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Chair

Mrs. Joy Smith

Standing Committee on Health

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● (1530)

[*English*]

The Chair (Mrs. Joy Smith (Kildonan—St. Paul, CPC)): Welcome to committee, everyone.

Welcome, committee members. I have to say that at the end of the meeting we have to go into some unexpected business for 15 minutes. We'll do that at 5:15, so we have a lot of time to get through our agenda here.

We welcome our witnesses. It's most important that you're here today. We're eagerly looking forward to your presentations. We've been studying technological innovation. It has been one of the most exciting and productive things that we've ever done, I think, in the health committee. It has opened up a lot of ideas and a lot of stimulation in our thought.

With us from the university of Montreal we have Dr. Pascale Lehoux.

Welcome. I'm glad that you're here today. I understand that you have a PowerPoint presentation. Is that correct?

Dr. Pascale Lehoux (Canada Research Chair on Innovations in Health, Professor, Department of Health Administration, Université de Montréal): Yes. I will speak in French.

The Chair: That's great.

Ms. Libby Davies (Vancouver East, NDP): Could I make a point of order, Madam Chair, please?

The Chair: Sure, go ahead.

Ms. Libby Davies: Thank you.

I would just like to ask if we could get an update on the minister appearing. I know that the time has pretty well gone for the supplementary estimates, but I do want to make sure that when the minister appears before the committee, we actually have the report on plans and priorities, which is part of the main estimates.

The Chair: It's going to be on April 18.

Ms. Libby Davies: Okay.

The Chair: We are going to have business at a quarter after five, too.

That said, Doctor, we will begin with you. You have a 10-minute presentation. Would you like to begin now?

[*Translation*]

Dr. Pascale Lehoux: Madam Chair, members of the committee, thank you for inviting me.

During my presentation, I will ask you to consider three questions. First, what constitutes a good health innovation? Second, where is Canada's health innovation policy headed? Third, could health care system expertise be used to influence innovative businesses?

During my presentation, I will talk about three messages and try to explain a recommendation for the federal government to set up an intersectoral health innovation development body driven by the health portfolio.

Let's begin with the first question. What constitutes a good innovation in the health field?

I assume that the members of the committee already know, based on what they have learned from testimony, that the current challenges in health care funding and delivery are considerable.

Regarding the various dominant visions on technologies, you have probably heard it said that technologies are the beneficial but unpredictable result of the marketing of scientific advances. You may also have heard that the best technologies are necessarily the most expensive ones. I believe a new position should be adopted to preserve the future of care systems by conceptualizing innovation differently. That means focus should be placed on design. I will illustrate that with an example.

Dialysis has been in use since the 1960s and has improved over the years. Today, hospital dialysis uses specialized equipment. There are alarms, and data is gathered in real time and digitalized. However, when patients are asked what they really care about, they say it's treatment length. They are hooked up to the machine three days a week, four hours at a time.

You may wonder how come, although the treatment has been provided since the 1960s, it has only recently become possible to undergo dialysis at home, over night. Only a handful of manufacturers develop dialysis equipment. Those machines allow patients to undergo more regular and mild treatments, follow a less restrictive diet and, most importantly, maintain job ties. That is a key factor when it comes to public health.

The idea is not only to capitalize on technological advances, but also, more importantly, to meet users' needs.

I think it is clear that the current policy challenge is neither to increase the adoption of innovations nor to slow it down. The key question is what makes superior innovation come about and how can innovation policies lead to the development of brilliant innovations while avoiding troublesome failures.

About 50% of innovative projects fail somewhere along the way, very often because those who develop them, in the upstream part of the process, fail to understand the needs of care providers, in the downstream part of the process.

The first message is that, regarding health care systems, technologies should explicitly pursue at least the following three characteristics. First, they should be relevant to the context in which they are used. Second, they should be user-friendly on an organizational level—in other words, they should be easy to use in lighter infrastructures. Third, they should be sustainable and not require overly frequent updates.

Generally speaking, that would help us reduce our dependence on specialized services found only in urban centres, equip front-line physicians to provide their community members with the appropriate care, and act on the social determinants of health.

Let's now discuss the second question. Where is the Canadian innovation support policy headed?

The Jenkins Report, published in 2011, focused on some 60 federal research support programs for industry. It should be pointed out that a large part of our spending—from 70% to 80%—goes into tax credits for businesses.

The illustrated figure on the right gives an idea of how over-represented large businesses are in that program, given that 90% of Canada's industrial fabric is made up of small and medium businesses.

The $6.4-billion envelope is roughly equivalent to the funding for all health R&D in Canada. A closer look at the main sources of funding and places of R&D execution shows how incredibly important the public sector is. The category of post-secondary education in health includes university research centres.

Considering the envelope for R&D and the fact that the government—the public sector as a whole—funds but also purchases innovations, the federal government has important levers to play a structuring role in innovation. That is the second message.

However, a correct distinction must be made between at least two industries: the medical device industry and the biopharmaceutical industry. They are different not only when it comes to economic impacts, but even more so when it comes to their size and structure. The medical device industry is mostly made up of small and medium businesses.

That key distinction was not taken into account in the Jenkins Report. According to that document, the main problem is that commercialization efforts are very unsuccessful across the country. The report suggests the state should provide support to companies so that they can grow, but also do more R&D in co-operation with universities, to potentially create spin-off companies.

However, that type of model depends heavily on venture capital. Those spin-off companies face their first hurdle during the start-up and development phases, which are a key part of the development and innovation process. In our studies, we note that capital investors —and later shareholders—place tremendous pressure on spin-off companies to market products and generate revenues, even though those companies are not always ready for that step. That is to the detriment of clinical users and patients, who are seeing the value of technology rise.

As a result, companies very often end up being sold. According to the data provided by the Conference Board of Canada, about half of Canadian venture capital exits are through foreign acquisitions. So public funds are invested in research and development, our university hospitals are working on innovation development, but in the end, we lose most of the commercialization revenue.

