INSTITUTE OF HEALTH ECONOMICS
ALBERTA CANADA

Innovation and Economics

Investing in the Future Health System

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Forum IV

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 organisations:

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Preface

In December 2008, the Institute of Health Economics launched a series of semi-annual innovation forums whose goal is to bring together senior public and private sector decision-makers to address policy issues of importance in the health care system, not just in Alberta, but to all of Canada and the international community, as well.

Emceed by Tom Feasby, the University of Calgary's Dean of Medicine, this fourth session considered the following theme: Innovation and Economics: Investing in the Future Health System. Speakers from all sectors provided a range of perspectives on the best ways to direct resources so as to ensure a real return on investment.

The complete speaker presentations can be found on the IHE website at http://www.ihe.ca/research/knowledge-transfer-initiatives/--innovation-forum-series/.

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Investing in the Future Health System

Master of Ceremonies: Tom Feasby, Dean, Faculty of Medicine, University of Calgary

Welcome and Opening Remarks

Tom Feasby: Good afternoon, everyone. Welcome and thanks for joining us for the fourth Institute of Health Economics Innovation Forum. The title today is Innovation and Economics. The way I see it, economics presents the challenge, and innovation represents the opportunity or the solution. We hope to explore both parts of that equation this afternoon.

These Innovation Forums have become important events on the healthcare system calendar in Alberta. At a time of significant change in the health system, they provide what seems to be a rare opportunity for us to get together. The CEO of the Institute of Health Economics, Dr. Egon Jonsson, always says that good things happen when people get together, and that has certainly been the case with these forums. We all need to take time to reflect on where we are and where we might be going. Such discussions always benefit from visiting experts, and we are very pleased today to welcome Dr. Adam Elshaug, who is joining us from Australia. Adam, welcome. We are sorry that Dr. Michael Drummond from the UK will not be with us today. He was held up by volcanic ash and despite his efforts is still somewhere on the other side of the pond. But we will be seeing a lot of Dr. Drummond here quite soon. He is chairing some work for the IHE, exploring new methods of evaluating health technologies. This work is being done in part with national agencies for health technology assessment in both Canada and the UK.

Now, it is my pleasure to introduce Dr. Raj Sherman. Dr. Sherman was elected to his first term as a member of the Legislative Assembly for Edmonton–Meadowlark in 2008. Shortly thereafter, he was appointed the Parliamentary Assistant to the Minister of Health and Wellness and serves as a member of the Standing Committee on Health. Prior to serving as a member of the Legislative Assembly of Alberta, Dr. Sherman was an emergency room physician for 15 years. He had previously trained at the University of Alberta. It is my pleasure to call on Dr. Sherman to bring us greetings from the province. Dr. Sherman.

Raj Sherman, MLA, Parliamentary Assistant to the Minister of Health and Wellness

It is truly an honour for me to join all of you today. On behalf of Premier Stelmach and Minister Gene Zwozdesky, the Honourable Minister of Health and Wellness, all of my colleagues in the Alberta Legislature, and my good friend, Fred Horne, seated right before us, I welcome and thank all of you for participating in this forum today.

I would like to talk about health care. The number one issue in the nation is that health care is gobbling up 50 percent of the budget. Those poor folks in Ontario have a 200-billion-dollar debt. In the US, I think health care is the number one issue right now for the president. It is not only an Alberta issue. It is not only a Canadian issue. It is an international issue, and we in Alberta are attacking this issue head on. As you know, Fred Horne, along with many of the experts in health care, came out with a report that is going to lead to the Alberta Health Act later this fall. It calls for input from both experts and the public on the question of what we can reasonably expect from our system. I believe we are going to have a patient charter as well.

Health care must be evidence-based and outcome-based. One part of that is a patient-focussed vision that engages not only the professions, but the patients themselves. Number two is funding. The vision is based on the Canada Health Act, and one part of the Canada Health Act that we have not paid attention to, and probably the most important, is universal accessibility. We have not made health care accessible to everybody in the country. Once you have it, it's fantastic health care, but the line-ups have gotten longer and longer. Governments need to fund health care adequately. No one can run a business on the same budget year after year. This is long-term planning. This is why, in the largest economic downturn in history, the premier and our government here in Alberta have made the biggest injection into health care ever with a five-year funding plan. Alberta Health Services inherited a deficit, and we have said, "We are going to give you an even starting point and five years of sustainable, predictable funding with which to plan health care." That's the funding side.

You can have the best ideas and the most money on the planet, but if you don't operationalize your vision properly, you are going to have a problem. This is where Alberta Health Services comes in. As you know, standards of health care vary across the country and in different areas within provinces. We need to standardize health care across the province and across the nation. I believe that going to one region, as we have in Alberta, and with health care being so specialized, we simply cannot deliver every service in every hospital as we used to. We can do more things now, but we cannot do in them every city, let alone in every province. One advantage of going to one region is bulk purchasing, but the biggest advantage will be the electronic health record. Technology is going to play a big role in healthcare delivery. Those are the three things that the government of Alberta is doing.

I would like to thank everyone at the Institute of Health Economics. This is an important organization that brings together those involved in health care from the policy end to the delivery end. And I would like to welcome Adam from Australia. Thanks for coming all this way to join us. I thank all of our partners, from the Alberta Medical Association to Alberta Health Services to Alberta Health and Wellness, and to all of those from academic backgrounds and from industry as well. I look forward to the conversations today, and I hope we have good deliberations. Thank you and God bless you.

Tom Feasby: Thanks very much, Dr. Sherman, and special thanks also to Dr. Stephen Duckett and to Mr. Fred Horne, MLA, who have become regular participants in our panel discussions at the Innovation Forum. Your presence

here enriches the discussion and is very important to us. Thanks also to Dr. Bernard Prigent, a board member with the Institute of Health Economics, who will be bringing his extensive experience to our discussions later today. I am also very pleased that Dr. Marvin Fritzler was able to join us. Dr. Fritzler, as many of you know, is the chair of the new Alberta Research and Innovation Authority. He has a daunting task to help guide government in building a research agenda in the province.

We have the ingredients for great success here in Alberta, but we need to spend wisely. We need to reduce waste. We need to invest in innovation. Determining how to do these things all at once is a real challenge. We need to ensure an efficient and effective system today while planning and building a better healthcare system for tomorrow. I hope we will find some useful guidance today and many ideas that will act as catalysts for our future actions.

Speakers/Keynote Presentations

Tom Feasby: Before I introduce our first speaker, Dr. Fritzler, I would like to make a personal observation as a dean of medicine. In the Alberta environment, we have been faced with two revolutions in the last two years. One is in health care, with the creation of Alberta Health Services. This is a bold and exciting project, one that is still in progress, and we look for and, in fact, must expect great things from it. That has provided some interesting challenges for us, and we will be talking about some of those challenges today in Adam's talk.

The other revolution is in the research arena. The revolution in health research, in particular, involved the dissolution of the very successful Alberta Heritage Foundation for Medical Research. Created in 1980, this entity served us well, initially in building research capacity in the province by recruiting outstanding scientists from across the country and around the world in order to make Alberta a player in the international research scene. In recent years, once it had reached steady state, many people wondered if it was still delivering on that value. For this reason and others, such as wishing to see more direct deliverables and perhaps better assignment of research priorities, the government decided to create new entities out of the Heritage Foundation and some of the other research corporations in the province. This resulted in Alberta Innovates – Health Solutions and its related health corporations. We are in the midst of that very dramatic change right now. We look for good things from the new entities and, in particular, Alberta Health Services; but it is a journey that we have just embarked upon, and we need to have lots of discussion and input as we go forward.

We are very pleased to have one of the architects of that change, Dr. Marvin Fritzler, with us today. Dr. Fritzler is a Professor of Medicine at the University of Calgary. He is a graduate of the University of Calgary, a specialist in rheumatology, and an outstanding research immunologist. Of particular relevance to our discussion today, he is Chairman of the Alberta Research and Innovation Authority. I am pleased to call on Dr. Fritzler to speak to us now.

Marvin Fritzler, Chair, Alberta Research and Innovation Authority

New Vision for Health Research: Realigning Science Technology & Innovation Systems

Thank you to the Institute of Health Economics for inviting me. I have followed the institute over the past 15 years or so with interest. Certainly in the deliberations of the Alberta Science and Research Authority, and now the newly formed Alberta Research and Innovation Authority, the institute is one of those that we look to from time to time for advice and information in shaping the policy and strategy for innovation in Alberta.

Much of what I want to talk about is old hat for most of you, but I think it is important that we understand a little bit of our history in Alberta *[see slides 2–4, "Our Alberta"]*. Alberta health and goes back a long way, arguably 17,000 years, when the first aboriginals are known to have walked the soil of our province; so our history as measured by human geography and anthropology goes back a lot longer than most of us, I think, appreciate. We were not always Progressive Conservative in this province, and, in fact, in the earlier years after we became a province, Liberals ruled, as some of you know, for an extensive period of time, only to be ousted by the then Aberhart group, which eventually took the Ernest Manning route. In 1971, after Social Credit had been in power since 1935, the current Progressive Conservative era began under Peter Lougheed, and the rest, you know, is history. Prior to 1950 or so, we were largely an agricultural economy, and then Leduc No. 1 oil well blew in February 1997 and changed forever the face of Alberta. The very strong emphasis on energy in our economy is well known to most of you.

Our population is 3.6 million (2008 statistics), and our growth rate exceeds the national average. Over 49 percent are of European extraction, 14 percent are visible minorities, and 6 percent are aboriginal. Educational expenditures in this province lead the country at $2,558 per capita, compared to the national average of around $1,800 per capita. We have the highest weekly earnings. We are the second highest in per capita healthcare spending. I picked the conservative number of 36 percent of the budget, but one could pick a number anywhere between 36 and 45 percent, I would guess, as our expenditures in health care.

Total research investment, according to data ferreted out a couple of years ago, exceeds $250 million per year, and over 50 percent of that is in the area of health and life sciences. Like the rest of Canada, we underperform in industry-based research and development. This has been a topic of much discussion over the years and, indeed, is the theme of the latest document released by the Canadian Council of Academies, who were commissioned by the federal government to review the status of our economy. Their report is the latest, and I think a somewhat depressing, look at research and development investment in Canada. Tom already referred to the tremendous impact that the Alberta Heritage Foundation for Medical Research (AHFMR) had on our healthcare sector. AHFMR alone invested over one billion dollars, give or take, in research funding in this province over the course of 30 years or so.

As you know, Alberta research and development has now come under the title of innovation. What is innovation, after all? I like the definition given by the Council of Canadian Academies, which is that innovation is new or better ways of doing valued things, or adding value to what we do already. That, I think, encapsulates what we are hoping to achieve in the transition to the Alberta Innovates system. But why did we do this rejigging? Partly to blame was the Alberta Science and Research Authority, who had been asked by the Government of Alberta through Minister Horner to review the entire innovation system in the province. We did that, and in a document provided to the minister, we had a diagram that mapped out the innovation system in the province. That map was about the size of that back wall. Those of you who attended the first stakeholder meeting in July of 2008 will have seen that map. It was a mess. I have extracted a small subset of it in this slide *[see slide 6, The complexity of innovation?"],* which shows the tremendous complexity of stakeholders and players we have built into the system, even in a very small slice of health research called biomedical engineering. This then raised the question of how these systems are all aligned, and how we are co ordinating them in a province of three and a half million.

That question led to the mandate from Premier Stelmach to Minister Horner to "develop and implement a framework that defines the roles and mandates for publicly funded organizations that support world-class research and innovation in Alberta" *[see slide 7, "Background"]*. There has been a lot of anxiety that somehow the government had lost sight of the importance of maintaining world-class research while going through this tremendous transition, and so Minister Horner undertook consultations with innovation leaders to see where this was going to go. I referred to one of the first meetings held in July 2008, at which a thousand or so stakeholders were present. We broke up into little groups

and then we came together and recommendations abounded; and at the end of the day, Minister Horner was given the mandate to proceed to effect the change.

Stakeholder consultations continued, and we now have Bill 27, the Alberta Research and Innovation Act, which has put legs on the new Alberta Innovates system *[see slide 8, "Bill 27: Alberta Innovates Corporations"]*. Through the Act, four new independent corporations and the new Alberta Research Innovation Authority, which I chair, have been created. The official launch was January 1, 2010. Each corporation has a separate board, chief executive officer, and secretariat, and strategic and funding ties to a Government of Alberta department. Health Solutions, for example, wants to build on ties to Alberta Health and Wellness; Bio Solutions is tied obviously to Sustainable Resource Development, and so on. Each of these new corporations reports to the minister and to the Alberta Research and Innovation Council, which is made up of the chairs of the corporations and chaired by the Minister of Advanced Education and Technology.

I n the early stages, each of the new Alberta Innovates corporations developed core strategies in four areas. The first is leadership, which means not only developing leadership but also modelling leadership in a culture of trust. This system will utterly fail if we do not develop a new spirit of trust in moving into an aligned strategic approach to research and development. We are also going to be very focussed on continuing to develop, retain, and attract world-class people. Open innovation, the second core strategy, is a basic Wikinomic approach to the transfer of knowledge, intellectual property, and skills, in which we add value by gathering information and intellectual property from disparate sources.

The third core strategy is enhancing research capacity. That is not new for this province, but the question for Alberta is, "When is enough, enough?" When have we arrived at capacity? I have been with the Alberta Science and Research Authority for 13 or 14 years, and I still don't know the answer. That is a question that I think we ought to look at.

Finally, the fourth key area is return on investment. Clearly, one of the drivers for this change was the underperformance of Alberta in return on investment. I referred to $250 million plus, not to mention AHFMR's billion or so investment in research over 30 years. What are we getting back for it? That was a key question, and we found that, like the rest of the country, we were underperforming. So the fourth strategy is to bring technology to market — developing new products, but also best practices.

This is the organization chart *[see slide 10, "Bill 27" Alberta Research & Innovation Act"]*. The three new research and innovation corporations in the three blue boxes are Energy & Environmental Services, Health Solutions, and Bio Solutions. The Alberta Research and Innovation Authority reports to Advanced Education and Technology. At the bottom are the stakeholders, postsecondary institutions, and other research performers. Off on the far right is the entity that probably represents the largest change, Alberta Innovates – Technology Futures, which is the embodiment of what used to be, for the most part, Alberta Ingenuity, the Alberta Research Council, and, as we sit here today, ICORE. All of these are intended to work together. The chairs of Energy & Environmental Services, Health Solutions, Bio Solutions Technology Futures, and the Alberta Research and Innovation Authority sit together in a bridging organization called the Alberta Research Innovation Corporation.

