Pillar 4 researchers, on a grant funded by Alberta Innovates – Health Solutions. The ability to collect and use data is central to our work.

A second point, which extends what occurs at Kaiser in patient empowerment, is that it is extremely important that we recognize that individuals who have an illness are, in fact, the ones who are most concerned about caring for their disease. Empowering individuals by permitting them access to their data — recognizing that it is *their* data — and



helping them manage their condition through information is extremely important. Although we have plans to address that, I think this has been a failure of our information technology strategies over the past number of years.

Finally, I do not think that we can replace people with machines. I don't wish to be unfair to one of my colleagues, but I am aware that there is a research project being funded by one of our national funding agencies to look at the use of an E-discharge tool, in part because of a lack of integration in our health system. Our hospital specialist teams do not look after patients in the community after discharge; this is done by primary care practitioners in the community. This study is extremely important, but I teased my colleague that perhaps the control was not correct. Why can't he just have his residents pick up the phone, or why can't he pick up the phone and call the primary care physician? We cannot lose sight of the importance of interpersonal communication, because sometimes much more information is communicated that way than in the electronic health record. Thank you very much.



Anne McFarlane, Vice-President, Western Canada and Development Initiatives, Canadian Institute for Health Information

As we say in CIHI in our strategic directions, we are about data, about analysis and understanding and use. We have talked here a lot about data, but we have talked as much about understanding and use. I want to thank our speakers for that. It was very helpful that we went from the international level down to the level of patient experience. I think that what Terhilda said about information is very important: Information is power at all levels, and we need to know who understands it, who uses it, and how it is used.

We have published studies in CIHI that suggest that reporting data on the healthcare system to the public does not really move the public — it does not change where people go for care — and it does not move the providers. The people it moves are the administrators who think it moves the public and the providers. I think that is a very important lesson. There are two things about public reporting that are important. First, politicians and administrators are justifiably moved by public opinion; and in a public healthcare system, public opinion and patient opinion are very linked, as you know. There is a difference between information that you provide to improve care and information that you provide in a democracy for accountability. It is helpful not to try to do both at once, or at least to be aware of that difference.

The second thing I want to say is about understanding and using data. I think that everyone in this room would be very supportive of data and more data, but many people in the system really do not know how to use data. People simply are frightened by data. They may not be particularly numerate. They need assistance, and the best assistance that we can give them is to use data frequently so that they become comfortable with data. The problem they encounter is that when they use data, someone challenges them, for the very excellent reasons that Dr. McKee pointed out when he talked about data-collection problems associated with PROMs. We have to become much more comfortable with the quality of our data and how the methodologies were developed, so that we are conversant and can say, “Yes, this piece of data doesn't answer this question. It wasn't intended to. We are aware of its limitations. But this piece of data does.” We cannot think only about data. We have to think about the understanding and use of data.

Finally, I want to say a little bit about patients. I think that in our discussions we may sometimes confuse access to data about patients' conditions and the opportunity for patients to exchange information and ask questions. I have two very interesting slides, one of which consists of quotes from RateMyMD. If you have not read RateMyMD, I encourage you to do so. Here are patients voting about what they think of their care, and we have not tapped into that. The second slide is from breastcancer.org, a website where people with breast cancer engage in innumerable threads of discussion. They state their diagnosis — I have Stage 4 double mastectomy, et cetera — and they ask

questions. They are looking for other patients who can help answer their questions. Just as Chip has said, we have not tapped into the patients' need for information. The need is not for data. The need is for information.

Being from CIHI, I have to, of course, close by saying that we need more data and better data, and I applaud Alberta, which is the leading province in Canada in developing that data. Thank you.