My third message is that businesses should not only design more ingenious innovations, but when it comes to the economy, they should also contribute to job creation and the vitality of Canada's industrial fabric.

Let's now discus the last question. How could health care system expertise be used to positively influence business start-ups early on?

I think some of the difficulties technology developers encounter have to do with what I would refer to as the missing link—represented by the red arrow on the slide. Better alignment is needed between the two value creation models: the technology developer's model and the health care system's model. Expertise is required for that alignment to materialize.

Economic development Canada mainly seeks short-term commercial and financial success. Focus is generally placed on certain sectors rather than on innovation.

When it comes to health, focus is put on quality of care. We have access to a considerable amount of expertise regarding the health care system's needs and challenges. That is what really counts when it comes to designing innovations I have referred to as brilliant or ingenious.

I will now go back to my recommendation to set up an intersectoral health innovation development body that would be driven by the health portfolio. I think this innovation planning and design strategy cannot currently be developed by the industry. None of the portfolios—be it economic development Canada or the Department of Health—can achieve that goal alone.

Thank you for your attention.

● (1540)

[*English*]

The Chair: Thank you so much for your very insightful presentation. We appreciate it very much. Now we'll go to our next witness, who is Dr. David Jaffray. He is the head of the radiation physics department, Princess Margaret Cancer Centre.

Doctor, you have 10 minutes. We look forward to your presentation.

Dr. David Jaffray (Head, Radiation Physics Department, Princess Margaret Cancer Centre): Thank you.

I would like to thank the committee for this opportunity to share my perspective on the challenges of innovating in health care in Canada. I'll begin by introducing myself to the committee—it places my perspectives in context—and will follow with three specific messages I would like to bring to the committee's attention.

I am an employee of the University Health Network. The University Health Network is a $1.7 billion per year health care delivery, education, and research company created through an act of legislation of the Province of Ontario. Some may be more familiar with the names of the hospitals that comprise the UHN, specifically, the Princess Margaret Hospital, the Toronto General Hospital, the Toronto Western Hospital, and recently the Toronto Rehab Institute. It is important to note that this company has about $300 million in a budget for research activity funded through peer-reviewed grants, industry collaborations, and philanthropy.

I am also a professor in the departments of radiation oncology, medical biophysics, and biomedical engineering at the University of Toronto. I trained in physics at the University of Alberta near where I grew up and specialized in the field of medical biophysics at the University of Western Ontario. I worked for eight years in a large academically oriented hospital in the United States.

I'm now responsible for the management of radiation treatment systems for more than half of the cancer patients in the Greater Toronto Area through my work at the Princess Margaret Hospital, the Southlake regional cancer centre, and the Carlo Fidani cancer centre in Mississauga.

I run a peer-review, grant-funded research program and have published over 150 scientific publications with a focus on addressing the challenges of treating cancer with greater precision and efficacy. My team contributes to the scientific literature, but simultaneously we're very active in the domain of medical technology commercialization. I hold a number of patents on novel technologies for cancer treatment, and have impacted hundreds of thousands of patients around the world with these technologies.

As an inventor and innovator in health care I recently led the creation of a new research organization within the UHN, which will resonate with the rest of my comments. This organization is called the Techna Institute.

The mandate of this organization is to bring a deep, tangible understanding of the health care system to the problem of integrating new technologies that promise to improve outcomes and/or bend the cost curve in health care. The board of the University Health Network supported the creation of this institute in response to the ever-accelerating rate of technological development and its anticipated impact on health care performance, best practices, and cost.

We have been formally operating for a period of 18 months and occupy an important niche at the intersection of novel technologies, deep health care know-how—motivation, practice, and process; in fact, the design that was just presented—and commercial activity.

I will begin my three pretty straightforward messages. The first message relates to the great importance of your assignment for this committee. Abraham Maslow, in his 1943 paper, talked about a theory of human motivation and presented a hierarchy of human needs. The first tier addresses physiological needs, and we're seeing, globally, a shift that's delivering on those physiological needs. The next tier is security, and fundamental to that security is health care and maintenance of health.

The rest of the world wants high-quality health care. In fact, it is expected the worldwide health care market will grow from just over $5.7 trillion U.S. today to approximately $20 trillion U.S. by 2030. This can be compared with the global automotive industry, forecast to reach only $1.7 trillion by 2015. Health care is becoming a massive global market.

The topic of innovation in health care in Canada should not be limited to the level of productivity, the cost, and the quality of care delivery to Canadians, but must address Canada’s capabilities to participate in one of the fastest growing high-technology and services markets in the world today. Missing the opportunity to be a competitive player in this massive market would be truly unfortunate given the magnitude of the existing investments in the health care enterprise in Canada. That's message number one: the global impact in terms of the broad market is something that we'll miss if we don't get innovation working well within health care.

My second message relates to a missing but key ingredient in Canadian health care. To put it bluntly, the system lacks an economy of innovation in health care. An economy comes to life when there are incentives and appropriate policies put in place. Our health care institutions are filled with some of the world’s greatest thinkers. Our academic clinicians are respected the world over for their acumen, their integrity, and their preference for evidenced-based practices. The quality of scientific medical research, engineering talent, and infrastructure is arguably world-class. Our multidisciplinary practice approach and patient-centred care philosophies create the opportunity to define the future best practices in medicine.

Given this raw material, what is preventing us from taking a global position in health care innovation and charging confidently into that large global market? What is preventing us from processing this raw material into product? What is preventing us from drawing new technologies into health care to solve problems?

● (1545)

The answer to this problem is not straightforward, but I think it is *the* problem. If we can build an economy for innovation in health care, then the rest of the pieces will come to life. We could ask many questions to find what kind of solutions would be involved. For example, does the health care system have the mandate to innovate or only to deliver? If it's not going to innovate, who is? If investment is needed, who would invest in that innovation? Where would you invest? Would you invest in a hospital? Is that an appropriate vehicle? What would be the nature of the returns: the savings, the efficiency gains, the quality? What are the incentives: intellectual property, licensing, academic yield?