If you are from certain sectors that bridge across all of these, such as information and communications technology (ICT), humanities, or social sciences, you will want to know where you fit. And that is largely the intention of the Alberta Research and Innovation Authority: to make sure that each of the corporations keeps these as part of their core values and core functions.

Not included in the diagram is the Alberta Innovates Connector service *[see slide 11, "Connector service"]*. This was thought by industry to be one of the missing pieces. Emerging entrepreneurs need to know how in the world they get off the ground and find their way through the innovation maze in Alberta. To address that, we have created what at first was called the "concierge" service and now the Connector service. This is where you go when you have an idea for a new business, a new product, a new venture, a new value-added, but don't know how to get it into the system. This one-stop service, currently embedded in Advanced Education and Technology, provides information, resources, programs, and services to refer entrepreneurs to key contacts in the innovation system, but also provides guidance and support.

The role and mandate of the Alberta Research and Innovation Authority is virtually unchanged from that of the Alberta Science and Research Authority (ASRA), and that is to provide high-level policy and strategy advice to the minister and to the Government of Alberta. We also collect intelligence and information on other jurisdictions with comparative research and innovation systems, provide advice on opportunities, conduct future studies and market scans, and maintain a long-term vision with recommendations that form objectives in five- and ten-year cycles.

The board of directors of the Alberta Research and Innovation Authority is significantly different from the former ASRA board *[see slide 13, "ARIA Board of Directors"]*. The entire ASRA board was made up of Albertans, whereas the board of the Alberta Research and Innovation Authority is largely international. We have 11 of 12 seats filled right now, of which three are Albertans and the others are from Ireland, Finland, the United Kingdom, the United States, Germany, and Australia. By having a board of directors that is much more international in flavour, we are not only looking at what can we learn from them, but hoping that they can learn something from us.

AHFMR is not dead. It has moved higher up on the scale of evolution in my view. The CEO, Jacques Magnan, who is here today, is the new CEO of Alberta Innovates – Health Solutions (AIHS) and quite frankly I can't think of a better person to lead AIHS through this transition. The $1.5 billion endowment is still in play, and current AHFMR personnel are covered for a minimum of one to two years. Team grants continue, and the new strategy development is now underway and expected to be completed in the third quarter of this year. And, clearly, one of the reasons for the renovation of AHFMR into AIHS is to develop a balanced portfolio so that we are covering the entire spectrum — not just basic research, but all the way to innovation, application, and policy and strategy. Obviously, this will need significant alignment and synergy with what is going on at Alberta Health Services and with the Alberta Health Services research strategy authored by Roger Palmer and Lorne Tyrrell. Now we are waiting for the government version of the health research strategy to be unveiled so that we can start synchronizing and synergizing with the other relevant departments, bearing in mind what I said about trust. If trust cannot be shown between the individuals involved in this, and it involves all of us in this room, I am convinced we will be back to where we were in five years. We need to make sure we are synchronizing as much as possible.

I pulled this out of the transition business plan just to remind everybody that Alberta Innovates – Health Solutions is not starting entirely from a blank page *[see slide 15, "Principles: Transition Business Plan"]*. These are the key values that are articulated in a transition business plan that will get us through to the next strategic plan that is now being worked on. Having highly qualified people was the number one strategy in the ASRA of old, and it continues to be at the top, along with other areas that I think are familiar to you.

We asked the people in the province, "What are the big ideas that you think Alberta should be engaged in?" This is one page of a three-page list of the ideas that people say ARIA ought to be working on *[see slide16, "Alberta's Menu of BIG IDEAS"]*. The menu is huge, and the question is which of these should we do, and which can we really do well? It might be systems biology. It could be food for health. It could be any one of these things. You see the daunting task. It

is challenging to say which of these will see the light of day and which we should champion as a board with the Government of Alberta.

It isn't going to be a lottery. We are not going to put these ideas into a hat. We are intending to design what is called an innovation filter *[see slide 17, "Innovation Filters"]*. This is in part a creation of Ray Bassett. The big ideas start at the top of the funnel and move through a series of filters until we arrive at the bottom. Those filters include: Is this idea relevant to Albertans and other Canadians? Is it a large, long-term ambitious challenge on a global scale? Does it have jurisdictional advantages for Alberta? Is there a market in which Alberta can benefit from the big idea? And at the end of the day, if we are going to put Government of Alberta money behind it, is there political will to do it? It is a structured approach to deciding how we will advise the government, and not all of the ideas on the menu will make it through the filters.

This is a selection of those things that seem to be shopped around a lot and that probably meet some of the criteria of the filters *[see slide 20, "Alberta's S&T Future?"]*. No secret to most of you, energy and the environment — carbon dioxide sequestration or dealing with the carbon footprint — is high on list in this province. We do have an image issue to deal with in terms of our carbon footprint, and not only that, the water that goes along with it. Second, I am expecting that in association with Alberta Agriculture and Rural Development and Alberta Health and Wellness, we are going to want to do something significant in nutrition and human health. Much work, including a taskforce report, has been done in this area already. Biomedical engineering is on the list, and so is nanotechnology. After all, we have the National Institute for Nanotechnology. Do we push this little raft off the shore and then abandon it? But if we are going to do nanotechnology in this province, we are going to have to get our shoulder behind the flywheel and move it along. Mental health and addiction is another important area, as is personalized medicine.

At first glance, most people think that patients are like zebras. It is hard to distinguish between them. They all have stripes, after all, and if they all have one disease, the stripes look the same. But if you look closely at a herd of zebras, you see that they are different. Each has a unique stripe pattern, and, hence, its own metabolic and genetic background, and so it is if you look around the room. Each one of us is different. And that raises the question, Is personalized medicine one of those desired futures that the province of Alberta should be looking at?

Personalized medicine goes by a long list of other names: individualized medicine, molecular medicine, designer medicine, companion medicine, P4 medicine, theranostics, and translational genomics. Skeptics abound. Whenever I bring up the topic of personalized medicine, about half the crowd dives under the table, not recognizing that personalized medicine is already here. We are already practicing it. I will give a few examples here, including the use of BRCA genes to predict ovarian and breast cancer *[see slide 21, "Skeptics Abound: A Few Examples of PM"]*. And, in fact, the wife of a good friend of mine in Calgary developed breast cancer. She had a strong family history of breast cancer on the maternal side, and they were worried about their two daughters. They had their BRCA status done, and they were positive. So the daughters had mastectomies after they had their children, as a preventative approach to breast cancer. We already are targeting specific therapeutics to breast cancer based on molecular markers called HER2 receptors. If a patient is HER2 negative, you are wasting your time to treat her with Herceptin. We have now identified biomarkers that will predict which patients respond to extremely expensive biologicals. At best, 40 percent respond to a drug that costs $30,000 per year in this province. Knowing which patients should get it and which should not saves the healthcare system money. We can also use biomarkers to detect minimal residual disease before it clinically returns.

I borrow from Denny Cortese, the relatively new CEO of the Mayo Clinic, in his approach to personalized medicine. The bottom line is the question of whether or not personalized medicine brings value? And the answer to that is yes, if the cost of personalized medicine is diminished by the outcomes. If we do well enough on outcomes to address the

perceived increase in cost, then we bring value. The bottom line is that personalized medicine may be worth it after all.

In this last slide, which is a painting by Bev Doolittle, our attention is drawn to the little red fox, while we tend to ignore the bigger picture and the Natives who are riding an appaloosa in the woods. It is just to remind us that innovation is not myopia. It is not what *I* think is important in the list that I gave you. It is maintaining the bigger picture. Thank you.

Questions and answers: Marvin Fritzler

Tom Feasby: Thank you very much, Marv. I think we have time for a couple of questions.

Phil Baker, Dean of Medicine, University of Alberta: I share your enthusiasm for innovation. I particularly share your enthusiasm for personalized medicine, and I think if we can better align a translation agenda with all of the different stakeholders in the province, fantastic. But one of the challenges that we all have to face up to — and I think we do Alberta a disservice if we do not — is the transition process. Assurances that it was going to be a painless transition are not quite coming to fruition. The Heritage Foundation was fantastically successful in recruiting some world-leading researchers to Alberta. It probably wasn't a sustainable model, but nevertheless we got some world-leading researchers, many of whom are focussed on the discovery end of the pipeline, which I know you all think is important and crucial for the results in translation. The challenge that Tom and I have as deans of medicine is to convince those individuals that one to two years of transitional funding doesn't give them a window to find a job elsewhere in the country. We're going to do that. We're going to work our back sides off to keep those outstanding researchers in the province so that your vision can come to fruition, but we shouldn't take our eye off the ball. That's a crucial step in the process.

Marvin Fritzler: I agree with you completely. A number of things came to bear that have had an impact on the transition. And a disclaimer: if it were me, I would not have done it that way personally. I was once an AHFMR scholar, and then a scientist, and I still research actively in the lab, so I know the sentiments, the feeling, and the anxiety quite well.

I think the gap between the old system and the new system needs to be significantly collapsed. I referred to quarter three of 2010. I would prefer that to be quarter two, if at all possible. I get the anxiety emails, and I am sure that you get many, many more. I know that Minister Horner is anxious to narrow that gap as well, and from all my conversations with Doug and Annette and everybody else I can tell you that the department is working hard to collapse that, as I know Jacques is, too, and Rob.

Tom Feasby: I think we can all agree that change is difficult, but I think we can also agree that change was necessary. Marv, thank you very much for taking us through that. I agree with you that we need to trust and continually re-establish that trust. We have a lot of nervous people. I think we are going in the right direction, and we need to keep trusting each other and working towards it.

Now, we are going to move to another topic. I talked about two revolutions. One was in research, which we have just talked about, and the second is in health care. I think we are all aware of the tremendously escalating costs in health care. In Alberta, it is said that healthcare costs have been going up by about 10 percent per year. In the US, about 17 percent of the GDP is now spent on health care. In Canada, it is about 13 percent of GDP, and we are fourth highest in the world. Although Alberta spends only seemingly 36 percent of its budget on health care, some provinces are approaching 50 percent. Many people think that increases of this sort are unsustainable. This leads us to the conclusion that we must do something different, and back to this notion of change.

A lot of the discussion is centered on improving efficiency in the system, eliminating waste, and so forth. Some have advocated shifting the burden of payment by introducing user fees. That would certainly shift the payment to some degree and perhaps might also result in reduced utilization, which would have other benefits. Others advocate private medicine. The evidence, I believe, is mostly that it will not reduce costs, but that has been an ongoing debate in Canada, and there are certainly some who would argue the other way.

There is one key question that I think is seldom asked, and that is can we stop doing some of the things we are now doing? I am not talking about rationing, which is one way of stopping, but stopping things that don't add value. There are several lines of evidence that lead us to consider this as a realistic possibility. One is the work that came out of Dartmouth University in the *Dartmouth Atlas of Health Care* looking at Medicare expenditures across the United States. It would be nice to think that expenditure is somehow related to outcome and health status, but, in fact, there is a very poor correlation. Jurisdictions that spend a lot more on Medicare in the United States do not have better health status or health outcomes. This leads to the conclusion that more is not necessarily better, that there are things done that we don't need to do, if we could just figure out what those things are.

Another line of evidence is looking at the appropriateness of healthcare interventions. This is an area in which I have had an interest in my own research work. I will cite two examples. One is a study we did on intravenous immunoglobulin, a serum derived from human blood that is used to treat many immunologic and quasi immunologic diseases. It is a very expensive treatment, and we found in our studies that up to 50 percent of the use of that expensive intervention may be inappropriate. If we could stop doing that, think of the difference it would make. A more recent study — as yet unpublished data, just being analyzed — looked at the appropriateness of MRI scanning of the lumbar spine, the lower back, for back pain. We found that in up to 50 percent of the cases MRIs of the lower back were inappropriate.

It forces us to look at this issue. Should we be doing these things? Can we figure out a way to stop doing the things that really do not add value? That brings us to the topic of our second speaker, our guest, Dr. Adam Elshaug, Senior Lecturer at the University of Adelaide. I am very interested in hearing him tell us about identifying health services that do not provide value for money. Dr. Elshaug.

Identifying Existing Health Services That Do Not Provide Value for Money

Adam Elshaug, Senior Lecturer, Department of Public Health, School of Population Health and Clinical Practice, University of Adelaide, Australia

Thank you, Tom. What a perfect introduction to this presentation. I would also like to thank Dr. Sherman for introducing the session, and Marvin, for the wonderful presentation. This is my second visit to Edmonton, and it's always a pleasure to come back.

This is a quote that most people in the room may be familiar with and that applies to any developed health jurisdiction around the world:

There is substantial overuse, under use, and misuse of medical care in the United States. Interventions that are of little value are commonly overused; care that is effective is commonly underused; and care that is of unproved value is frequently misused. Spending on medical interventions continues to increase without evidence that doing more results in better outcomes or better patient satisfaction. — Wennberg, as quoted in Daniels, S. The leader's guide to hospital case management (2005), p.187

This, I think, is the impetus for most of the work that I do, which is in the area of disinvestment. The quote is from a researcher in the medical community, but it refers to a phenomenon that is being noticed by the general public as well. The Commonwealth Fund asked members of the public in the last two years, "Has a doctor recommended a treatment that you thought had little or no benefit?" *[see slide 3, "And the community is noticing"].* Canada, at 12 percent, is actually doing quite well in comparison to some of the other countries, but you can see that this is something that is being noticed by patients as well.

This is a nice quote from NICE [National Institute for Health and Clinical Excellence] in the UK:

> *So much is expected, by the public and by politicians. But resources are finite and choices have to be made about where and how to invest — and disinvest — to make the most out of the nation's funding for health.* — NICE, 2006

This is an area for which there is an economic imperative (sustainability), an ethical imperative (quality of care), and also a best-practice imperative (excellence). How do we identify healthcare practices and procedures and pharmaceuticals that are overused or may even be obsolete, and how do we remove them from the system so as to create a value dividend that we can reinvest in other areas of the healthcare system, including innovation? And what should we call it? 'Disinvestment' is not a nice word, but it is the word that was used by NICE in 2006. I use it because it carries some cachet in the health technology assessment and policy communities in which I run, but I think that 'reassessment for reinvestment' is probably a better phrase.