Mary-Anne Robinson, Chief Executive Officer, College and Association of Registered Nurses of Alberta

I would like to thank Dr. Tyrrell and the Institute for inviting me to speak today. I couldn't help but think as I was listening to our two speakers that it was an illustration of the complexity and sophistication of our healthcare system. But at the same time, I wondered if we have asked the larger question. We are talking about how we are doing with the healthcare system. But the first question is what do we want the health status of our population to be? What do we want to achieve? That can help us to select those measures that will indicate whether or not we are achieving those ends. We can measure how well we throw people into a well, how quickly they drop and all of those things, but if we really should not be throwing them in the well at all, we have kind of missed the point. So it struck me that we need a debate in Canada, and in Alberta, about what it is that we value. What is it that we want to achieve with our healthcare system?



We have some formidable challenges in front of us in the next years, with an aging population and with rising obesity rates that we know will dramatically increase healthcare costs. The OECD data on obesity rates in Canada are frightening. We are in the top three in the world in obesity rates, and we know that obesity is linked to diabetes, heart disease, and other illnesses. We know that that train is coming at us. Are we taking the actions that we need to within the healthcare system and also forming those critical partnerships outside of the healthcare system that result in healthy public policy in other areas?

We have an opportunity right now in Canada. We have negotiations coming up on the ten-year health accord that is to be renewed in 2014, and we can choose to use that opportunity to advance the agenda for improving our health status in this country. The last ten-year accord set some targets, but I would suggest that perhaps some of those targets did not help us to focus on the real issues. We focused on wait lists for joint replacements, et cetera, without thinking about what it is that is contributing to the need for those joints replacements in the first place. Selecting what to measure is critically important. I think that Einstein said it very well: "What can be counted does not necessarily count, and what counts cannot necessarily be counted." I think we need to have that dialogue as well.

Another statistic that I have come across is that Canada is one of the highest providers of dialysis in the world. There may be policy that is contributing to that, but it suggests to me that we are not doing a very good job in the upstream work. Maybe one of the things that we need to measure over the next decade is whether or not we are reducing the demand for dialysis. Given that we have an aging population and rising obesity rates, it would seem that we are headed toward higher rates of dialysis, but we know that it is not going to be affordable. We have to pay attention to that.

Another thing that strikes me as interesting to measure, if it were something that we could measure, is patient and family engagement. We know, as we heard, that individuals have improved health outcomes if they are engaged. Measuring engagement might therefore be used as a proxy indicator for improved health status.

Another area of concern is coordination of care. Increasingly, we hear from the public that lack of coordination of care, especially in transitions, is a frustrating problem. We know that it is often in transitions that bad things happen. Measuring how we do in those transitions is something that would also be worthwhile. Another is patient attachment.

We know that a significant percentage of our population is not attached to a primary care provider, and we know all of the issues that arise from that. Typically, they are the individuals who have the highest healthcare needs in our society. So measuring patient attachment in primary care might be a worthwhile indicator.

My final point is a pitch for nursing, because, after all, that is my *raison d'être* in the world. I cannot help but be perplexed that we spend the amount of money that we do on nursing services in hospitals and in the community, and yet we have so little data that helps to demonstrate whether or not what we are doing in nursing makes a difference. I would suggest that if we are going to be working on indicators, we need to pay attention to nursing-sensitive indicators, not just because we want to show you that we do a good job, but also because we want to know where things are not working so that we can make sure that we are focusing the very expensive and specific service that nursing brings into the healthcare picture. It is a huge part of our healthcare budget. Let's pay attention to it. We know that nursing-sensitive data, when given to nurses in administration and in frontline care, will make a difference in how they provide care. They need to have that information in order to change their practice. Thank you very much.

Panel Discussion with Keynote Speakers

Marcia Nelson, Moderator: I would like to invite the keynote speakers to join us up at the panel, and we will open up the floor for questions.

Egon Jonsson (Institute of Health Economics): I would like to ask Ms. Garrido about Kaiser Permanente's success. There is no question about Kaiser's being very successful and having done things that are admired all over the world. Kaiser is, to a substantial extent, owned by its doctors. How much of the success is due to the fact that doctors have a strong interest in their own organization?