In 2010-11, the Province of Ontario spent $44.7 billion on health, 40.3% of its total spending on programs. Based on current trends, this share is likely to expand to more than 44% by 2017-18. To think this activity is yielding nothing more than acceptable service is an incredible waste of the remarkable talent base and infrastructure we have created in Canada.

The Institute of Medicine in the United States released its *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America* report in September 2012. This represents a major shift in thinking in U.S. health care. This combines the existing industry drive of that health care industry with integrated learning. No longer will Canada have the high ground on evidence. An economy of evidence development linked with investment for innovation that is the nature of U.S. health care will be a very difficult competitor in the global health care delivery market. We need to establish an economy of innovation to build Canadian health care.

My third and final message relates to the means by which health care innovation gets stimulated. There has been a lot of effort by our national and provincial research funding agencies to push the traditional academic research community to make their research more translational. This has done a great deal to ensure research grants have well-motivated introductory paragraphs. However, it is not clear that it's the best strategy to ensure discovery science reaches into the complex activities of health care. As pointed out by the previous speakers, process and design are key to bringing technology into health care.

In last week's *Globe and Mail*, Dr. Tony Pawson of the Samuel Lunenfeld Research Institute in Toronto highlighted the concerns of some of the scientific community with a shift in funding to translational science. He is concerned that it weakens the quality of the basic science, as well as the yield. An alternative approach would be to invest directly in health care innovation that pulls the discoveries into health care as opposed to stimulating scientists to push their innovations into health care when they don't have the skills to do so. Funding directed at health care innovations that synergize with an economy of innovation health care would be more effective. In the current scheme, we run the risk of doing nothing well, undermining our track record of strong basic science, and failing to build an economy of innovation in health care.

In closing, I would like to thank you for the opportunity to present and look forward to responding to any questions you may have.

● (1550)

The Chair: Thank you very much for your insightful presentation, and we look forward to our question period.

We'll now go to Dr. Jeffrey Hoch. I understand you have a PowerPoint, Doctor.

You have 10 minutes to present, and we look forward to hearing from you.

Dr. Jeffrey Hoch (Director, Cancer Care Ontario, As an Individual): Thank you very much, Madam Chair and members of the committee, for this opportunity to share with you my observations about the evaluation of innovation in Canada. I'm going to describe a few of my own experiences, and emphasize three main points.

I want to make it clear that my views are my own. They do not necessarily reflect the views of the people with whom I work or the organizations for which I work. Most of my health technology or HTA policy experience has been in the area of cancer drugs. However I feel my observations can be generalized beyond just cancer and beyond just drugs.

My perspective has been influenced by my career as a health economist. In the beginning, I worked as a university professor in an ivy-covered tower. Okay, it wasn't really ivy covered, and it wasn't a tower, but it was a two-storey building far away. I had brushes with relevance, but it wasn't until the second stage of my career, when I got involved in applying health technology assessment or HTA tools in the real world, that I became aware of some of the issues I'd like to share with you today. Currently, I'm working on using these tools that we develop in HTA to help policy advisers, decision-makers, and the system that would implement new innovation.

There are three main points I would like to leave you with today, and they are quite simple. The first one is that there's not enough money to pay for everything people want their health care system to provide. Because there is a scarcity of resources, there is a need to make hard decisions about what will be funded and what won't be. As a result, there is a need for tools to help people with funding recommendations, decisions, and implementation.

The second one is that different stakeholders will have different opinions about what the problem is, and what tools are needed.

The third and last one is that if we decide we are going to facilitate innovation, we must also facilitate the creation and implementation of the tools necessary to handle the subsequent challenges. Before going on a shopping spree, we should build capacity in the area of smart shopping practices.

Three years ago the executive officer of the Ontario public drug programs of the Ministry of Health invited me to present to the Ontario Citizens' Council. They were being asked to provide their views on expensive innovative drugs for rare diseases. My job was to provide some insights from health economics.

To explain to the Citizens' Council why we could not pay for all new drugs, l introduced the analogy of a suitcase. The suitcase is the health care budget, and the contents are the treatments we pay for. Because the suitcase is not infinitely large, we eventually run out of room if we say yes to everything. In fact we would run out of room even if we only said yes just to the products that Health Canada said were safe and effective.

If we want to put something in the suitcase, and it is already full, we have two options. One is to buy more space by increasing taxes or taking money from education or social services. Alternatively we can take something out of the suitcase to make room.

I think the Citizens' Council understood the need to make sure we packed our health care suitcase wisely. To do this you need the right tools that will help you because the capacity to make and use these tools is lacking right now. I'd like you to consider that the need for these tools will be even greater if we hasten the adoption of technology.

Innovative technology faces a variety of reimbursement challenges along the HTA process. After Health Canada decides something is safe and effective, the product can be sold in Canada. However if it's an expensive item like a cancer drug, patient access comes only if someone else pays, for example the Ministry of Health or a hospital.

● (1555)

Based on my experience, I have noticed four key categories. Challenges differ by category and so must the solutions. For example, let's consider an innovative cancer drug. At the national level, the pan-Canadian Oncology Drug Review, or the pCODR, will issue a funding recommendation to provinces based on the clinical and economic evidence, as well as patient input and system feasibility issues. The recommendation is then sent to the provinces, and in some provinces like Ontario, a separate recommendation committee, for example, the Committee to Evaluate Drugs, or the CED, will review the evidence about the cancer drug and make a recommendation.

Provincial committees, like the CED, make their recommendations in a broader context, considering treatments for other diseases. With funding recommendations from both the pCODR and the CED, the executive officer in the Ministry of Health will make a funding decision, perhaps after closed-door negotiations with the manufacturer of the product. Each of these stakeholders in the HTA's ecosystem has their own special set of challenges. Failure to plan with the payers, policy advisers, and policy implementers of innovative health technology is as good as planning to fail.