My definition of disinvestment is as follows: the withdrawal, partial or complete, of resources from practices, procedures, pharmaceuticals, technologies, and programs that deliver no or low health gain and are not an efficient use of health resources, thereby freeing resources for more effective, safe, cost-effective, and prioritized health services. Quite often, disinvestment is talked about in the same breath as obsolescence. Although sometimes obsolete technologies are used, and they do need to be disinvested from, most of the time obsolescence is not the issue. Quite often we have a whole host of technologies, practices, and procedures, that are, in fact, effective, but they are being overused or used inappropriately. Disinvestment in these cases is about reducing use to a more effective or efficient level of use.

Disinvestment is grounded in the notion of opportunity costs. Essentially that means that there are foregone opportunities, and we are trying to be more efficient in how we allocate our resources so that the tradeoffs are on the plus side. Disinvestment can occur in degrees. It is not black or white. And disinvestment is not rationing. Rationing implies that we have services that we want to use, but we are choosing not to use them for cost reasons. My approach is different. It is about eliminating waste: essentially, we are trying to skim off the things that are not adding benefit to our healthcare system. Most importantly, it is a refocus on the positive, an reallocation of funding to safe and effective interventions or to patient groups that are most likely to benefit.

Disinvestment is controversial, because, as the old saying goes, one person's waste is another person's income. If you are trying to eliminate waste in some areas, you are eliminating income for certain interest groups. In a moment, I will give some examples of how that has played out in Australia.

Disinvestment is not a new idea. Work was started in this area in the US back in 1976 with the Blue Cross Blue Shield Medical Necessity Project, which attempted to identify "outmoded and useless procedures." The National Center for Health Care Technology was set up in 1978 with a $4 million budget, a staff of 20, and the explicit mandate to do this work, but it lasted only a few years before it was disbanded. The reasons given for that were opposition from interest groups and a change in government. That government, if you like, sided with interest groups and thought that it was too contentious to go down this road. Similarly, in Canada, in the 1990s, some procedures and tests were identified

and delisted. Again, interest groups pressured for items to escape review. The adoption of the delisting was highly variable among the provinces, which raises all sorts of equity issues.

In the UK, disinvestment became a formal policy of the National Health Service back in 2005 during their fourth stream of system reform, which was focused on clinical waste. Now, they deliver disinvestment recommendations through their optimal-practice reviews. The problem is that NICE is sandwiched in the middle, with government on one side and the primary care trusts on the other side. Government is pushing hard for disinvestment, because they realize there is a value dividend to be gained. And they know roughly how much they are going to save, because NICE does budget-impact appraisals on every item they recommend for disinvestment. But when the primary care trusts are given that advice, they do not have to adopt it. It is optional. So you can see that it is a bit of a toothless tiger and has led to variability of uptake across the UK. There is new debate in the UK about whether or not this needs to be more regulated so that there is actually bite behind it.

Spain is also doing work in this area, through two health technology assessment agencies with whom I have consulted. Their PriTec website (www.pritectools.com, available in English) allows people to map or track interventions after they have been introduced and to prioritize potentially obsolete health technologies.

In Australia, where I have been working in this area since about 2006, something fairly exciting happened just last year. We had a change of federal government, and we now have a proactive young health minister who is very open to reform measures. Last year, there was a review of health technology assessment, and one of the proposals is a review process with the capacity to recommend disinvestment. The reference, I am pleased to say, is my own [Elshaug A., *et al*. *MJA* 2009;190(5):269-73, Australian Government, Department of Health and Ageing, Discussion paper 5 — Enhanced Post Market Surveillance]. I have published a number of papers in this area, but this one is particularly putting forward a framework that could be used to identify and prioritize practices. It is a political process, and the important thing is that we have a health minister who is standing firm and trying to espouse the positive side of this. It is not about disinvestment. It's not about saying no. It's about eliminating waste. It's about achieving sustainability. It's about improvements in the quality of the healthcare system that should benefit everyone, clinicians, patients, the community, and so on.

I am going to touch on some of the challenges that I have identified in my research in this area, and we can talk about whether or not you think these apply in the Canadian context. In Australia, there has been a lack of policy mechanisms with which to investigate existing practices. We are quite good at reviewing new and emerging interventions for their safety, effectiveness, and cost-effectiveness. But we haven't always done that, and therefore most of what is on our Medicare benefit schedule has never been assessed rigorously. The review committees are now overwhelmed with assessing the new and emerging items. They have no capacity to look at the existing items, things that have been there for awhile and are done every day in our healthcare system.

How do we identify and prioritize practices? I presented some work to a group of surgeons in a particular subspecialty, and at the end of the presentation one of them stood up and said, "This is all good and well, but why are you picking on us? What have we done to deserve this sort of attention? I could name ten things in oncology care that they should stop doing tomorrow." I thought that was a fair point, because I had been selective. I had made choices from a research perspective. From a policy point of view, there need to be systematic, transparent criteria for selecting things that we are going to review. We often think that evidence will save us and give us all of the answers; but, in fact, quite often there isn't enough evidence, and there is uncertainty around evidence that we have. We still need to push forward, from a policy point of view, in making decisions in the face of uncertainty.

Entrenchment is probably one of the biggest political, clinical, and social challenges to removing an established technology or practice. These are often technologies that have often been around for years, and that gives the impression that they are endorsed by governments because governments are paying for them. Clinicians are used to using them, and there are all sorts of training and practice paradigms that have developed around use. Taking something away or reducing its use has the potential to be controversial. I will give an example.

As I mentioned, our new health minister is very proactive, and her team announced that they were going to cut the cataract surgery rebate by 50 percent throughout Australia. I think they have very good reason to go down this path. This is a classic case of innovation. Cataract procedures have become safer, faster, and, therefore, you would think cheaper. Where it used to take 45 minutes to an hour to do these procedures, now they are done in 15 to 20 minutes; and Medicare data show that some ophthalmologists are charging up to $25,000 per day for cataract procedures. The government said, rightly so, that ophthalmologists do not need to be paid that much money to do these procedures, and this is what happened *[see slide 22, "Recent Australian events"]*. In this full-page advertisement in our national newspaper, the Council on Ageing came out and said "Grandma's not happy!" The message was "Isn't this a terrible government? You are not going to be able to get your cataract procedures done."

The government probably was a little bit too gung-ho. They didn't consult with the groups. They just acted, and it blew up in their face.

Another challenge, one I raised earlier, is that there is a lack of published studies with clear evidence showing that existing technologies provide little or no benefit. Again, the evidence is uncertain most of the time, and even when we think it is certain, there are going to be people who disagree with the evidence. The case that I like to talk about here is vertebroplasty, a procedure in which they inject bone cement into the spine to fix it in place. Our federal government, through its Medicare Services Advisory Committee, gave interim funding to these procedures a number of years ago. Interim funding means that we need more evidence: it kind of looks okay, but we're not sure, so we will re-evaluate it in a couple of years when there's more evidence. Now there have been two good randomized controlled trials published in *The New England Journal of Medicine*. They would have to be considered the glinting gold on top of the gold standard of evidence. They are randomized, double-blind, placebo-controlled trials, and both are showing that vertebroplasty is no better than placebo, that you may as well just give someone the smell of the cement, as it has the same effect as actually injecting it into their spine. You would think that that's it. It's clear cut. We shouldn't be funding that. But, of course, the clinical community has come out saying these studies are flawed, they don't apply to their practice, and so on and so forth. I think we need to expect this and to plan for it and know how we are going to progress from a policy level.

I am going to touch briefly on the proposed approach that is the title of my talk. How do we identify and prioritize practices and technologies? I think the process needs to be explicit, a-priori, transparent, and inclusive, but also removed from vested interests. In the paper that I published, I proposed a framework for certain areas that might flag potential candidates for disinvestment assessment. I go into them in detail in the paper, so I won't dwell on them here, but these are some points of prioritization: cost (per procedure or volume), impact (health, liberation, equity), cost-effect alternative, burden (high/low), evidence (sufficient to offer utility, growing consensus), pay for evidence, futility, and precedent. I think it is really up to each individual jurisdiction to decide which of these get more weight than others.

I will run through a couple of case studies in identifying services for disinvestment. I am going to focus on three items: evidence; variation, which is either geographic, provider, or variation over time; and conflict. I can show you very briefly what sorts of things are flagged.

The first example is variation in the prescription rates for oxygen therapy across Australia *[see slide 28, "Domiciliary oxygen therapy prescription rates: Variation by state"]*. The states are across the bottom of the chart. The white columns in the middle show the difference between the states and the national average. You can see that there is huge variation. I am not suggesting that that is not reasonable variation, because quite often there are good explanations for variation, but this is a flag that says there is something going on here that we might want to look at.

This next chart shows the average costs per patient *[see slide 29, "Domiciliary oxygen therapy by state: Variation ($ per patient)"]*. Again, I draw your attention to the white column. You can see that there is huge variation in cost per patient for this service across the states. Now, again, this might be justified by the fact that some states are bigger than others and have more remote communities, and, therefore, transport costs associated with this service are higher. But I would point out that the costs per patient in Queensland and Western Australia are about equal, although these states have different populations and different transport costs.

The next example is a surgical procedure for sleep apnea *[see slide 30, "Surgery for OSA: Variation by state"]*. I joke about the difference between New South Wales and the Australian Capital Territory. I wonder what's different about these populations that would require New South Wales to have 4 surgeries per 100,000 and the ACT to have 13 per 100,000. Personality-wise, I think there is quite a difference between these population groups, but I am not sure there is that much of a difference anatomically or physiologically.

The next set is the variation by state of osteotomies *[see slide 31, "Osteotomies of mandible and/or maxilla"]*. Down the left-hand side, we are looking at item numbers for different surgical procedures. You can see that Queensland is doing none of these procedures, whereas the ACT is doing four of some procedures, and Tasmania is doing five. There could be justification for this, but again it is a flag that there might be more going on there that we're interested in looking at.

Arthroscopy for osteoarthritis of the knee is a favorite around the world. Certain reports that came out in 2004 said that knee arthroscopy offered no significant advantage. Blue Cross Blue Shield said the same thing. In 2008, the Cochrane Collaboration said there is "no evidence… to support the beneficial effect of arthroscopic debridement," and then NICE said that it should not be offered as part of treatment for osteoarthritis. And yet in Australia the curve continues to go up and up and up *[see slide 35, "Three most common arthroscopies"]*. Nearly 77 percent of the arthroscopies that are done are the most expensive of the three item numbers that we offer for this procedure. This shows the effect that a guideline approach can have on practice. We can see that it has not worked, so the question is whether something firmer, such as more reimbursement drivers, needs to be brought in to try to reduce the use of these procedures.

Using our framework, we have so far identified over 40 technologies and procedures that look like fairly good candidates for assessment. I acknowledge Dr. Sarah Garner from NICE who provided me with her list *[see slide 37]*. We collaborate and are going to be combining our lists and publishing them soon. Health technology assessment processes are highly applicable in this area. In fact, I think they dovetail nicely. What is different is that HTA obviously focuses on new and emerging technologies, whereas we are looking at existing or entrenched technologies, so there needs to be adaptation.

There are models under consideration internationally about how we address this. Some of these are controversial, and I don't agree with all of them, but they are worth raising nevertheless.

Guidelines – Establishing guidelines is one model. Do we reimburse only when guidelines are adhered to? That is controversial, because essentially it takes clinical autonomy away from a physician. I don't think that's necessarily beneficial, but some jurisdictions around the world are talking about it.

Remove from funding schedules – In Australia, with our Medicare system, you can simply remove an item from a funding schedule. It's just not there anymore. This is a firm lever that can address this issue.

Tighten or restrict the indications – Most procedures or technologies do benefit a certain number of people. Do we remove the service altogether, or do we try to restrict it to the patient subgroup that is truly going to benefit from it?

Reduce the fee – Where there is technological development or innovation, as in cataract surgery, we could reduce the fee, as the Australian government has tried to do. It has worked to some degree, but not as well as they would have liked.

Partial reimbursement – We can partially reimburse, based on how effective a procedure is or how many patients it treats.

Risk sharing – We can share risk. We do this with pharmaceuticals, and there is now talk of doing the same thing for practices, technologies, and procedures. That is, if it is a promising technology or procedure, we fund it fully; but if it turns out that it does not do what we thought it would do, then the provider reimburses the payer. Again, that is very controversial.

Restrict providers to 'centres of excellence' – The idea here is that certain clinics have high throughput and high skill levels and are therefore better at what they do.

Compulsory reviews – We can have compulsory reviews, so that everything that comes into a healthcare system or jurisdiction must be reviewed, no matter how it arrives.

Sunset clauses / time-limited funding – We can have sunset clauses, which means that if something has been around for 10 or 20 years but has never been reviewed, it is given a three-year window. Evidence must be generated within that time for the standard fee to prove its worth; and if that does not happen, it is not funded anymore. I think that's an interesting one, because so much of what we do at the moment has escaped that kind of critique. You quite often hear the suggestion that there is not enough evidence, so we have to keep on funding it, whereas the flipside of that is that if we have fully funded this procedure for 20 years and there's no evidence. Perhaps we should put that procedure to the same stringent standards that we would require of anything new and emerging.

Concurrent specification (one in, one out) – The UK has concurrent specification in a fixed budget model, which means that if something new comes in, they have to be explicit about suggesting what goes out to make room for it.

These are some of the implementation considerations that I have put forward in the document that I prepared for CADTH *[see slides 41–46, "Possible approaches and implementation considerations"]*. I offer them quite humbly, because I really think it is up to each jurisdiction to think about how these might apply within their own jurisdiction.

Element 1: Importantly, there needs to be a high-level decision and commitment to make this activity an explicit, formal, and resourced policy agenda. I am pleased to see members of the provincial parliament present at these presentations today. That's a wonderful thing that you don't often see around the world where I present. Getting this sort of work on the agenda is important.

Element 2: There needs to be a regulatory framework for decision making that is transparent and removed from vested interests. In Australia, I have proposed that this activity be parallel to some of our very good existing

processes. The logical group to do it in Australia is our Medical Services Advisory Committee, which has all sorts of flaws and limitations, but also does some things very well. Think about what is in place currently that would do this work well, and build on that rather than inventing something from scratch, unless that's the better option.