Terhilda Garrido: It is a complex organizational structure. As I mentioned briefly, there are three parts to our organization, a non-profit health plan, a non-profit hospital chain, and eight separate physician groups. These are physician partnerships. The physicians own their own organizations, and they share in the profits as well as the potential losses. The health plan and the physician groups negotiate on a yearly basis a mutually exclusive contract. The physicians provide care only for Kaiser patients, and Kaiser sends their business only to those physicians. Those are the basic tenets. That is a critical element, because it means that we are aligned. We are linked in arms; we are tied at the waist; we are swimming across the lake together. Our success is their success. Their success is our success. Although legally they do not own the health plan or the hospitals, they are accountable for the success of the organization overall.

All of our projects include physician leadership. They are at the table as instrumental leaders in all of the change that we take on. I would say that it is fundamental to the success of our organization that the physicians have buy-in and that our incentives are aligned. None of this would work without that. In fact, we could not have implemented the electronic health record. You cannot have huge change if the leaders of key components of the system are not aligned. It is one of the foundational building blocks of our progress.

Audience member (Alberta Health Services): Alberta has done wonderful work in chronicling and defining the various steps along the way to heart surgery, for example, but my question relates to how we determine what is important to the public. My experience is that after they have had successful surgery, people cannot even remember whether it was 4.8 weeks or 6.3 weeks that they waited. But they can remember if we canceled them at the last minute, if their brother had to take time off work to accompany them, if, indeed, we put them to sleep and then, because of another emergency, woke them up and said, "Oops, we are not able to do your surgery." How do we get at what is important to the public?

Martin McKee: I mentioned that there are three types of measures: the generic, the disease-specific, and the patient-generated. A colleague, Danny Ruta in the United Kingdom, has done work in patient-generated outcome measures in which you ask people what is important to them. And you hit the nail on the head. Often, it is not the things that we think are important. It is issues like cancellation of operations, which can have profound implications for people. Looking at Danny Ruta's work in this area might be helpful.

Marcia Nelson, Moderator: Other comments from the panel?

Chip Doig: I will simply echo that, in saying that in my clinical area the patient satisfaction surveys and the health-related quality-of-life measures and other key performance indicators are completely...I don't want to say completely incongruent, but that is pretty close.

Tracey Bailey (University of Alberta): I want to pick up on Ms. Robinson's comment that we have to step back and ask ourselves what we are hoping to achieve and what is important to us. Instead of looking at the prevention end — which I agree is very important and I am glad to hear that Mr. Horne has it as part of his agenda — I want to look at the other end and ask the panelists whether or not treatments are used appropriately. We could pick dialysis as an example, or we could talk about ICU units, given that Dr. Doig is on the panel, and ask what are we hoping to achieve with that kind of treatment, and are we overusing it, given that we have limited healthcare resources?

Mary-Anne Robinson: I would suggest that this is a debate that we avoid quite well in Canada. The discussion that is going on right now in British Columbia around assisted suicide is an interesting example. I would suggest that a conversation with Canadians about what quality of life means when you are aging might lead to some interesting discoveries. We make assumptions as healthcare providers that people want certain things, but I think that we need to pay attention to what quality of life people want for themselves. We all know that we are spending an enormous amount of money on the last few days of life, and that means that we are making tradeoffs. We are making tradeoffs by, perhaps, not funding a nutrition program for children in low-income communities, as an example. We make tradeoffs every day, but we don't talk about it openly. I think we need to tackle that conversation and understand that even though we do not admit that we are doing it, we are making value judgments every day.

Martin McKee: Many of you will have read in this morning's *Globe and Mail* a story on exactly this issue. It is clearly right at the top of the agenda in Canada. The late Alan Williams, a health economist from Yorkshire in England, talked about the concept of "fair innings," and in fact when he died he raised the issue of what people expect. I think that as we look ahead, the issue of how much money we spend on the last days or weeks of life will be right at the top of the agenda, because that is clearly driving health expenditure. But the challenges are profound, because until someone has actually died you do not know when that last week or month of life will be. Again, the crystal ball and the tea leaves are needed here. This will be one of the biggest issues in health policy over the next decade.