During your October 18, 2012 meeting, you heard about the success of the pCODR and how it was recommended as a model of how to do HTA nationally. The pCODR was the result of provinces creating a separate HTA process to better serve their needs for cancer drugs. Both patient groups and industry are big supporters of the pCODR. It is the province's process. It was designed for them by them. The pCODR's innovative methods and processes have been admired and adopted by other HTA processes in Canada. I want to echo John Soloninka's testimony that the pCODR's excellent customer service in the field of HTA would be a good starting point to look for success strategies related to how to encourage innovation in a sustainable and accountable way.

As an economist, I would be remiss if I didn't stress the importance of incentives. If we want more innovation, we must create the incentives to encourage it. However, if we create the incentives that lead to greater innovation, we should not be surprised if we get more innovation. It is not enough to encourage companies to create innovative product. We must also make sure the capacity is there for Canadian health care system payers to be able to use HTA to evaluate what they're getting and what they're paying for it. We cannot expect our health care system to be sustainable and accountable if we have underinvested in the capacity to do smart shopping.

Creating more things that we can pack into our healthcare suitcase will not save us from the fact that we still need to choose what we put in and what we leave out. HTA helps decision-makers, policy advisers, and policy implementers with the challenges they face with innovation. HTA will also help patients and physicians who want to know the extent to which a new treatment is better than usual care and how much more it will cost. Applied research in the areas of health economics, services, policy, and ethics creates the evidence for evidence-informed policy decisions. If we're going to invest more in innovation, let's invest in the research we will need to determine its value.

Thanks again for the opportunity to share with you, and I look forward to your questions.

● (1600)

The Chair: Thank you so much, Dr. Hoch.

We'll now go on to Professor Adam Holbrook, associate director of the Centre for Policy Research on Science and Technology, from Simon Fraser.

Prof. Adam Holbrook (Associate Director, Centre for Policy Research on Science and Technology, Simon Fraser University, As an Individual): Madam Chair and committee, thank you very much for inviting me to speak on the evaluation and promotion of innovation.

You've heard from a number of eminent practitioners of innovation and innovation management in the health sector in Canada. As a researcher in innovation and the benefits of R and D programs, I would like to speak on a more theoretical basis perhaps, rather than speaking to the specific examples that have been raised so far.

Innovation is both on the one hand very easy, and on the other hand very hard, to measure and evaluate, regardless of whether we're talking about innovation in the health sector or other sectors. R and D is a subset of innovation. Much of this committee's interest has been focused on how Canada's health care system can be improved through innovation. But let's start with R and D.

R and D is of interest because it is an indicator of innovation. The OECD realized this 50 years ago and that's why we've been measuring R and D expenditures ever since. It's relatively easy to measure the resource inputs for R and D—funding and people—and it's usually possible to quantify the outcomes: academic papers, patents, licences, formalized intellectual property, and other economic benefits. I'll just ask you to bear in mind the simplified definition of R and D, and I'm quoting from the Income Tax Act: R and D is the ”systematic investigation or search that is carried out in a field of science or technology by means of experiment or analysis” to advance scientific knowledge or achieve technological advancement.

Okay. But what about innovation? Innovation is both more flexible, as I said, and also harder to define. According to Schumpeter, innovation can be in one or more of five separate areas: new products, new processes, new forms or methods of organization, production, or new sources of inputs.

While the first two, new products and processes, are the main scope of this committee's work, the other forms of innovation should be part of this discussion. But there are other views. Everett Rogers in his book, *Diffusion of Innovations*, wrote about the transmission of ideas. For Rogers, innovation is not a single, well-defined change like Schumpeter's catastrophic innovations, but a series of small changes, which add up over time to a significant change. Innovators take ideas developed by inventors, researchers perhaps, and communicate them to the individuals who actually implement them. Thus, there can be three separate players in the adoption of an innovation.

As I said, it's relatively easy to measure the effectiveness of some R and D, and thus the consequent innovations. In the health sector, R and D is usually formalized in patents and licences, codified knowledge that can be bought and sold. But there are even problems looking at this simple model, particularly in terms of evaluation. The knowledge from some research does not generate measurable benefits for decades. How far into the future do we try to measure the cost-benefit of research? Some research generates negative results. These are usually unsaleable. Yet the knowledge of what does not work is often as important as the knowledge of what does work. Furthermore, when a patent or a licence is bought by venture capitalists or whoever, the seller still retains the knowledge of what did not work. That's maybe one of the reasons why larger firms tend to purchase or acquire the firms, rather than simply trying to acquire individual pieces of intellectual property.

Arguably, most research, whether in universities, government, or industry, results in tacit knowledge, the knowledge that is retained in the heads of the researchers. Research is a lifelong learning process, and researchers accumulate knowledge even if periodically they have to divest themselves of specific pieces of knowledge to others who can exploit them, either commercially or non-commercially.

But innovation is trickier. How do you measure the improvement of a product or process? This can be done, but often, again, the benefits accrue over time, not the span of a single fiscal year. Sometimes, as with some research, there are clearly identifiable benefits, but innovation can be incremental with small changes accruing over years, which may or may not have measurable benefits in that period. How does one measure the small day-to-day changes in operating procedures in the hospital, at the end of which year might result in better health outcomes or lower costs? How do you identify which innovation was significant? More importantly, how do we know who was the innovator and reward them appropriately?

● (1605)

Following the Jenkins report, we were asked to carry out a study on knowledge transfer from university-based R and D to the productive sector. There were some interesting results. These are very preliminary, and they're not in any particular order of importance.

First, Canadian university IP, or intellectual property, policies are at best inconsistent. Given that there's no nationwide standard university IP policy, industry is often reluctant to involve universities in R and D projects, since they're uncertain as to what the IP requirements might be, or how long it will take to negotiate an acceptable IP arrangement.