Element 3: Additional resources need to be committed to advisory committees to give them the capacity to assess existing items in parallel with new and emerging technologies; or new, parallel committees need to be formed to do this work.

Element 4: Regulatory support is needed for removing or reducing reimbursement for an item, or for restricting its use, if there is a comparative technology that is more efficient and cost-effective. On the surface, the UK is the country that has tried the hardest to do this, but they have also fallen to a lot of criticism because, at the end of the day, they do not have teeth to implement their recommendations. From conversations that I have had with colleagues in that country, I understand this has been quite frustrating.

Element 5: Again, the process for selecting candidates for assessment should follow a protocol with pre-specified, transparent selection criteria.

Element 6: I think there needs to be debate about which mechanisms, models, or combinations thereof are most appropriate within a jurisdiction.

Element 7: We need more funding for capacity building in research and policy development in this area, because it requires new methods of addressing uncertainty in evidence and that sort of thing. We need to talk not only to clinicians (and clinicians need to be central to this process) and policy makers, but also to patient groups and community groups so they understand why this is being done. Finally, there needs to be an implementation plan.

Thank you very much. I welcome your questions and comments.

Questions and answers: Adam Elshaug

Tom Feasby: Thank you very much, Adam. This is a very, very relevant topic for Alberta, and I really believe that Alberta has a chance to be a leader in this, especially with the recent changes in our healthcare system. Your suggestions for how should be implemented are very, very reasonable and give us plenty to think about. Certainly, the political will is a key portion of this, and I am glad that we have some of our political leaders here who can comment on this.

We have time for a few questions before we have a break.

Bernard Prigent: In terms of change management, I wonder if you are presenting this to the practitioners — to people reluctant to change — under performance management as opposed to cutting? You said that you look holistically at a population of patients and at standards of performance to determine what items you want to get rid of. It is because they are not performing intervention? Have you thought of that?

Adam Elshaug: Oh, absolutely. I haven't spoken about it in this presentation, but it's worth saying that we work quite closely with clinicians in this area because clinicians understand the nuance. On the whole, they are very receptive to this idea because it's about trying to improve their own practices and potentially redirect resources into their own specialty by reducing the waste. There is always a loud minority that take the defensive, but that's to be expected, I guess.

Performance measurement is something that I think needs to be jurisdiction-specific because it can be expensive to monitor performance if it is not already in place. In Australia, for example, it is quite hard to monitor performance in

private practice and in general practitioner clinics in private hospitals. It is a bit easier in public hospitals, where they are almost mandated to do so, or it is in their interest to do so.

Tom Feasby: I am interested in the role of the medical profession in this debate. We have heard about people defending their turf and their procedures and so on, and yet I think the profession as a whole has a responsibility to deliver the best and most efficient care, and not to do things that are not worthwhile. You didn't say very much about that in your recommendations, but I think that getting the medical profession on side as part of the solution might be important.

Adam Elshaug: I absolutely think that it is important. I am a chief investigator on a research project that is doing this work in Australia, and we consult with quite a broad clinical community. They are far and away the richest source of information in this area. As to the resistance, quite often, I think it's a sociological question as well. Some of the minority are very vocal in defence not because they are unreasonable people, but because they genuinely believe what they are doing is effective. I think negotiating that is quite an important area as well.

Tom Feasby: Agreed.

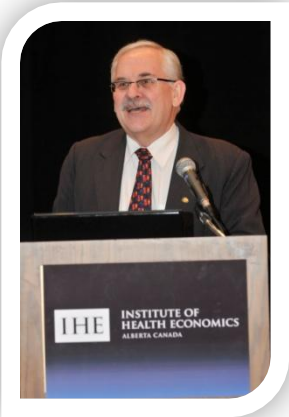
Marvin Fritzler: Adam, I enjoyed that very much. Can I come to the personalized medicine issue and how you see preventing throwing out the baby with the bath water? Let's say an intervention is effective in only five percent of patients, but it is effective. How do we protect against dismissing what may be a very effective intervention, albeit in a very small component of the population?

Adam Elshaug: It's a very good point. I suspect that what you are talking about will come up again and again: cases in which there is a population subgroup who get clear benefit, but others do not. It is about differentiating between the two. You don't want just to get rid of something altogether if there is a level of benefit. That is partly my point about developing methods in this area. There is an onus on the clinical community, or the clinical epidemiological community, to start developing better models to predict who is going to benefit from interventions. In some of the case studies that I have done in the surgical areas, for example, they have been doing these surgeries for 20 years and still don't have very good predictive algorithms for who is going to benefit and who is not. Sooner or later, we are going to have to call it and say, "How much longer do you want? You are taking up these resources." I think the area of coverage with evidence development could possibly look at saying, Okay, let's develop our predictive algorithms for who is and who is not going to benefit.

Tom Feasby: I would like to express my thanks to Adam for an outstanding talk. We will look forward to more questions and debate when we get into the panel.

(ADJOURNMENT)

Panel Presentations



Dr. Stephen Duckett, President and Chief Executive Officer, Alberta Health Services

As part of my preparation for these remarks today, I went back to my remarks at the Innovation Forum held in May of last year. Back then, I foreshadowed a concern about allocative and technical efficiency. Since then, we have made remarkable progress towards technical efficiency, starting with the work on activity-based funding for long-term care facilities. We have also made progress on allocative efficiency, and have established a health technology assessment and innovation branch within Alberta Health Services.

It is important to recognize, though, that health technology assessment is not the sole preserve of that branch. To some extent, it is part of the everyday work of senior executives and all the nascent clinical networks. The surgery network, for example, is working with the health technology assessment branch on a framework for assessing new surgical technologies.

I will give a couple of examples of the use of technology assessment in everyday life in Alberta Health Services. First, there has recently been publicity about the appropriateness of venous imaging and venous angioplasty in multiple sclerosis. Alberta Health Services needed to develop a position on this very quickly. We produced a two-page paper that characterized our position, which was developed by the senior physician executive in consultation with experts in the field. The two-pager provided a synopsis of the proponent's studies and a brief evaluation of that. This was all done very quickly, within days.

The Alberta Health Services position was summarized as follows:

1. At this time, it is only a hypothesis that CCSVI contributes to or causes multiple sclerosis and that venous angioplasty is clinically beneficial.
2. Further, independent and controlled studies are required to prove, discount, or better understand Dr. Zamboni's study results.
3. The nature and frequency of the risks of venous angioplasty are not yet fully understood. Without a clear indication that venous angioplasty carries a clinical benefit that outweighs the risks, it cannot yet be supported as standard practice.
4. At present, there is no proven indication for venous imaging or venous angioplasty in patients with multiple sclerosis. Therefore, unless part of an approved research protocol, these procedures will not be provided by AHS to persons with MS.
5. If, and when, there is independent scientific validation of Dr. Zamboni's results, Alberta Health Services will seek approval from Alberta Health and Wellness, under the province's health technology assessment process (described at http://www.health.alberta.ca/initiatives/AHTDP.html), to introduce the new procedure into practice in Alberta.

What can be seen here is a careful assessment of the evidence and a reinforcement of existing provincial health technology assessment processes in response to quite a significant public campaign. My message is that health technology assessment is not somehow separate from the day-to-day work of leaders, and is not something that necessarily takes months, years, or eons.

We are also in the midst of evaluating what works and what doesn't in community physiotherapy. The literature in this area was not as good as we wanted, but we have undertaken a careful review of what is known and attempted to map that to what we do in practice. This was a very complex task, and it revealed gaps in our current provision as well as identified areas of lower-priority physiotherapy inventions. We now need to think about how we take this forward.

If we are to build technology assessment into our everyday practice, we need access to good research synthesis, and the tools and mechanisms to translate technology assessments into practice. As I intimated last year, I think we have to be much more nuanced in our health technology assessment approach. The days of seeing everything in black and white are over. Despite the relative sunshine in Alberta this week, much of life is gray. This means that the health technology assessment decision is rarely going to be a go/no-go one. Rarely will a decision be about whether this technology is all good or all bad. Rather, it will be about in which circumstances, which patient groups, which comorbidities, and what genetic profile this technology is appropriate.

I will also put in a plug for tracking the implementation of new technologies. Has there been indication slip, a technology approved for a particular group that is now being used more widely? Here, our routine data sets can be used to track implementation and outcomes, moving towards what Etheredge (2007) calls a "rapid learning health system."

We also need be better at building valuation more directly into our practice. In the United Kingdom, for example, they are now looking at the routine use of patient-reported outcome measures, measuring from a patient perspective whether what they got was what they expected. I discussed this issue last year as well.

Finally, all of this will be facilitated by having a more integrated relationship with our academic partners, and here the development of the Alberta Academic Health Sciences Network should provide important opportunities to build health technology assessment into our everyday work. Thank you.

Tom Feasby: Our next speaker is Mr. Fred Horne. Fred is the MLA for Edmonton–Rutherford, and serves as Parliamentary Assistant to the Minister of Seniors and Community Supports. Fred recently chaired the Minister's Advisory Committee on Health, and I had the privilege of serving on that committee under his very deft leadership. The committee came out with an important report that has been tabled and is undergoing public consultation prior to the introduction of an Alberta Health Act this fall.

Fred Horne, MLA for Edmonton–Rutherford, Parliamentary Assistant, Seniors and Community Supports

Good afternoon, everyone, and thank you to the Institute of Health Economics for the very kind invitation to be with you today.

I would first like to just take a few moments to talk about the report to which Tom referred. The Minister's Advisory Committee on Health was established in September of 2009 with a mandate to make recommendations for a new legislative framework for Alberta's healthcare system. I discovered something recently that I wasn't aware of: that it is not true that Saskatchewan was the first province to legislate universal healthcare coverage in Canada. That province was, in fact, Alberta. In 1935, the government of the day, the United Farmers of Alberta, passed the Health Care Insurance Act, and although there were changes to this legislation, it was proclaimed. If you ever have a moment to take a look at it, you might be interested to see that in addition to medically necessary hospital and physician services, there is a fair degree of

specificity in the act about other services that were universally available to Albertans, including pharma care, dental care, and various public health services.

With that in mind, our committee began a series of discussions with key stakeholders in the health system through written submissions and dialogue, and also with Albertans through a public survey about some key considerations in drafting new health care legislation. We addressed things like overarching principles that should guide decision making; and, interestingly, the use of the best evidence to guide day-to-day decisions in the health system was one of those principles that we proposed. Both the stakeholders and the public generally felt that it was extremely important for government to start looking down that road.

Tom also mentioned the introduction of new legislation in the fall, the Alberta Health Act. What is significant about that is that we are looking at a shift, and we believe it is the first in Canada, from very prescriptive legislation to an enabling legislative framework. Most provinces and territories in Canada have pretty much the same boilerplate legislation. They have a hospitals act, a nursing homes act, and a healthcare insurance act, and most of those date back to the early 1960s, or earlier. One of the consequences of that sort of legislation is that it severely restricts government's ability to fund any other than a specific profession to provide a certain service, and restricts the ability to fund the delivery of a specific service somewhere other than in a specified setting, usually a hospital or a nursing home. It also restricts quite severely our ability to apply the best available evidence to decision making.

As a country, we are facing an aging population and an increase in chronic disease. If we want to deliver specific services using specific technologies and clinical protocols in certain settings in order to target a particular cohort of the population, we need more flexibility in our legislation and regulatory framework. Any of you who have been involved in consultation or review of legislation will know that it is a very, very laborious process involving many consequential amendments to the different pieces of legislation. There are over 30 statutes in Alberta that govern our public healthcare system, and several hundred regulations associated with each one. So this is, indeed, a challenge.

As we move from a prescriptive legislative and regulatory framework to an enabling one, we need to look at how to guide decision making in this new enabled environment. We talk a lot about the need to invest in research. I think we have done a very good job of that in Alberta, as measured by dollars and by some of the successes that were pointed out in the presentations earlier today. What we have not done a good job with is ensuring access to research data so that it can be applied to decision making, and integrating that research with a research agenda to support policy development in the public healthcare system. We need to do a much better job of collaborating, not just at the research level but at the clinical level, at the level of education, certainly at the level of government, of political discourse, and most importantly, at the level of consultation with the public. If you look at our report, you will see that the number one concern of Albertans — not only of users of the system, but also of the 90,000 employees of Alberta Health Services who are our health work force — is to be engaged at a much deeper and more meaningful level in decisions that are made about the system.

The last presentation did an excellent job of pointing out the challenges and giving suggestions about process in moving toward evidence-based decision-making. We talk a lot about this in our report. Next week, the government will be launching a consultation, which I will be leading, about how to implement this recommendation. There are a number of models to look at, but I think it starts with a common understanding of the population health outcomes that we are seeking and a willingness at the political level, the clinical level, the citizen level, and the level of our postsecondary institutions to make this a reality.

I will be the first to admit that this is not going to be an easy task. I am committed to a vigorous discussion with stakeholders and with other Albertans about the functions that we intend to fulfill through this shift to evidence-based

decision making. In the end, we are asking the citizens of our province to accept more discretion and authority on the part of government to make decisions that are not embodied in the statutes of the 1960s, but which are set out in regulation and policy. Those regulations and policies need to be more dynamic. They need to be able to change as our health system evolves and our ability to perform improves, but we are not going to be able to do that, as I said, without that core commitment.

The exercise we will embark upon is really our pitch to Albertans for their permission — their social permission, if you will — to make these decisions in the public interest, using the best available evidence, and that is no small task. On behalf of Raj and the minister and all of my colleagues, thank you, and please take the opportunity to join in and help us make this happen for Albertans. Thank you.

Tom Feasby: Our final speaker in this panel is Dr. Bernard Prigent, and I refer you to his biography, which is very interesting. I learned some interesting things about his beginnings as a family physician in France. He is currently the vice president and medical director of Pfizer Canada; and Pfizer, as you probably know, is one of the world's leading pharmaceutical companies. Dr. Prigent is also a member of the board of the Institute of Health Economics, and thus we have the privilege of his council on regular occasions during our meetings. More recently, he has taken a position as a member of the governing council of the Canadian Institute of Health Research. I think putting him on that governing council was a bold move and one that symbolizes the important and growing relationship we have with the pharmaceutical industry.