Anne McFarlane: I think it is Wennberg who famously said that what drives variation is physician uncertainty. Clearly, we need to have a social conversation about the issues surrounding end-of-life events, about advanced directives, about legal arrangements, and about physicians' behavior. These are legal issues, moral issues, and personality issues. I agree that there is a great deal of uncertainty, that clearly you don't know when the end of life will be until that end comes. But I also think that this is an area that we have not studied enough, just as there are certain diseases that we don't know as much about as we could. I don't think that we are faced with a tsunami of difficulty. As time progresses, we do solve our problems. For example, in the early 2000s we thought we were facing a huge burden of disease with hepatitis C and would need huge numbers of additional gastroenterologists to care for these patients. But we have developed effective treatments that have reduced this burden. We will solve this problem as a society.

Terhilda Garrido: I think that another part of the solution is to refer back to the patient. There is a Minnesota alliance of providers that frames it as “honouring patient’s wishes,” or letting patients make choices to the degree that they have information about what their choices may be. How long do I want to be in ICU? What does it mean to be intubated? What does it mean to have life support? What do Alzheimer’s disease and other severe conditions look like in their end stages? Provide patients with information and the opportunity to have a conversation about what they ultimately want. And record that, so that at any point along the continuum of care there is awareness, both by providers and by the family, of what the patient’s wishes are. This, to me, offers hope that we might be able to manage this very difficult issue in a way that is humane and potentially wiser than what we are doing now.

Lorne Tyrrell (Institute of Health Economics): In Kaiser Permanente, what portion of your patients do not have any healthcare insurance, and how do you look after them? And what about drug plans in Kaiser for patients who have no ability to pay for drugs?

Terhilda Garrido: We are a private system and the vast majority of our patients get their insurance through employers or buy it individually. We do participate in Medi-Cal and other government-subsidized programs that provide health insurance to people without it, and that number is growing, not surprisingly. I would say that between 5 and 10 percent of our membership is subsidized. We also are required, being part of the community, to provide services to patients who walk in off the street and need care for any condition that is life threatening. We then have to sort through the process of reimbursement for those services. But the majority of our members are, in fact, privately insured.

The majority of our members, 80 percent, also purchase a drug plan, so that when they fill a prescription, they have a co-pay of \$10 to \$20, but do not pay the full cost. Our Medicare members are covered by Medicare Part D, which includes Medicare-approved drugs. That is a significant portion of pharmacy usage. We encourage the purchase of drug plans, because drugs, as you know, can often prevent emergency-room visits and hospital stays, and we have found that patients are sensitive to the costs. If you are sensitive to costs and have no drug plan, you are potentially not going to take those statins and other prescribed medications that will help to keep you away from the emergency room. So we encourage patients to buy drug plans, and we try to do what we can to provide those at a minimal cost.

John Sproule (Institute of Health Economics): Dr. McKee brought up the question of improving performance in areas where we cannot count things, particularly in the areas of leadership and management. I think these often get forgotten in the healthcare system, where we are measuring everything rather than looking at such things as organizational stability and professional development. I know, for example, that in the Canadian public service and health authorities there is tremendous transition and turnover in leadership. I am wondering if leadership can be measured, and is it? And how does one assess the correlation between leadership quality and health system performance? Any thoughts on its importance in driving health system performance?

Martin McKee: I think that leadership is crucial. I had a conversation about nursing leadership with colleagues at the University of Pennsylvania, with whom I work on the magnet hospitals. One thing that is very clear there is that nursing leadership, particularly among nurses working closely with physicians, reduces hospital mortality. That has been shown in the United States, we have shown it in the United Kingdom, and we have a paper under review showing it across a number of European countries. It has been shown in Canada too, I think. So leadership is absolutely crucial, but it is one of those things that you struggle to define.

Our book *Good health at low cost* emphasizes that individual leaders are important, but their leadership is contextual. You cannot take people from one setting and just transplant them into another. The match must be right, and they need to be backed up by the institutions. It is institutional stability that gives leaders the space to innovate and solve problems. If you are constantly changing, stability is undermined. The OECD report that came out last week said that

the United Kingdom is doing very well, but it would be doing even better if the government had not been reforming the National Health Service every few years, suggesting that the current disastrous reforms will set things back significantly. I think it is crucial that stability be linked to leadership.