There are many anomalies in these policies. For example, most universities have no policy regarding the IP rights of students, whether graduate or undergraduate students, yet students are an important part of the knowledge production process.

We didn't look at this as part of the study, but I will contrast the IP situation with ethics. There is a relatively consistent national policy on ethics, but even here, ethics approval by one university does not guarantee approval by other members of a research consortium. One of the things that bedevil all researchers, not just health researchers, is the need to get separate ethics approval from each university that's involved.

Another thing that came out of the study is the need for what we call “intermediary” institutions, for want of a better term. Other nations, such as Germany, have institutions that come between industry and the higher education sector, and act as a filtering mechanism. We have a couple in Canada that I can point to—MaRS, whose president you heard from earlier, and FPInnovations—but there are not nearly enough. In Germany there's a whole system, what we collectively call the Fraunhofer institutes, but in fact it is a system that goes under a number of different names. Yet we know that already the Fraunhofer institutes are expanding into Canada and that one institute has already set up in Ontario.

We need to recognize that the principal role of universities is to create human capital. The generation of knowledge for specific purposes should come from somewhere else, perhaps these intermediary institutions.

I don't have the figures for Canada, and indeed I don't believe they exist in Canada, but the Royal Society in the United Kingdom has data that show that less than one-half of 1% of all science Ph.D. graduates ever become tenure-track professors, but 17% of Ph.D. graduates become researchers in industry and 50% of Ph.D. graduates in science enter the workforce in other capacities that are unrelated to science.

The question I would like to leave with the committee is this: who are the innovators, and how do we foster innovation by encouraging innovators?

Innovators are frequently entrepreneurs, and entrepreneurs, by Schumpeterian definition, are innovators. But there are other types of innovators. There are social innovators, people who innovate not for profit but to improve the human condition, such as innovators in not-for-profit organizations.

There's also another category we need to encourage, and that's intrapreneurs, people who work in large organizations such as governments but who are unlikely to receive major economic recognition for their efforts.

Can we train innovators? Arguably, yes, but the average researcher, particularly the average health researcher, has such a long training period that adding to their required program of study would probably be counterproductive. Indeed, some researchers and inventors will never likely make good innovators or entrepreneurs. History is full of examples where inventors never acquired any recognition from their R and D, but where other individuals, innovators, saw the potential of their work and exploited it.

Most university tech-transfer programs struggle to generate enough revenue to maintain their programs. One of the thoughts I would leave you with is that the tech-transfer officer should be encouraged to seek out problems as well as to offer solutions. In other words, they should be pulling ideas in as well as trying to push ideas out. One of the participants in our project referred to this as encouraging R and D “enablers”, and thus, of course, innovation enablers.

What can the committee do? I would suggest it recommend that universities not be pressured to produce codified knowledge—that is, patents and licences—but be encouraged to produce the very best human capital for the nation.

I'd recommend that you consider means to recognize and reward social innovators and intrapreneurs.

I would recommend that universities adopt similar, but not necessarily identical, sets of IP policies, perhaps similar to the way the ethics approval system works but without the consequent need for approval by each institution in succession.

● (1610)

Finally, the policy-makers recommend that this should be a two-way street: encouraging a demand for R and D, as well as looking at the supply of R and D in the health sector, whether directly or through intermediary institutions.

Thank you.

The Chair: Thank you very much.

We'll now go into our first round of seven minutes, beginning with Ms. Davies.

Ms. Libby Davies: Thank you very much, Chairperson.

Thank you to our guests today for coming.

I do have to say that today I found I had a more difficult time following what you were all saying than I've had in the past. It seemed as if there were so many different issues raised, so I'm kind of asking myself where I begin.

I want to begin here. Last night, I went to a wonderful talk here in Ottawa by Thomas King. Some of you might know him. He's a great storyteller, very often heard on CBC, and has written lots of books. Anyway, he's just written a book called *The Inconvenient Indian* and it's about the history of Indian people in North America.

He gives this great analogy of what's going on at the Department of Indian Affairs and how the structure is not supportive of what needs to be done. He gave this analogy of two slices of cheese, one of which is a slice of cheddar and can sort of stand up on its own, and the second is Swiss cheese with all the holes in it, and of course you try to stand it up and it just kind of folds over—

The Chair: We are going somewhere, aren't we, Ms. Davies?

Ms. Libby Davies: We are going somewhere with this.

It was a great analogy, because he used it to describe what he saw as the problem in that particular field, which is different from what we're talking about today, but it did strike me that in some ways what you are describing is the Swiss-cheese effect, in that we have many good innovations, but do we have the system that holds it together in a coherent way, and even if we do in particular areas, is it national in scale? That's what I kind of get out of what you're saying today, and I hope I'm right.

So to be a bit more specific, Dr. Hoch, you said that we need to evaluate HTA, health technology assessment. That sounded a bit odd to me, we have to evaluate the assessments. No? Okay, I got that wrong.

My question was, what is CADTH's role in that? Is that agency adequate and sufficient to do those evaluations, or are you talking about something beyond that?

Then to Dr. Holbrook, in terms of the intellectual property rights, again I think there are so many questions here, but I know what you're saying about graduate...I mean, who owns this work? I know it's an issue that comes up all the time. Whose responsibility is it in a country like Canada? We have this federation; we have provinces. Certainly when you look at health care, it's provincial delivery, and we're always trying to zero in on what the federal responsibility is to bring about resolutions for some of the issues. I'd really appreciate it if you could give us your perspectives on what the federal role should be in the problems you've identified. I've now just pulled out two, but you had many other examples as well.

The Chair: Who would like to begin on that one, anyone in particular?

Okay, Doctor, go ahead.

Prof. Adam Holbrook: Thank you.

Whose responsibility is it for trying to bring together the question of intellectual property?