Economics and Innovation in Healthcare: A Biopharmaceutical Perspective

Bernard Prigent, Vice-president and Medical Director, Pfizer Canada

Thank you very much for your nice comments, and I want to thank the Institute of Health Economics for getting me out of my zone of comfort and putting me in front of you on the podium. This is the third Innovation Forum that I have attended, and they have always been of a very high quality. My task today is to present you with some facts and to update you on some of the challenges related to innovation in the private sector.

My presentation is not about Pfizer, one particular company, but rather about the magnitude of the changes that the whole pharma sector is going through. I will start with innovation and bio pharma technologies in the healthcare environment and then maybe touch on how innovation could shape the future of health care.

First we will look at the changes in pharma on the macro level *[see slide 2, "Biopharma and Innovation"]*. In economic terms, within the next few years the whole pharma sector is expected to lose about $140 billion in revenues, which represents about 35 percent of the total revenue of the pharma sector. You can imagine the challenge this represents for a business model in which a large amount of revenue has been plowed back into research and development. Another consequence, since not all companies will generate the same level of income, is that you can anticipate mergers, acquisitions, and new business models. In particular, there is a growing presence of pharma within emerging markets. Pharma is now looking at emerging markets not just as sources of revenue, but also as areas where they could outsource some of their research and development activities. This would result in a major shift of investment from Canada, Europe, and the US to emerging markets.

In addition, the integration of pharma with biotherapeutics is creating very big biopharma companies, and more and more companies are integrating genetics and diagnostics in their business model. Lastly, and something that is much closer to my heart, is the re-engineering of research and development on a global basis. The R&D footprint of most companies is reducing as we speak. The good news, I think, is that the trend is towards partnership and collaboration, not just with the biotech industry, but also very much with the academic sector, to ensure that innovation is being developed collectively by academic innovators and researchers and our own researchers with their own lab. That is a snapshot, if you like, of the current situation.

These are recent data, showing the climbing curve of R&D costs for the whole pharma sector *[see slide 3, "Innovation Gap Getting Wider"]*. You can see that in 2007, pharma collectively was spending about $50 billion annually on research and development. But if you look at the number of new chemical entities approved by FDA and other regulators around the world, you can see that we are managing to bring only about 20 innovations to market year in and year out, despite the tremendous amount of investment.

We know that the cost of health care is rising tremendously, and in the US expenditures will reach $4 billion within the next five years. As a percentage of GDP, it is 17.5 percent at the moment, but it is going towards 20 percent, so the rising cost of health care is a major issue. Clearly, technology, and in particular pharma and innovation, is seen as a major cost driver in some circles, and the acquisition costs of some technologies may be high. But if you look at the policy options open to the United States to try to reduce potential healthcare costs, you realize that focussing on the cost of drugs is not the solution *[see slide 5, "Policy Options and Distribution of 10-Year Impact on Spending"]*. There is a wide range of other options, from improving the healthcare delivery to prevention and other very broad interventions, that will translate into significant savings.

Some of the speakers touched on the changing face of health care. Clearly, the future relies on moving from a sporadic and reactive healthcare model to one that is very comprehensive and personalized in nature, starting from a low-risk profile and potentially going all the way to an early chronic and late chronic healthcare framework *[see slide 6, "The Changing Focus of Health Care"]*. The ability to deliver on such a framework requires a focus on health-promotion and prevention education and the development of technologies, in particular around personalized medicine. It is important for innovators, and certainly for pharma innovators, to start to move away from the model of one-size-fits-all and the concept of a breakthrough medication, to looking at intervention for subgroups of patients and working with other actors in the healthcare sector to make sure that personalized interventions do indeed generate value for the individual patients and the healthcare system.

What are we expecting from personalized medicine, in a broad sense and from the view of the industry? Clearly, it should shift the emphasis in medicine from reaction to prevention, but it should also enable selection of the optimal therapy and reduce trial-and-error prescribing, especially of the new and high-tech solutions that will come to the market. It should also tremendously improve drug safety by reducing adverse reactions in individual patients. It should increase patients' compliance with treatment, reduce the time and the cost of clinical trials (which is significant for us), and revive drugs that are failing in clinical trials or are withdrawn from the market. The expectation, if we do all that well, is that it should reduce the overall cost of health care.

I think we need to have the right attitude toward innovation. A 2008 survey showed that only 61 percent of new drugs were recommended for reimbursement in Canada, and they were not necessarily reimbursed by any or all provinces *[see slide 9, "The Right Attitude Toward Innovation?"]*. It is important that we understand why w e seem unable to demonstrate the value of some technologies. We need be able to anticipate the reaction of the payers and the drug policy thought leaders around an emerging technology and understand how we can build the right assessment of that technology to ensure that we can demonstrate value for the right patients.

Do we have the right metrics with which to assess those new technologies? There is no question that one of the challenges for drug developers is to modernize the toolkit for evaluating the safety and efficacy of medicine; we do not have the right tools at the moment, and that is something that the whole sector has to work on together. The metric must be such that cost-effectiveness is important, but does that standard need to be revisited in the context of personalized medicine? Likewise, when it comes to the productivity and financing of research and development within our sector, is the focus on price the right focus? Is there another way of quantifying the value of interventions when we are making investment decisions?

There is a debate on whether the most important issue in the world at the moment is health care or the environment. Clearly, from a budgetary point of view, I think health care is the fair winner. But environmental issues are still top of mind, and, like health care issues, are very complex. What can we learn from thought leaders dealing with complexity outside of the healthcare sector? What can we import into our thinking as we address some of those critical questions about healthcare delivery and healthcare efficiencies?

Some of you may have read the latest book by James Lovelock, a very strong thought leader in the area of the environment. In *The Vanishing Face of Gaia*, Lovelock argues that all of the climate change work being done by the environmental science research community around the world is doomed to fail because the majority of researchers are focussing on one parameter, and using it over and over again, in their forecasting: "climate forecasters are obliged to model atmospheric physics where they should be modeling the whole Earth system of which the climate is one property." They are looking only at temperature and atmospheric curves, as opposed to looking in a holistic manner and studying interventions that would treat the planet as one single biological entity.

Analogous to this, one could say that we are focussing too much on cost in health care, and if we keep looking at all those curves and panicking because they all move in the same direction, we may miss important issues. We need to look at the healthcare sector holistically and study interventions within that very rich environment in order to come out to the right conclusions.

Finally, when it comes to the role that the biopharmaceutical sector plays in innovation and health, there is no question that we will not be able to find the solutions if we do not have the right standards for collaboration and make the right links between researchers, industry, governments, and policymakers. Thank you.

Panel Questions and Answers

Tom Feasby: We have enjoyed five different presentations looking at this elephant and describing it in different ways. We have an interesting topic, our healthcare system, and I think we all understand that it is the main cost driver. I believe we have an opportunity in Alberta to do things that are more difficult to do in other jurisdictions. We have a relatively small province. We have stability. We have highly educated population. We now have a centralized system of health care, and I hope that we can learn from the stories we have heard today to make it a more sustainable and high-quality system. I would like to invite questions related to any of this.

Mike Gormley, Executive Director, Alberta Medical Association: One thing that is very critical is to engage the medical profession and other health professionals very directly in the entire process of delisting. I think the health professions are very prepared to do that. The concept of opportunity cost is pretty much second nature to many of them, because they deal with it every day when they are allocating scarce resources. From a purely practical point of view, having been involved in four or five delisting exercises, the reality is that what health professionals say matters a lot. Even our most recent polling of Albertans about who they trust to impart health information showed that it's nurses, it's pharmacists, it's doctors. When you compare that with others — administrators, government, and so on

— there is no comparison. So I think that engagement is essential, if for no other reasons but the practical ones. But how it is done matters a lot. It is not only the need to have the conversation but how we have that conversation.

By way of analogy, when we went through the province asking what should have been a relatively simple question — What information has to go from a doctor's record into the general electronic health record? — the initial answer was that there needs to be somebody who makes that decision, so we will make it the Minister of Health. In fairness, government then changed that, and Fred Horne had a lot to do that. The reason that idea failed miserably is that it came about it at the wrong end: rather than going to professionals and asking them what information needs to be included and who should be responsible, it went at it the other way. The final decision, which is that the decision should be in the hands of professionals acting in the interests of patients, was, I think, the right way to go.

I also think there is a critical need for a trusted source of information. Bodies like the academic centres and the Institute of Health Economics can play that role, but there is a decision process around issues of insurance and de-insurance. We cannot escape the politics of it, but I think a much job could be done of informing that process. We have to form a trusted source who is independent from the different stakeholders, and to build the capacity for that into the system.

Finally, I think there is much opportunity for this. We have a lot of the basics. In physician services, for example, we already negotiate a fixed budget, so the idea of balancing the in and the out is already a possibility. We have good institutions and capabilities that we can build on. Much more needs to be invested in information, but we have the basics. The work that Fred Horne is doing on the legislative framework provides a great opportunity to move forward. Also, I do think that a lot of attention needs to be given not only to the criticality of engaging clinicians but to how they are engaged.

Tom Feasby: Thanks, Mike. A lot of points raised. I would direct our attention to the one about the role of physicians in helping the process of de-investment. It is a tricky issue. Maybe I could ask Dr. Duckett for comment, as he is in the pivotal position to make this sort of thing happen. Mike is arguing that the profession has an important role to play. How do you engage them in the process and establish trust in its ownership?

Stephen Duckett: In Alberta Health Services, we have established methods of clinician engagement, including physician engagement. I mentioned the clinical networks, and, obviously, they are now a structured mechanism for gaining clinical input into decisions on key priority-setting issues. We also have the Alberta Clinician Council, which has a significant number of clinicians among its membership.

Mike raises an interesting point, and it is a very, very difficult one, because as Adam said, every dollar spent by Alberta Health Services is the income of someone, be that a staff member, a contractor, a supplier, or whatever. The profession has to be careful to ensure that when it is speaking on these issues, it is speaking in a way that is consistent with a trademark that I've heard about, called Patients First. Very early in my career, I learned that the interests of patients and the interests of providers are not always coincident. I think Adam's comments about ophthalmologists in Australia and their interest in protecting the very high measure of the value of their services in the Commonwealth Medical Benefits Schedule is a good example of a case in which the interests of the public, the patients, and the providers were not coincident.

Tom Feasby: Any comments from others on the panel about this point?

Adam Elshaug: By way of reassurance, Mike, in the session today with Alberta Health Services I would say that 20 percent of our time was spent talking about the involvement of clinicians, and there were a number of clinicians

present. I would encourage you to talk with Don about that because I am sure that Don would be keen to pick up that conversation.

Lorne Tyrrell: Bernard, you said that 61 percent of 36 new innovations were approved for funding in Canada, and there must be quite a range across the country. This is a provincial issue rather than a federal issue. What is the range in the provinces in funding new innovations?

Bernard Prigent: I don't have the data at the top of my mind, but in that particular study some provinces were more innovation-friendly, so to speak, than others. Québec, by the way, was not in that survey, and it is very likely that they would have reimbursed a larger proportion of those 36 drugs. I don't have the data. But this was not so much to discuss the data as to make the point that the private sector has to identify the value in the data submitted. In the future, technologies will be much more sophisticated and will target a smaller group of patients, and the acquisition costs of those technologies will likely be higher. How do we anticipate this, discuss it with the payers, and set in place the studies or the mechanisms to make sure that the technology will reach the right Canadian patients?

Tom Feasby: Dr. John Cowell from the Health Quality Council of Alberta.

John Cowell: I would like to revisit the question of appropriateness in light of the expectations that we have built up in the minds of citizens about their need for certain tests or therapeutic interventions. In particular, I would appreciate a comment from our Australian colleague. We have built up in this province and around the country a huge expectation that you can't get through a day without having an MRI, an ultrasound, or a CT scan, and that is in direct conflict with some of the emerging evidence that not all of these need to be done. In fact, some of them, the CTs in particular, could be downright dangerous. How do you suggest we approach dealing with public expectation?

Adam Elshaug: It is an important point. There is something odd about the human psyche: it doesn't like the word 'no' and it thinks that taking something away is always a bad thing; whereas, in fact, it could be the best thing for that person and for the healthcare system.

With our research, we are trying to engage with patient groups and consumer groups to see if we can include them as agents in the change process. Canada does this very well, as I have seen in sessions that I have attended on my previous visits: citizens' councils and the like are a model that was born in Canada. I don't know how applicable they are to this jurisdiction, but I think they worth looking at. I don't think we necessarily want to try to make them rational economic agents in decision making, but we do want to bring their views to the fore and incorporate them in the decision-making process as we go along. I also think that if there is political support at a higher level, there is open communication, so that these are not dirty deals being made behind closed political doors. There is the economic imperative, sure, but there is also the ethical imperative and the clinical imperative, which is quality of service and care. All of those things are a bonus for everybody, including politicians, clinicians, and the community. If we can communicate that better, I think this is where we can develop the process a bit more.

Fred Horne: To go back to an earlier point made by Mike Gormley, the independence of the entity that is overseeing the process of assembling and analyzing the evidence is, I think, very important from a public perspective. It is not much different from the structure of the Health Quality Council of Alberta, which operates under specific legislation with an independent board and the ability to initiate inquiries independent of government or other bodies requesting investigations. I think that's key. As a committee, we talked about citizens' panels or citizens' juries as being a key component of the evidence-development and analysis process. I think that's important as well.

In regard to the question of political will, there are a number of considerations. If the approach is an all-or-nothing proposition — in other words, a service is either on the insured benefit list or it's not — that calls for a difficult

discussion, because you have achieved disinvestment in its entirety on that basis. Some consideration of varying degrees of application of a technology or clinical protocol is important. I don't think this came up yet, but in addition to the politicians' buying in, I think it is critical that there be an alignment of processes within the regulatory bodies for the health professions. If the public sees that the application of this evidence is codified in standards of practice and that those standards are tied to licensing (they might also be tied to compensation in some circumstances), I think that helps boost the credibility as well.

Tom Feasby: Thank you. Next is Dr. Deborah Marshall from the University of Calgary.

Deborah Marshall: I'm a health economist and health technology assessment researcher at the university. I am very excited to have a centralized healthcare system now, because I think we need to come at these questions from a systems approach. Secondly, value for money is what we do, so I am very pleased to see that on the agenda. And through Dr. Duckett, we certainly see that there is a very large health technology assessment agenda. My question to him specifically is about the Academic Health Sciences Network that you just mentioned. How do you envision the university entities linking with the health service and the established institutes in the province? I want to ask Dr. Fritzler a similar question, but from the area perspective. How do you envision the teams being formed? Would they be disease-based or disease-management-based, as Dr. Prigent was mentioning, or do you envision them to be systems-based teams that will be funded?