Mary-Anne Robinson: I want to add to the comment about nursing leadership that it is visible nursing leadership at all levels of the organization that makes a difference. I raise that because we need to look at our health system in Alberta. Do we have strong visible nursing leadership at all levels of the organization? I think not. And, related to that, we have a nursing leadership crisis right now. Very few young nurses are interested in moving into positions of leadership, and one reason for that is that the spans of control are unmanageable. They cannot see how they could possibly take that on, and they are not seeing that nursing leaders are very valued in the health system. When we know that patient outcomes and system efficiency are improved by having strong visible nursing leadership, and at the same time there is a force working counter to that, we have a problem. This is one of those things that we do not measure, but we do know there is a correlation and we should be paying attention to it.

Marcia Nelson, Moderator: Mary-Anne, I think that you took a risk by stating what you consider to be the key indicators to measure, those that you think are the most important for driving the kind of performance that we would like to see across the healthcare system. I wonder if any of our other panel members have thoughts on one or two measures that you would say are most valid, most important — or is it, as you have said, Martin, that the context is all important?

Anne McFarlane: Obviously, if you put me with my back against the wall and said you must say one measure, I would choose something like life expectancy or infant mortality. But my own sense is that we should have — just as people have described — a balanced scorecard, with measures and data that are understandable, but which may be changed over time in order to give a balanced picture. I also think that measuring patient satisfaction, as imperfect as the data collection may be, is respectful and important. We can improve only by learning from our weakness.

Chip Doig: I would like to see a measure of the number of people who die at home. There has been work done by a number of researchers, but only one Canadian, Darren Hyland, who pointed out the large number of people who not only die in hospital but die in intensive care units. Quite frankly, I do think that for a number of conditions, we can predict the likelihood of success. Long-term care facilities are sometimes not home-like, and dying in hospital is not necessarily dying in comfort with palliative care. I know that sounds perhaps a little bit dark, but I think it is something that we cannot lose sight of.

Marcia Nelson, Moderator: We can't end on death and destruction. I think it would be good to have another comment.

Martin McKee: I agree with everything that has been said so far. I would just add one thing. Whatever the indicators are, we should choose ones that are useful. The criterion of usefulness is one that should transcend all else, I think.

Marcia Nelson, Moderator: I think that you will all agree that we have had an extremely interesting afternoon with a terrific, informative, and dynamic panel. I invite you all to join me in thanking the panel members.

Lorne Tyrrell (Institute of Health Economics): I want to thank Deputy Minister Nelson and, again, all the panelists for the great performance. I also want to thank the audience who stayed to the end and who have asked very good questions. Every time we run a forum, we have excellent participation and interest from the audience, and that is extremely important. Thank you.



Appendix I – Program

IHE INNOVATION FORUM VI

Maximizing Health System Performance—Assisted by Evidence, Science,
and Information Systems

Tuesday, November 29th, 2011

Delta Edmonton Centre Suite Hotel (Centre Ballroom)

3:00 – 3:20 p.m. Opening Remarks

- Lorne Tyrrell, Chair, Institute of Health Economics
- Honourable Fred Horne, Minister of Alberta Health & Wellness

3:20 – 4:50 p.m. Keynote Presentations and Discussion

- Martin McKee, Professor, European Public Health, London School of Hygiene and Tropical Medicine
- Terhilda Garrido, Vice President HiT Transformation and Analytics, Kaiser Permanente

4:50 – 5:05 p.m. Break

5:05 – 6:00 p.m. Panel Discussion

- Moderator: Marcia Nelson, Deputy Minister of Health and Wellness
- Chip Doig, Head, Community Health Sciences, University of Calgary
- Anne McFarlane, Vice President, Western Canada and Development Initiatives, Canadian Institute of Health Information
- Mary-Anne Robinson, CEO, College and Association of Registered Nurses of Alberta