This was really the same sort of question in relationship to ethics. Ethics is a mixture of social norms, cultural norms, and provincial and federal law. In the end, this was done by a tri-council committee, if I am correct, which issued a set of guidelines but did not impose an actual procedure on each of the universities. So all of the universities follow the tri-council guidelines, but each has its own particular spin on them.

I would argue the same thing should be true for intellectual property. Certainly most graduate students in the health sector—not just the health care sector—are funded one way or another through federal grants, either directly or indirectly, and one of the conditions of these grants, just as for ethics, is that there should be recognition of their intellectual property rights.

● (1615)

Ms. Libby Davies: Dr. Hoch, can you talk a little bit more about the...I thought I understood you to say that the evaluation of HTAs—

Dr. Jeffrey Hoch: I'm sorry, I was a bit nervous.

I wanted to sort of link the notion that HTA was the ability to evaluate what you were getting. For example, if I were going shopping for a car, and I'm not a professor of automobiles, I would need help evaluating what I'm getting and how much it costs, so I would go to *Consumer Reports*. HTA is like *Consumer Reports*, and I thought if you're going to spend a lot of money, it would be nice to know what you're getting.

Ms. Libby Davies: But aren't we already doing that?

Dr. Jeffrey Hoch: So that leads to your next question—

Ms. Libby Davies: Yes.

Dr. Jeffrey Hoch: I wanted to also clarify that you could think about the pCODR as the cancer CADTH. I believe that CADTH is a fantastic first start. If we're going to encourage additional innovation, we are going to be met with additional challenges. It's my opinion, although I don't work for CADTH, that additional support will be necessary.

I do think that CADTH is a great step in the right direction. I am pleased as punch that the provinces came together and developed an additional HTA system for cancer drugs, and I think that if we get more and more exciting innovations we will need more assistance.

I hope that clarifies it.

Ms. Libby Davies: If I may, I'll just quickly ask Dr. Jaffray this question. In terms of Techna, I know that it's quite new at 18 months, but when you say that you want to shorten the time interval from technology discovery to actual application, how do you actually do that? What does Techna do to shorten that time interval?

Dr. David Jaffray: It's very similar to what was raised by Pascale in her comments.

For health care, there's more technology in the world than we know what to do with. It's not matter of the next discovery. It's like raw material in terms of the capacity to bring new technologies forward, whether communication technologies or a novel intervention from a surgical perspective.

One of the things we realize is that companies bring those technologies to us and they see the health care system as quite impenetrable; it's extremely complex.What we do within Techna is pull together MDs who know the details of the intervention, administrators within the hospital, and people who have expertise in the technology to meet in a business-to-business way with the technology source and accelerate it into the environment.

The Chair: Thank you, Doctor.

Thank you very much.

We'll now go to Mr. Lizon.

Mr. Wladyslaw Lizon (Mississauga East—Cooksville, CPC): Thank you very much, Madam Chair.

I thank all the witnesses for coming here this afternoon.

The first question I would have is for Dr. Hoch. How is that pronounced?

Dr. Jeffrey Hoch: It rhymes with Scotch.

Voices: Oh, oh!

Mr. Wladyslaw Lizon: Thank you very much. I thought it was a German pronunciation, but I guess I was wrong.

I guess I have a feeling similar to that of Madam Davies. I'm a little bit confused. Therefore, the first question I have may be more on general terms.

In your presentation, you stated that “there's not enough money to pay for everything” and you used the suitcase example. I understand, and I don't think that in the real world there is ever a situation when there's enough, in anything. If you were to determine how much is “everything“, if it's talking about money or needs, is it even achievable to determine what is enough?

Dr. Jeffrey Hoch: This is a very challenging question to answer. In health care we have a set of differences of opinion about what is enough. There is the perhaps strictly clinical opinion, based on the physician. There is the perhaps strictly patient perspective, in terms of “here's what I want”, and there is the strictly “I'm the payer” opinion.

I'm sorry. I'm not answering your question, but I suspect that if you were to ask the three different people, you would get three different answers.

● (1620)

Mr. Wladyslaw Lizon: The reason I ask this question is that it leads to me the second question. You mentioned health economics. How would you describe that? What would be the role of health economy in the proper distribution of the financial resources of the system?

Dr. Jeffrey Hoch: That's a very good question.

My perspective as a health economist is that I help people see how much extra they're going to have to pay and what they're going to get, so I describe this as positive analysis. It's seeing, basically in *Consumer Reports* style, that if we have a new drug, how much longer the patient is going to live with it and how much more it will cost. There's a second part called “normative”, wherein you actually tell people what they should do.

I feel that my role should be to give decision-makers information they can understand. If they think this is good value for money, they can make the funding decision. If they think “no, it's not”, that's okay. My role is to get them the information to inform the decision.

Mr. Wladyslaw Lizon: How is this applied in the real world?

Dr. Jeffrey Hoch: As I mentioned, I work at the pharmacoeconomics research unit. My job is to create cost-effectiveness analysis of new cancer drugs or to critique cost-effectiveness analysis of cancer drugs. I then explain it to a recommendation committee and say, for example, “We're getting two more months of life with this new cancer drug. It's going to cost an extra $30,000. Let me give you more context: there's no other treatment for this type of disease and this is seen as a big breakthrough.”

I do this regularly, helping people understand the information, helping them evaluate the information, and helping them use it.

Does that answer your question?

Mr. Wladyslaw Lizon: Yes, of course.

For my last question, are you satisfied with how your information is received, generally speaking, or are you disappointed? Sometimes you may recommend the proper thing, but the committee might discuss it and say maybe it's not that great an idea.

Dr. Jeffrey Hoch: It's a wonderful question.

To be particular and exact, I feel I almost never make any recommendations. I try very hard to leave out my opinions. What bothers me a lot is when people don't understand what we are presenting as information. I've tried very hard to focus; instead of being complicated, I try to be clear in answering the question that the payer wants to know about.