Stephen Duckett: I think the issue here is that we need to move to a situation where evidence is embedded in decision making at all levels, from the people who sit near me, to the clinicians and cleaners and everybody. That means that we need to have a culture in which everybody is interested in improving. Everybody is interested in questioning. Everybody is interested in learning. Everybody is interested in trying to find out new things. Everybody is interested in innovation. We don't have that now. We have pockets of it now.

We need to think about how we can harness the service delivery, expertise, and orientation of Alberta Health Services, and the research and academic expertise of the universities, in a way which can create that new platform. I think it is fair to say that all of us are committed to that sort of direction and vision. We need to work out jointly what are the three or four things that we need to do to achieve that. I have my list of three or four practical things that are needed in order to make Alberta Health Services a research-friendly organization. We need to create some platforms for research. We need to change some of culture issues, to improve the performance appraisal, to improve the accountability. None of this is going to be a quick process, but I think we have made some starts. We have had some conversations, and I am confident that we will get better at it and make some progress this calendar year.

Marvin Fritzler: That's a good question, and it's one that has been discussed, and debated a lot. Leading to Bill 27, we discussed the issue of demarcation — in other words, who should be responsible for what? We were talking about the whole system, but let's just take Health and Wellness or Advanced Education and Technology. What are the primary responsibilities of Health and Wellness with respect to health research and the kinds of academic activities you would talk about? What are the primary responsibilities of Advanced Education and Technology, not to mention other departments and agencies, including IHE? There was a sense that perhaps the ideal solution would be to have only one corporation, as opposed to four, because demarcation was difficult and, after all, we wanted a horizontal theme. At the end of the day, we did not feel that it was time in Alberta to move to that entity.

This comes back to the research strategy for Alberta Health Services that Lorne Tyrrell and Roger Palmer worked on. How that all plays out relies heavily on a common understanding of who is primarily responsible and, given that understanding, makes a financial commitment. There was a long-held notion that if Health and Wellness was going to be in the game, a minimum of one percent of their annual operating budget ought to go into research and

development. The Government of Alberta, incidentally, said five percent overall; and we are still anticipating, natural gas royalties notwithstanding, that we are going to achieve that nirvana of a five percent investment in research and development in this province. Financial commitment is going to make the difference, and, I think, is going to help in not only demarcation but also implementation.

Don Philippon: I am from the School of Public Health, University of Alberta. At a session like this, obviously what we are really concerned about is how we best use our resources for the best outcomes for the people of the province or the country. There has been a lot of discussion here about personalized medicine. When I hear about personalized medicine, it seems to me that it potentially has the risk of pulling more and more resources toward individuals: understanding their genetic background and disease conditions and so forth and developing an individualized treatment plan. On the other hand, we know that in all developed countries that have spent more and more money on health care, there are serious inequities in health status that can be looked at on a population or subpopulation basis. How do we bring these two concepts together? Personalized medicine seems to run the risk of concentrating more and more resources on a few people, particularly those who are most articulate and informed, and at the same time increasing inequities in health status. Is there a conflict between these two concepts of personalized medicine and population health?

Marvin Fritzler: I think the allocation of resources to effective personalized medicine is shrinking very quickly. The cost of doing a genetic profile is not high, and it is going to get lower with high-throughput genetic sequencing. I have already had my 23andMe genetic testing done and know my essential genetic profile. I know that I am at high risk for prostate cancer, but not at high risk of type II diabetes. Genetics is not the only part of personalized medicine. There's proteomics, for example, which I do every day in my lab. I can probe an array of 40,000 proteins with any individual human serum or human blood, and the cost of that is getting smaller all the time. It costs $500 now, and it will be $50 soon when the technology rolls around. The same goes for metabolomics, which is championed in the province of Alberta. The problem is going to be sorting out the information. The information load that I get now through doing genetic profiles and proteomic profiles is huge. How do you sort that out and connect the dots? There's where the challenge is going to lie.

Adam Elshaug: I share your concerns about personalized medicine, and that is probably because we are both from departments of public health. It's about how much of our resources goes into this end of the curve and how much goes into shifting the entire curve to a healthier society. That is a challenge for governments, I think.

Roger Palmer, University of Alberta: My interest is in what Fred was saying about the change to a situation in which we must trust government to do many of the things it now does by specific legislation through regulation and other structures. It seems to me, Fred, that what we learned the last time around is that that was always the big fight, and in the final analysis, government was not trusted to do it through regulation. The people had to see it written in a specific act for it to be an acceptable move for a government to take. How do you expect to move this one forward this time around? How is it fundamentally different?

Fred Horne: There are potentially a number of things in our favour this time around. The first goes back to Mike Gormley's comments about partnership and collaboration. I think we have made very good progress in the last few years in approaching decisions on a shared basis, and the development of this report is certainly an example of that. Bill 52, the Health Information Amendment Act, is another recent example. I think the public are starting to visualize a trusted partnership of which perhaps government is the least trusted partner but nonetheless is still surrounded by the people that Albertans trust most to make decisions on their behalf. That's one thing in our favour this time.

The second thing that I think will help drive it is the commitment to evidence-based decision making, not only because I believe people will eventually understand that it supports better decisions, but there will be a degree of transparency associated with it that has not been seen, I think, in the past. Despite all of the good research that has gone on and the many partners that have been involved in it, we have not done a good job of demonstrating what went into making specific decisions. I think transparency would work in our favour, assuming we are able to integrate it as part of our process.

The third thing is that I do believe that Canadians in general are becoming much more aware of the rising cost of health care. There was good discussion here about the concept of opportunity cost. I think people in Ontario and Québec are realizing that this applies equally at the public policy level. Once you hit 50 percent of provincial spending on one portfolio, it calls into question your ability to fund things like education and infrastructure and environmental strategies. I think there's a growing awareness of that.

The bottom line in our new legislation will be what checks and balances we introduce in the legislative framework, and to what extent Albertans believe that will hold government in check. In the report, we talk about overarching principles. We talk about the development of a patient charter, which is not a small task, and that will be a big focus of the consultation coming up. We may also look at reaffirming our commitment to the Canada Health Act, which contains some important principles. They are not well defined. The act essentially functions as a mechanism to transfer funds from the feds to the provinces, but what is very interesting is the degree to which people place their faith in that. One of the things we will be talking about internally is how we reflect our commitment to operate within the parameters of that legislation as we decide where we are going. And if that comes to pass, that will be a significant departure from some of the earlier discussions in which Alberta has questioned, for good reason, the premise of the Canada Health Act.

Tricia Cisakowski: Good afternoon. I represent the Alberta Health Industry Association. Our association has a focus on collaboration between research, care delivery, and the business community. The necessary infrastructure for translating research into the clinical and business communities is key to having a sustainable health system and healthy Albertans. In other words, if we are going to have healthy Albertans and provide the best care delivery system that we can, we need to have that collaboration. My question is for Dr. Elshaug. How are you integrating new technologies, and how are you assessing them? You are doing comparison between technologies that are already in use, but do you have a specific mechanism for bringing new technologies into your research program?

Adam Elshaug: In Australia, we are actually very good at looking at new and emerging technologies. In fact, we are probably held up with Canada and some other countries as being quite good at doing that. We do lack the ability to look at the existing services. With new pharmaceuticals, for example, we do comparative, clinical, and cost-effectiveness work. We try to do the same thing with devices, procedures, and services. It is not always as easy with entrenched legacy items, because usually that work has not been done before. We don't know the clinical value or the cost effectiveness of existing entrenched items, so comparing the new and the old is very, very difficult.

Arya Sharma, University of Alberta: Dr. Prigent, I was very interested in the slide that showed that in the US, 30 percent of the cost of healthcare is driven by obesity, or $300 billion of the trillion dollars that were being spent. We live in one of the provinces that has the highest obesity rates among the urban population, and I am guessing that obesity with all its co-morbidities — diabetes, osteoarthritis, sleep apnea — ultimately accounts for 30 percent of our health care budget.

A recent OECD report modelled the scenario that if you were to implement all of the evidence-based public health strategies to prevent obesity, you would probably start seeing returns on investment in 25 or 30 years. This pretty

much means that we are stuck with everybody who is already obese, those numbers are probably going to continue increasing, and we are looking at an unprecedented epidemic of chronic disease in the young. The diseases that we used to think you got when you hit 50 are the diseases we are now seeing in 20-year-olds. And these 20-year-olds will not die of these diseases. They are probably going to be living with them for the next 50 years, and we need to manage that.

I would appreciate any comments that anybody on the panel might have. What are we going to do about this? On a positive note, we live in the province that probably has the greatest bundle of expertise in obesity research and innovation in Canada. Across Campus Alberta, we have people working in the schools of public health. We have people in the nutrition schools. We have the physical education people. We have the bariatric surgery people. I think that we have a tremendous opportunity to tap into the expertise that's right here in the province to solve a problem that does not affect the people in this province only. There is a global market out there looking for solutions to obesity.

Marvin Fritzler: There are some smaller initiatives, but I would be hugely disappointed if nutrition and human health did not take centre stage within the next five years. Enough effort has been put into it — with your help and the help of others in the province — that I would be hugely disappointed if we don't go there.

Adam Elshaug: I think that point echoes the one made earlier about the focus on prevention or the lack thereof. Sixty percent of the burden of disease is preventable, and there needs to be a refocus towards prevention; and moving resources freed up by disinvestment into that area would be something that I would encourage governments to consider.

Tom Feasby: Thanks, Adam. And the final question, Gregg Szabo from Merck and a member of the IHE board.

Gregg Szabo: As somebody who has worked with a company that has had a lot of experience with the chronic-disease management program, I have observed that the two most important factors in making a positive change in this area are the measurement and feedback loops — in other words, an incremental, continuous, quality-improvement loop and the buy-in of all the participants. I call it "bottom-up buy-in." There was discussion about the controversy surrounding disinvestment, and I wonder if a lot of it is in the framing. Do we want to buy into a disinvestment decision, or into a process of optimizing the management of a disease area? I don't think the decision has to be made in advance in order to take that incrementalist approach and see some positive change. Certainly, I think people have good will when they get around the table. They will buy in. They can move in the right direction without being told, "Thou shalt not use this service or this technology."

In Dr. Fritzler's excellent presentation there was a comment about when is enough, enough? I understood it to mean when is enough research enough research in the province of Alberta? And I was intrigued by that, because the way I have always looked at it is that you are not ultimately doing the research just for the people of Alberta, even though they are the ones that are investing in this case. You are looking at the export market, if you will. You are looking at the potential to export knowledge, but also potentially to bring economic return back to the province. I just wondered what sort of metrics you would consider in order to determine what is enough?

Marvin Fritzler: When I was talking about enough being enough, I was more downstream from what you described. I am talking about people. If we are building capacity around people, we can build capacity forever, and the output will grow proportionally. But when do we reach a plateau of recruiting highly qualified people to any given area in the province? You can build forever, and I'm a big fan of Biotech Beach in San Diego where I was

trained. And there, it seems that enough is never enough, but in a province of 3.5 million, I think we have to come to grips with that.

Tom Feasby: Thank you, Marvin. Speaking of enough is enough, we have now reached the end. I know there is still an appetite for discussion, and I hope you will take that next door to the reception.

I would like to thank the Institute of Health Economics and, in particular, John Sproule, for organizing a wonderful symposium this afternoon. I would like to thank our panellists who gave excellent presentations and spirited discussion, and thank you as an audience for pitching in as well. We had lots of questioners and really excellent questions. Thank you very much.

Appendix I – Program

INSTITUTE OF HEALTH ECONOMICS
ALBERTA CANADA

INNOVATION AND ECONOMICS

Investing in the Future Health System

April 22, 2010
Edmonton, Alberta, Canada
Crowne Plaza Hotel

Program

Moderator Dr. Tom Feasby
University of Calgary; Board member, IHE

3:00 Welcome and Opening Remarks

Dr. Raj Sherman
MLA, Parliamentary Assistant to the Minister of Health and Wellness

3:30 Speakers/ Keynote Presentations

Marvin Fritzler
Chair, Alberta Research and Innovation Authority

Adam Elshaug
Senior Lecturer, University of Adelaide g

4:40 BREAK

5:00 Presentations and Panel Discussion

Stephen Duckett
CEO, Alberta Health Services Remarks

Fred Horne
MLA, Co-chair, Ministers Advisory Committee on Health

Bernard Prigent
Vice-President, Pfizer Canada and IHE Board Member

Panel and Audience Discussion

Evening: Reception and Dinner

Greetings on behalf of the Government of Alberta

Speaker Biographies

Dr. Tom Feasby

Dr. Tom Feasby has been Dean of the Faculty of Medicine at the University of Calgary since 2007. Previously he was Vice-President of Academic Affairs at Capital Health and Associate Dean in the Faculty of Medicine at the University of Alberta. He is a practising neurologist and a health services researcher, who studies the appropriateness of health care interventions. Dr. Feasby has been a long time member of the Institute of Health Economics Board and was recently appointed to serve on the Minister's Advisory Committee on Health. He completed his BSc and MD at the University of Manitoba, followed by a research fellowship at Institute of Neurology in London, England and professorships in neurology at the University of Western Ontario in London, Ont. From 1991 to 2003, while leading the U of C Faculty of Medicine's Department of Clinical Neurosciences, he was also head of the Calgary Health Region's regional Department of Clinical Neurosciences, where he assembled an internationally-recognized clinical neurosciences group.

His record of research excellence is reflected in more than 100 research publications in areas such as neurologic diseases and the appropriateness of health care interventions, his supervision of numerous graduate students, and his involvement in professional societies and organizations including the CIHR Institute of Health Services and Policy Research, the Canadian Academy of Health Sciences and the American Academy of Neurology.

Dr. Raj Sherman

Dr. Sherman is Parliamentary Assistant to the Minister of Health and Wellness. He grew up in the B.C. interior, working as a young man in the lumber industry alongside many of his family members. After earning his MD from the University of Alberta, he went on to specialize in Family and Emergency Medicine. Later, he was elected President of the AMA's Section of Emergency Medicine and campaigned for action on emergency department wait times and overcrowding.