6:00 – 7:00 p.m. Reception

Maximizing Health System Performance—Assisted by Evidence, Science, and Information Systems is the sixth of the IHE's Innovation Forums, a semi-annual series brings together senior public- and private-sector decision-makers to address policy issues of importance in the healthcare system, not just in Alberta, but to all of Canada and the international community, as well. Previous sessions covered:

- I) Paying for What Works***
- II) Making Difficult Decisions***
- III) Maximizing Health System Performance—Cost Containment and Improved Efficiency***
- IV) Innovation and Economics***
- V) Innovation and Sustainability in Health Systems***

Speaker Biographies



Welcome: Dr. Lorne Tyrrell

Chair, Institute of Health Economics

The former Dean of Medicine and Dentistry at the University of Alberta, Dr. Tyrrell is the Chair of the boards of both the Health Quality Council of Alberta and of the Institute of Health Economics. He is the CIHR/GlaxoSmithKline Chair in Virology at the University of Alberta. He is also Chair of the Gairdner Foundation and a member of the Research Council of the Canadian Institute of Academic Research. Dr. Tyrrell was appointed to the Alberta Order of Excellence in 2000, made an Officer of the Order of Canada in 2002, and a Fellow of the Royal Society of Canada in 2004. He was awarded the F.N.G. Starr Award from the Canadian Medical Association in 2004, the Principal Award of the Manning Foundation in 2005 for his work on the development of oral antivirals for the treatment of HBV, and inducted into the CMA Hall of Fame in 2011.

Greetings: Honourable Fred Horne

Minister of Alberta Health and Wellness

Mr. Horne was elected to his first term as a Member of the Legislative Assembly for Edmonton-Rutherford on March 3, 2008, and served as Parliamentary Assistant to the Minister of Seniors and Community Supports, and Health and Wellness. On October 12, 2011, he was appointed Minister of Health and Wellness. Previous committee involvement includes membership on the Select Special Chief Electoral Officer Search Committee and the Standing Committee on Legislative Offices and chair of the Standing Committee on Health, and the Minister's Advisory Committee on Health. Prior to serving with the Legislative Assembly of Alberta, Mr. Horne worked as a health policy consultant for over 25 years, serving various government bodies and regional health authorities in addition to the public, private and not-for-profit sectors. Throughout his career Mr. Horne led initiatives to improve access and quality in Canadian public health care and has worked extensively with the Conference Board of Canada, the Alberta government and the Mayo Clinic. Mr. Horne holds a master of business administration degree from Royal Roads University and a postgraduate certification in dispute resolution from York University. He was named Minister of Alberta Health and Wellness on October 13, 2011.



Keynote Address: Dr. Martin McKee

Professor, European Public Health, London School of Hygiene and Tropical Medicine

Martin McKee qualified in medicine in Belfast, Northern Ireland, with subsequent training in internal medicine and public health. As Professor of European Public Health at the London School of Hygiene and Tropical Medicine he co-directs the European Centre on Health of Societies in Transition (ECOHST), a WHO Collaborating Centre that comprises the largest team of researchers working on health and health policy in central and eastern Europe and the former Soviet Union. He is also research director of the European Observatory on Health Systems and Policies.

Professor McKee has published over 550 scientific papers and 38 books. He was an editor of the European Journal of Public Health for 15 years and is a member of numerous editorial boards, as well as being an editorial consultant to The Lancet. He has been invited to give many endowed lectures, including the Milroy (Royal College of Physicians), Cochrane (UK Society for Social Medicine), Ference Bojan (EUPHA), Davidson (Royal College of Physicians Edinburgh), Salvador Lucia (UCSF), Population Health Sciences (McMaster University) and Victor Horsley (British Medical Association). Professor McKee sits on a number of advisory boards in Europe and North America, in both the public and private sectors. His responsibilities include serving as:

- A trustee of the UK Public Health Association;
- Chair of both the WHO's European Advisory Committee on Health Research and the Global Health Advisory Committee of George Soros' Open Society Foundations; and,
- A Fellow of the Royal Colleges of Physicians of London, Edinburgh, and Ireland and the UK Faculty of Public Health.