I feel this is a missed opportunity. It is no mystery why many of the innovations are not being funded. It's because either the information to make that decision hasn't been collected, or once it has been collected it doesn't represent a wise investment.

To answer your question, I've tried hard to make myself understandable.

Mr. Wladyslaw Lizon: Thank you very much.

I have a question for Madam Lehoux. I'm sorry if I have mispronounced it.

In the beginning of your presentation you said that the new technologies are unpredictable.

Can you expand on this? I was a bit surprised. What exactly did you mean?

Dr. Pascale Lehoux: I think I was referring to this vision by which people see innovation as something good that almost falls out of the sky and as something that is not manageable. “Unpredictable” or “unmanageable” would be the labels I'd use.

I think a lot of the upstream work when designing innovation can be steered and informed. There is a lot of input that can be brought early on in technology development that will avoid failures. With a lot of technologies that don't make it to the health care system, sometimes it's the system that is not responsive. Very often it's the technology itself that has been badly designed.

What I'm saying is that this is not unpredictable. With regard to some failures from a health services and policy research standpoint, experts in the field could probably say very early, from the business plan, “This is going to fail. This will not make it to health care. Providers will not use it. Patients will not benefit from it. Stop wasting your time.”

● (1625)

The Chair: I'm sorry, Mr. Lizon. That's the end of your time.

Mr. Wladyslaw Lizon: It seemed like one minute.

The Chair: It is, right now.

You might have another opportunity, and thank you for your very valuable questions.

We'll now go to Mr. Pacetti.

Mr. Massimo Pacetti (Saint-Léonard—Saint-Michel, Lib.): Thank you, Madam Chair.

Thank you to the witnesses for appearing.

I'm not a regular member so this will be to clarify, to see if I understood some of the presentations.

[*Translation*]

Ms. Lehoux, at the beginning of your presentation, you said that the policy challenge is neither to increase the adoption of innovations nor to slow it down. Should innovation not be stimulated?

Dr. Pascale Lehoux: No. In my view, the challenge is neither to increase it nor to slow it down. It is neither more nor less innovation that we need, but rather better innovation. Assessing technologies provides us with arguments that help us understand what it means to have better technology in terms of efficiency, safety and costs, but that is not enough.

To determine what better innovation is, we have to simply understand what is known as the burden of disease in epidemiological terms. We must determine whether our efforts make a difference in places where a real burden of disease exists, instead of having incremental innovations, as described by our colleague, that enable us to create another innovation without focusing on the crucial problems to which we have no solution right now.

Mr. Massimo Pacetti: You said that 50% of new inventions are accepted. Is that correct? That many?

Dr. Pascale Lehoux: It is difficult to have robust data, but 50% is a conservative figure. That means that 50% of innovative projects will fail. If we take, for example…

Mr. Massimo Pacetti: That also means that 50% of projects will succeed.

Dr. Pascale Lehoux: Yes, but it is a modest figure. The rate can go up to 70%. It depends on what we are measuring at the start of the project.

Mr. Massimo Pacetti: Are you saying that up to 70% of projects will fail?

Dr. Pascale Lehoux: Between 50% and 70% of projects will fail.

Mr. Massimo Pacetti: Okay.

On one page, there is a breakdown of expenditures. I am doing the math and I am confused. Twenty-one per cent of the funding comes from the federal government, 23% from enterprises and 27% from higher education. If I add those three figures, I end up with 71%. There is still 29% missing. Where does that portion of the funding come from?

Dr. Pascale Lehoux: Not all the sources are on the slide. I am sorry. I only listed the primary sources.

Mr. Massimo Pacetti: But the others...

Dr. Pascale Lehoux: They are provincial.

Mr. Massimo Pacetti: Provincial? Isn't that higher education?

Dr. Pascale Lehoux: No. There are the provinces, as well as non-profit organizations and foreign sources.

Mr. Massimo Pacetti: That's great, thank you.

[*English*]

Mr. Hoch, on page 4 in your presentation, at one point you were talking about needing more planning with innovators. I wasn't clear on who you plan with. Wouldn't it just be your customer? Who would your customer be? Wouldn't it just be your patient, or the hospital that delivers? It wasn't clear who you're trying to plan with.

Dr. Jeffrey Hoch: I'll give you an example. Let's say there's a new drug that works with people who have a certain set of genetic material, and you need a test to see if they have the right genes for the drug to work.

Mr. Massimo Pacetti: Can I stop you there? Wouldn't you have done that before you even began your research?

Dr. Jeffrey Hoch: Wouldn't I have done what?

Mr. Massimo Pacetti: Wouldn't you have already planned that before? You just don't wake up one morning and say, "Okay, I'm going to discover a drug and see who it's for and where we're going to get our test people from."

Dr. Jeffrey Hoch: I'd like to be polite to my basic science colleagues. Could you speak about whether it's all planned out in the lab?

Dr. David Jaffray: Little is planned in the laboratory. This brings up an important point: the value of technological or even drug-based innovations really only gets understood once they're in the health care system—and not necessarily funded as general funding, but partly funded as a research activity.

Related to all these topics is the fact that the health care system itself is part of what figures out what's going to work. The message that I was bringing forward was that we need to understand how to measure. That's the HTA piece. At the same time, we have to understand how these technologies impact the processes that are active in health care. The health care system is the place where we figure out that something has value. If we don't have the players there to enable that innovation, then we're really undercapitalizing on the opportunity.

● (1630)

Mr. Massimo Pacetti: This is where I'm having difficulty understanding. If we're talking about a process, I can understand it being more difficult if you're trying to implement an innovative process, but when it comes to a drug, isn't that completely different? The drug is for a specific purpose. It's not as if all of a sudden the drug changes its purpose and it's for something else.