Dr. Sherman is a past member of the University of Alberta Senate and a clinical lecturer at the University of Alberta's Faculty of Medicine. He has been honoured with many awards over the years for his contributions in the community and in his profession. He continues to be a keynote speaker and panellist at national health conferences.

Dr. Marvin Fritzler

Dr. Marvin Fritzler is Professor of Medicine at the University of Calgary where he holds the Arthritis Society Endowed Research Chair and is Director of the Advanced Diagnostics Laboratory. He served on the Scientific Advisory Board of the Centre for Environmental Health Sciences at the University of Montana and Chaired the Serology Committee of the International Union of Immunology Specialists and World Health Organization. He has served as a consultant to a number of diagnostic biotechnology companies including ImmunoConcepts (Sacramento), INOVA Inc. (San Diego), Immunex (Seattle); and Innogenetics (Belgium). He received the Distinguished Alumni Award and a number of Gold Star Letters of Excellence in Teaching from the University of Calgary. He served as the Associated Dean of Research and was Chair for the University Budget Committee for two terms. Prior to his appointment of Chair of ASRA, he was Chair of the Life Sciences Committee.

Dr. Adam Elshaug

Dr Adam Elshaug (pronounced 'elshaw') is Sidney Sax Fellow with joint appointments in the School of Population Health and Clinical Practice at The University of Adelaide and at Harvard Medical School in Boston where he is based. Adam trained in clinical epidemiology and health services and policy research. He has focused in the area of refining use of low-value health services; evidentiary, clinical and policy barriers to reform and implementation. Increasingly referred to as disinvestment, this work involves the development and application of epidemiologic, economic, ethical and policy appraisals of existing, entrenched health care practices that are thought to be ineffective, less effective or inappropriately applied with a view to reducing these in favour of offering more effective health care services.

Dr Elshaug collaborates and consults with government health agencies (federal and provincial) in Australia and internationally (Spain, U.K., Canada) to advance methods and policy reform in this area. He is currently working with the Australian government to design and implement a formal disinvestment policy agenda within Medicare. Dr Elshaug serves as an Associate Editor for the journal BMC Health Services Research and has published in journals such as the BMJ, Quality and Safety in Health Care, and Medical Journal of Australia. He is chief investigator on two large disinvestment research grants, is recipient of numerous awards as a new or emerging researcher, and has received over 85 invitations to address conferences as well as government, academic, insurance and health technology assessment groups internationally.

Dr. Stephen Duckett

Dr. Stephen Duckett has spent his professional life working in health care. As Alberta Health Services' new President and Chief Executive Officer (effective March 23, 2009). Dr. Duckett has more than 35 years of experience in health care.

Prior to coming to Alberta, Dr. Duckett was Chief Executive Officer of the Centre for Healthcare Improvement for Queensland Health in Australia. (Queensland occupies the north east of the Australian continent and is roughly triple the size of Alberta; Queensland health is the public provider with approximately 60,000 staff).

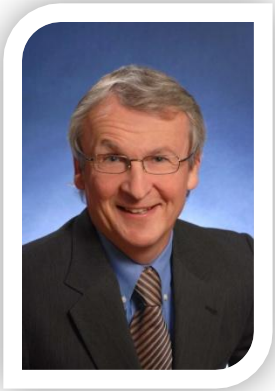
Before that, he was a professor of Health Policy and Dean of the Faculty of Health Sciences for 10 years at La Trobe University in Melbourne. He also chaired the board of a major public health provider, Alfred Health. Dr. Duckett's work in health care also includes two years with the Government of Australia as Secretary (equivalent to Deputy Minister) to the Department of Human Services and Health.

In 2006, Dr. Duckett received a Doctor of Business Administration in Higher Education Management from the University of Bath in the United Kingdom. That same year, he also received a Doctor of Science Award based on his publications from the University of New South Wales in Sydney, Australia. Dr. Duckett has a PhD in Health Administration from the University of New South Wales and a Bachelor of Economics (Economics and Pure Mathematics) from the Australian National University in Canberra, Australia

Mr. Fred Horne

Mr. Fred Horne was elected to his first term as a Member of the Legislative Assembly for Edmonton-Rutherford on March 3, 2008. In addition to his regular duties as MLA, Mr. Horne serves as chair of the Standing Committee on Health, deputy chair of the Premier's Council on the Status of Persons with Disabilities and is a member of the Agenda and Priorities Committee, Private Members Business Committee, Legislative Offices Committee and the Select Special Chief Electoral Officer Search Committee. 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. An avid volunteer, Mr. Horne has served on numerous boards including: Alberta Mental Health Board, Athabasca University, Mediation and Restorative Justice Centre of Edmonton, Canadian Student Debating Federation . Additionally, Mr. Horne is a former debater and coached Team Canada at the World Schools Debating Championships. For his continued contributions to the development of debate and speech programs Mr. Horne received the Queen Elizabeth II Golden Jubilee Medal in 2002. Mr. Horne and his wife, Jennifer, have lived in Edmonton since 1992.



Dr. Bernard Prigent

Doctor Prigent is Vice-President and Medical Director of Pfizer Canada, the Canadian operation of Pfizer Inc., the world's leading research based pharmaceutical company.

Under his leadership, Pfizer Canada has become one of the top R&D investors within the Canadian Life Science Sector. These investments cover most aspects of pharmaceutical R&D from discovery to clinical trials as well as alliances with the biotech sector and partnerships with academic institutions, federal and provincial funding agencies.

His current activities within the Life Science Sector include:

- Board Member of the Canadian Arthritis Network
- Chair of the Scientific Committee of the Research Foundation of Rx&D
- Member of the Strategic Advisory Committee of two C.E.C.R. initiatives: Center of Excellence in Personalized Medicine and Prevention (CEPM) and Prevention of Epidemic Organ Failure (PROOF)
- Chairman of the Strategic Orientation Committee of Quebec Consortium for Drug Discovery (CQDM)
- Board Member of the Institute of Health Economics

Dr. Prigent joined Pfizer in 1995 and occupied positions of increasing responsibility before becoming Vice-President and Medical director in January 2001.

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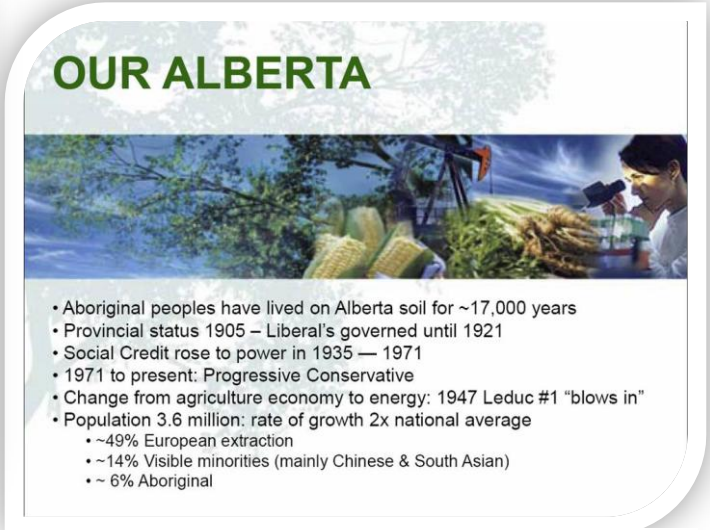
Appendix II – Referenced Presentation Slides

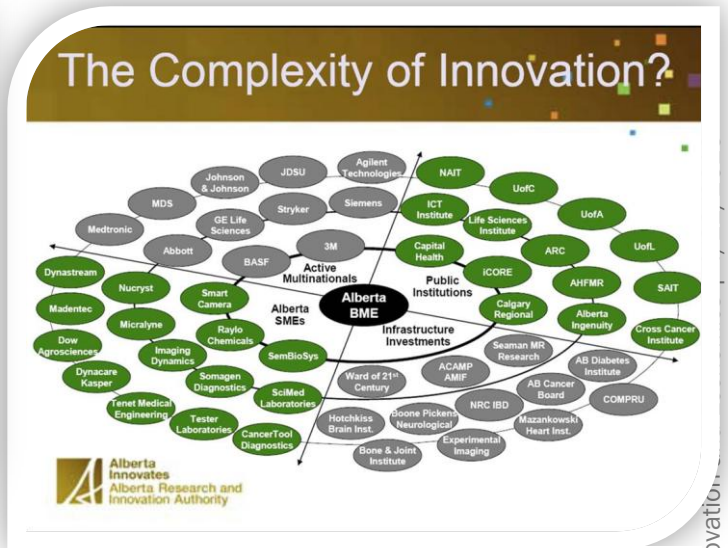
Marvin Fritzler

Fritzler Slide 2



Fritzler Slide 3

Fritzler Slide 4



Fritzler Slide 6

BACKGROUND

- **2008 Mandate Letter from Premier Stelmach:**
  "Develop and implement a framework that defines roles and mandates for publicly funded organizations that support world-class research and innovation in Alberta"
- **2008 -2009: Consultation with Alberta's innovation leaders indicated the need for an improved research and innovation system that would:**
  - Reduce complexity and increase connectedness
  - Increase focus on our priorities
  - Reduce duplication and overlap
  - Consolidate the system
- **Result: Bill 27 — Alberta Research & Innovation Act**
  - *"Proposed changes to Alberta's research and innovation system will better align resources, making the system more responsive to researchers and entrepreneurs, more accountable to Alberta taxpayers, and more competitive in the global economy."* Honourable Doug Horner

Alberta Innovates
Alberta Research and Innovation Authority

Fritzler Slide 7

Bill 27: Alberta Innovates Corporations

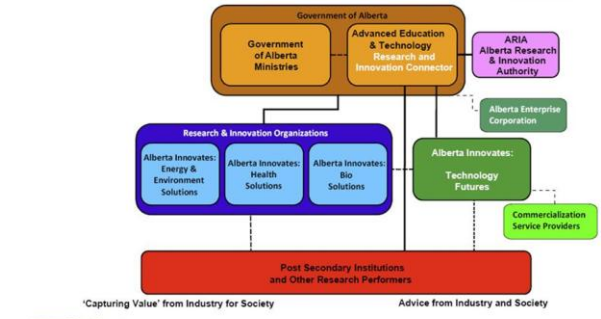
Alberta Innovates Health Solutions
Alberta Innovates Bio Solutions
Alberta Innovates Technology Futures
Alberta Innovates Energy and Environment Solutions
Alberta Innovates Alberta Research and Innovation Authority

- Official launch: January 1, 2010
- Each Corporation
  - Separate Board
  - Separate CEO & Secretariat
  - Strategic & funding ties to relevant GoA Department
- Report to Minister & Alberta Research Innovation Council (ARIC)*
  - Chairs of Corporations
  - Chaired by Minister of AET

*NOT as reported in Edmonton Journal 21/4/10

Fritzler Slide 8

Bill 27: Alberta Research & Innovation Act



Alberta Innovates
Alberta Research and Innovation Authority

Fritzler Slide 10

Connector Service

- One-window ("*concierge*") approach to accessing Alberta's research and innovation community"
- Currently based at AET, Mel Wong's "shop".
- A helping hand to guide through and link to Alberta's research and innovation network.
  - System Intelligence: information about resources, programs and services
  - Referrals to key contacts in the research and innovation system
  - Guidance and support

http://www.albertainnovates.ca/connector

Alberta Innovates
Alberta Research and Innovation Authority

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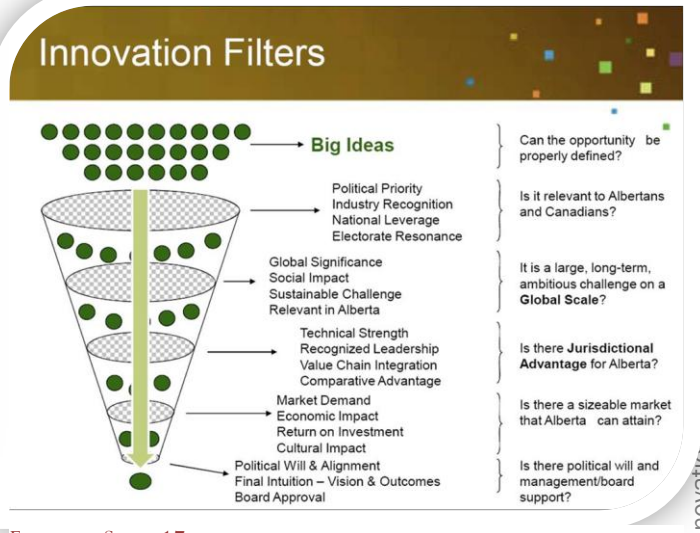
Fritzler Slide 13

Fritzler Slide 15

Fritzler Slide 16



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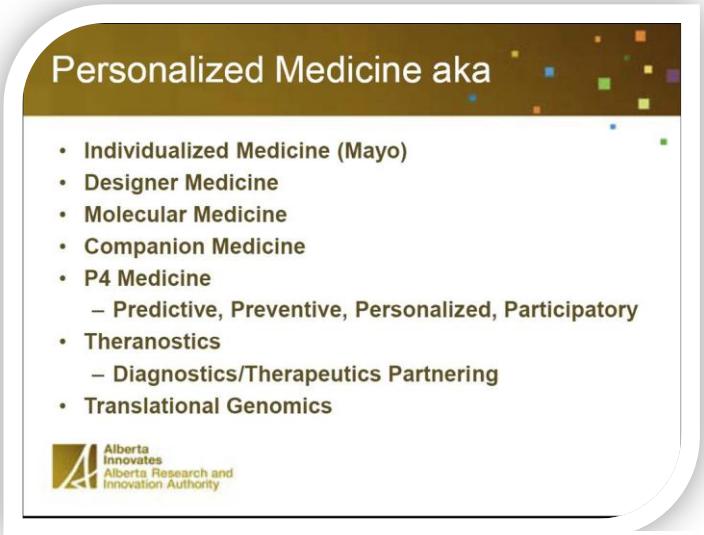
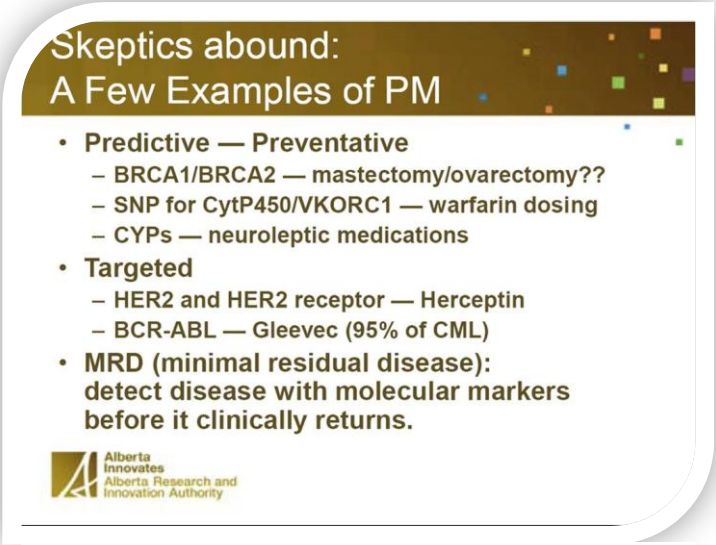