Keynote Presentation: Ms. Terhilda Garrido

Vice President HiT Transformation and Analytics, Kaiser Permanente

Terhilda Garrido has worked at Kaiser Permanente, an integrated delivery system, for more than 20 years. At present, she is vice president, Health Information Technology Transformation & Analytics within the National Quality and Care Delivery organization. Her team is responsible for realizing the strategic value and maximizing opportunities for Kaiser Permanente's pioneering electronic medical record. Ms. Garrido holds an Operations Research degree in Engineering from Princeton and a Masters in Public Health in Biostatistics from University of California at Berkeley. She has published on this area and lends her expertise to various organizations within the health care industry.



Ms. Marcia Nelson (Panel moderator)

Deputy Minister, Alberta Health and Wellness

Marcia Nelson was appointed Deputy Minister of Alberta Health and Wellness in October 2011. In her role as Deputy Minister, she is responsible for leading and supporting quality health services, leading the health system, and working collaboratively with partners. Marcia has also held the posts of Deputy Minister of Housing and Urban Affairs, Head of the Policy Coordination Office of Executive Council, and Assistant Deputy Minister of Strategic Services for Alberta Human Resources and Employment. Before moving to Alberta, Marcia worked for the Ontario government for 14 years in a variety of policy, planning, and research positions in several ministries. Her last position was Director of Corporate Policy and Intergovernmental Affairs for the Ministry of Community and Social Services. She holds a Master of Arts Degree in Public Policy and Administration and a BA in Canadian Studies and Sociology both from McMaster University. Marcia is currently Vice Chair of the Institute for Public Administration of Canada, Edmonton Regional Group. She is also an Advisory Committee Member for Athabasca University's Bachelor of Professional Arts in Governance Law & Management program.

Dr. Chip Doig (Panelist)

Head, Community Health Sciences, University of Calgary

Christopher (Chip) Doig is an intensive care unit specialist at the Foothills Medical Centre, as well as head of the Department of Community Health Sciences at the University of Calgary. He also teaches at U of C's departments of Medicine, Internal Medicine, and Critical Care Medicine. Dr. Doig is also a researcher of considerable note, and is the co-principal investigator of the Alberta Sepsis Network, which was awarded an interdisciplinary team grant by Alberta Innovates-Health Solutions. Past president of the Alberta Medical Association, he is on three healthcare working groups for the Alberta Minister of Health, and serves on the Board of Directors of the IHE and the Shock Trauma Air Rescue Society of Alberta.



Ms. Anne McFarlane (Panelist)

**Vice President, Western Canada and Development Initiatives,
Canadian Institute of Health Information**

Prior to being appointed to her current position, Anne McFarlane served as CIHI's Executive Director, Western Canada, for more than five years. During that time, she established the Western office-the organization's first regional bureau-and built a team focused on ensuring that the organization's products and services meet the needs of the health systems in Western Canada and the territories. Along with an MSc in Community Health and Epidemiology, Ms. McFarlane has more than 20 years of experience in the health and social service sectors.

Ms. Mary-Anne Robinson (Panelist)

CEO, College and Association of Registered Nurses of Alberta

Mary-Anne Robinson is CEO of the College and Association of Registered Nurses of Alberta (CARNA), the regulatory body and professional association for the province's 33,000-plus registered nurses (RN). She is herself an RN, with a master's degree in Health Care Administration, and a strong background in strategic planning and building effective multi-stakeholder relationships. In addition to her CARNA duties, Ms. Robinson is involved in numerous other activities. These include memberships on the Alberta Advisory Committee on Health Technologies and the Primary Health Care Review Project Advisory Committee, as well as being a jurisdictional advisor to the Canadian Nurses Association Board of Directors.



Founded in 1996, the Institute of Health Economics is a non-profit, Alberta-based research organisation whose work informs healthcare policy and practice. The IHE is active in four distinct, overlapping, areas:

*Health economics
Health technology assessment
Decision analytic modeling
Knowledge transfer and dissemination*