FRITZLER SLIDE 20

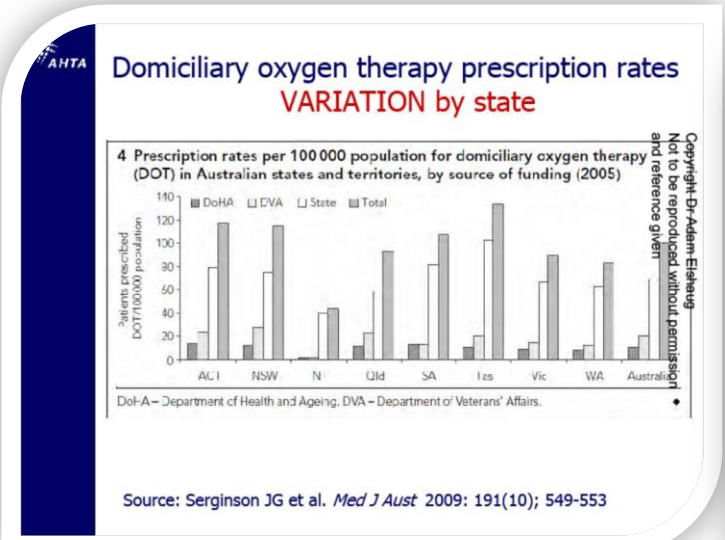


FRITZLER SLIDE 21

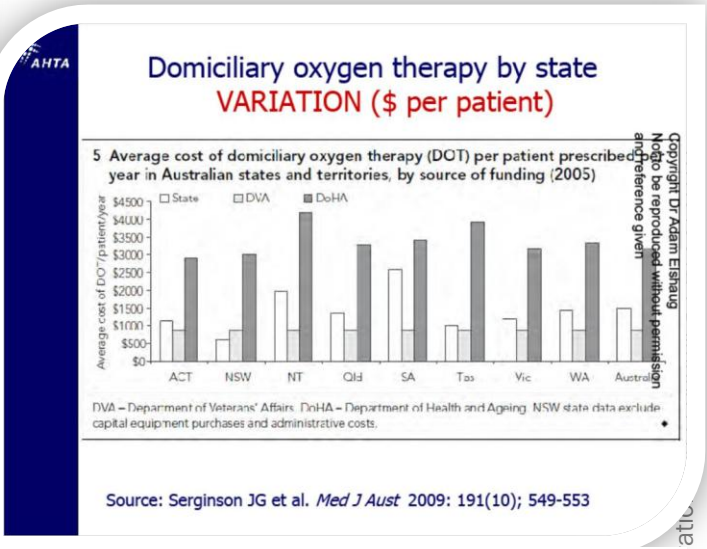
Adam Elshaug

Elshaug Slide 3

Elshaug Slide 22



Elshaug Slide 28



Elshaug Slide 29

Surgery for OSA: VARIATION BY STATE

- Uvulopalatopharyngoplasty (UPPP) – scalpel/laser (41786)
- Medicare services in 2008: 1,296 ($585,792.00)

Item 41786, services per 100,000 population by state (2008)

State								
NSW	VIC	QLD	SA	WA	TAS	ACT	NT	Total services per 100,000 population
4	6	5	9	11	7	13	6	6

Source: https://www.medicareaustralia.gov.au/statistics/mbs_item.shtml

Elshaug Slide 30

Osteotomies of Mandible and/or Maxilla

MA: 1,035; MMA: 456 ($1,635,613.00)

VARIATION BY STATE

Items 52342-52375, services per 100,000 population by state (2008)

	State								
	NSW	VIC	QLD	SA	WA	TAS	ACT	NT	Total
52342	1	0	0	0	0	0	4	0	1
52345	0	0	0	0	0	0	1	0	0
52348	1	1	0	0	0	0	1	0	1
52351	1	4	0	1	1	5	1	0	2
52354	0	2	0	0	2	0	0	0	1
52357	1	3	0	0	2	0	2	1	1
52360	0	0	0	0	0	0	0	0	0
52363	0	2	0	1	0	1	0	1	1
52366	0	0	0	0	0	0	0	0	0
52369	0	2	0	0	0	1	0	0	1
52372	0	0	0	0	0	0	0	0	0
52375	1	0	0	0	3	0	4	0	1

Source: https://www.medicareaustralia.gov.au/statistics/mbs_item.shtml

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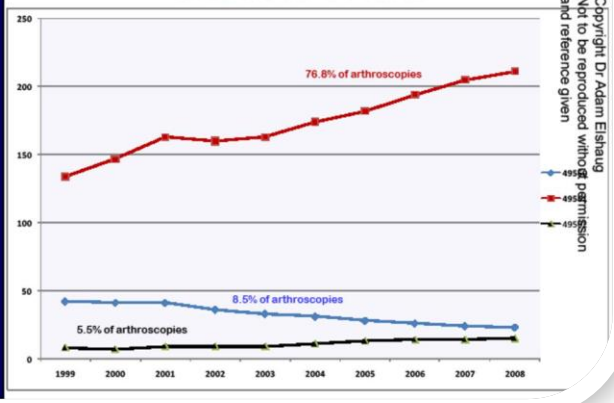
Three most common arthroscopies (Australia): services per 100,000 pop (1999 – 2008)

VARIATION BY TIME



Elshaug Slide 35

35 candidates identified, and growing

- Ear grommets for otitis media
- Arthroscopic for osteoarthritis of the knee
- Tension-free repair for asymptomatic inguinal hernia
- Exercise ECG for angina
- Blood tests for liver function
- Ultrasound-guided shoulder injections
- Thrombolytic therapy in acute stroke

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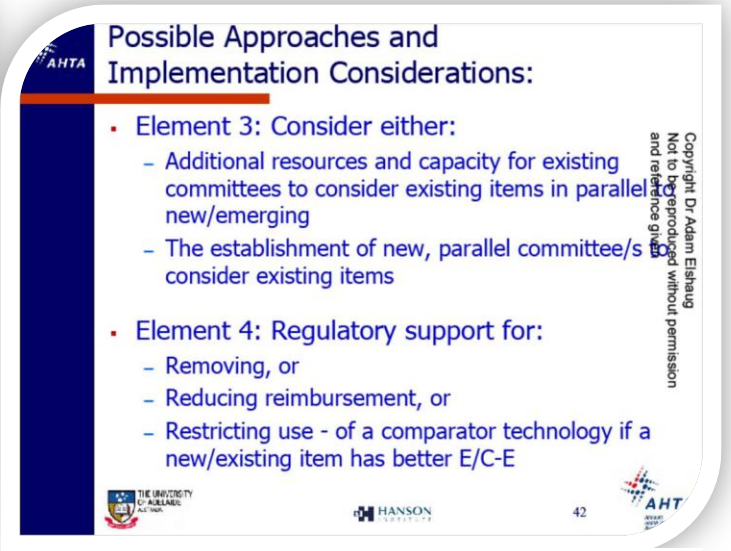
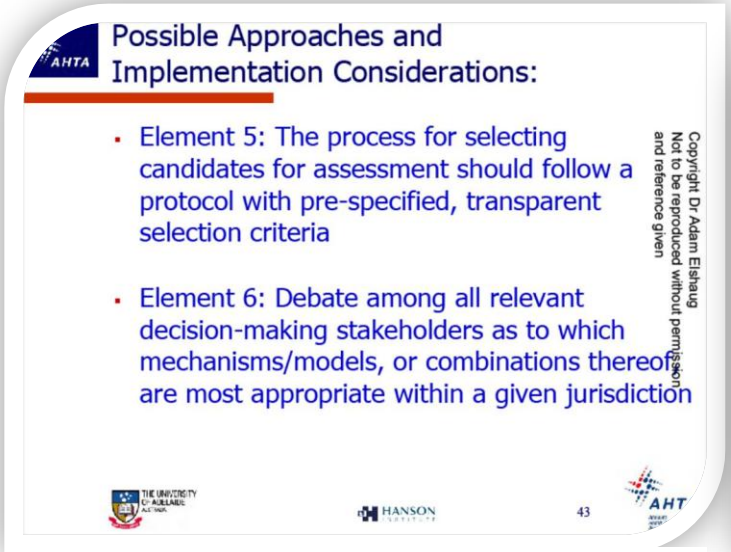
Elshaug Slide 37

Elshaug Slide 41



Elshaug Slide 42



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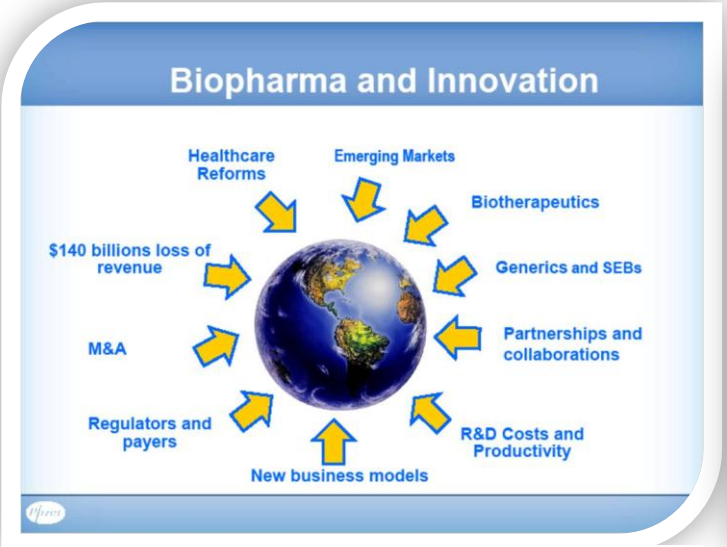
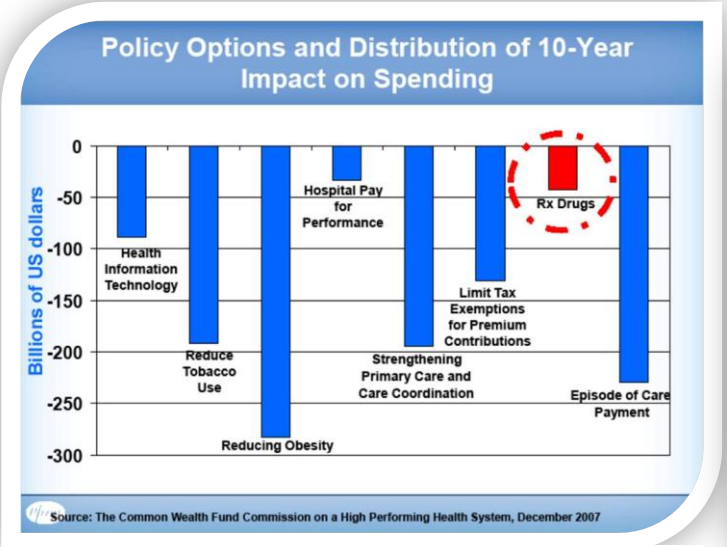
Elshaug Slide 44

ELSHAUG SLIDE 45

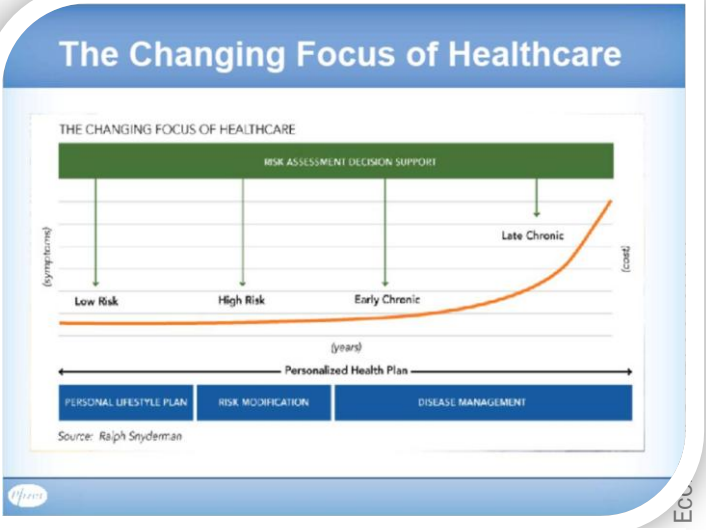


Prigent Slide 1

Prigent Slide 3



Prigent Slide 5



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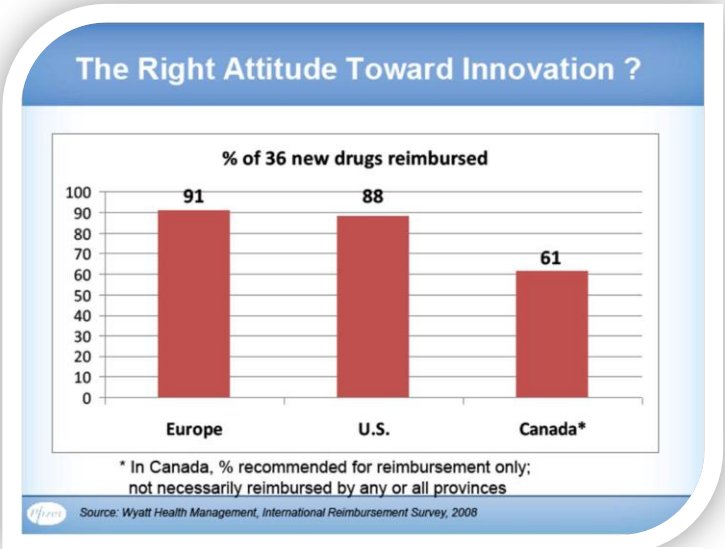

Prigent Slide 9