Dr. David Jaffray: Let's say, for example, we start to use the drug in a clinical context. We recognize that there are differences in response across a population of patients, only observed once it's in the clinical context. In the process, though, we're a research hospital, we're collecting extra tissue from those patients. We analyze then, in retrospect...those tissues have different characteristics that predict for different outcomes with the application of that drug.

The next step is: who's going to make these tests as a routine activity of the use of that drug in the health care system? That iteration has to happen within the health care system. The problem is that the health care system is not really built to innovate. We've bolted the expectation on it, as demonstrated by this committee talking about this topic, but we're not actually built to innovate.

Dr. Jeffrey Hoch: All I wanted to say was that if the drug needs you to be positive on the test, and the ministry funds the drug only for the people who are positive, someone needs to figure out how we're going to get the test paid for, which labs we're going to contract with, how we'll know for sure that they have it. There is some action that happens in the implementation area. In addition to that about drugs changing, it may be that when you do the studies, you study one type of patient. It might get funded for that type of patient, and then things might be more attractive to other patients.

The Chair: Thank you, Dr. Hoch.

We'll now go to Dr. Carrie.

Mr. Colin Carrie (Oshawa, CPC): Thank you very much, Madam Chair.

Perhaps to continue on that line, Dr. Jaffray, you mentioned that the system isn't really designed to innovate, and perhaps you and Dr. Lehoux could take a crack at this question.

It seems in this country there's a disconnect. We have academia and then we have industry. In the American system quite often, and I guess you spent some time down there, you can be an academic for half the day and then you can go work with industry.

We've heard of some of the steps we're taking forward, such as MaRS. In other places in the world, there are the Fraunhofer institutes. I was wondering if you could maybe give us an idea of why there seems to be this disconnect, and if maybe you see some practical solutions that could come from the government.

I know that where I went to school, Waterloo, there were co-op programs. You got kids out at an early stage working and interacting with industry right away.

Could you elaborate on why you think we don't have that connection in the country?

Dr. Jaffray, do you want to start, and then Dr. Lehoux?

Dr. David Jaffray: Sure.

I would say we've transitioned over the past ten years, or maybe a little bit longer back. We do have good links between the academic and health care environments. That's quite remarkable, in this country, and I'd say that's a strong asset. We no longer have the ivory tower fear that we had 10 years ago. MaRS, as a symbol of that kind of thinking, has impacted this.

The committee members could comment on whether they agree with me, but generally speaking, there is a recognized understanding that you need academia, you need health care, and you need industry. And we have that. We have people who work fifty-fifty, teaching at the university, caring for patients, partnering with industry. That's active, and we've done our best to deal with all the REB ethics issues, conflicts of interest, and so on.

What I think we have not done, though, is we haven't given health care the expectation, clear mandate, and some kind of economy that drives innovation. In the U.S., the economy of health care is driven by referrals and competitiveness with your partner. We don't necessarily want those drivers here, but we need some kind of driver.

Hospitals can't roll over their budgets year over year. Why would I save money in my hospital if it's going to go away? The savings in this silo only really come out in another silo, so why would I save in this silo? We don't have a way to coordinate activities and give it to individual innovators to drive innovation that links across those.

If we can come up with some scheme...and I don't know what the scheme is, perhaps carbon credits for health care innovation? I don't know.

Voices: Oh, oh!

Dr. David Jaffray: It would be something that lets us exchange the value across the system. Then you would have innovators driving it and working together. This is the part we're missing. We're realizing that we need process.

I won't speak to what Pascale will say—

● (1635)

Mr. Colin Carrie: You just got the NDP all excited about the possibility of a carbon tax.

Voices: Oh, oh!

Mr. Colin Carrie: Dr. Lehoux.

Dr. Pascale Lehoux: I guess I both agree and disagree with what has just been shared by my colleague.

I agree that there are many connections between academia and industry, but also health care players are connected in many ways. I sit on the board of IHSPR, which is one of the 13 CIHR institutes close to health services and policy research. That institute has worked quite a lot in the past ten years to create those connections with policy-makers, decision-makers, and getting the evidence out there in the system.

So there are plenty of connections, and I don't think we need more. I think we need to be able to sit down together, talk together, but we are good at doing stuff that we are good at doing, respectively.

The point on which I disagree is that I don't believe the U.S. is the model for Canada, or not in terms of innovation development strategy. The venture capital that we don't have in Canada, as the data have shown, often means that we lose a lot. We don't gain out of that game so much, and I don't think we will be on top of that game in the near future, because we don't have a similar kind of *tissu industriel*. We don't have the same type of businesses in the country.

I don't feel we need to look at the U.S. as a model to replicate.

The Chair: Dr. Jaffray, go ahead.

Dr. David Jaffray: I just want to be clear that I'm not supporting that we adopt the American health care system. When I worked there, it was very clear to me that if we were going to introduce a new technology to the hospital, I had to go to the board and demonstrate 15% return on that capital investment. That was a business decision that made us analyze very carefully the impact of that technology, how we were going to process technology, what it meant to our environment and to our partners.

That economy, which is active at the lowest level in American health care, is something that we're missing. I'm not saying we should drive it by dollar. We could drive it by efficiency, we could drive it by performance, we could drive it by quality, we could drive it by safety, but we need that economy of innovation to pull in the technological and pharmaceutical opportunities we have.

Mr. Colin Carrie: I would think too that we have to start measuring what we're doing. I was surprised by your comment, Dr. Hoch. I think you said we should be investing in research to determine its value. In other words, if we have a protocol and your expertise is in cancer, we're looking at a cancer protocol that we're using now, and then we have a new drug. Maybe there should be ways we can measure new protocol versus old and then we can make an economic decision—actually a quality decision. Whatever the quality, you want to use that as a driver.

Do you have any data that suggests that maybe, when doing all these things in the Canadian health care system, we're doing a bunch of stuff that's not working? I've heard in the past that we get into these little grooves and we keep doing the same thing over and over again, but we're maybe not getting the best bang for the patient in these protocols we're using to treat people.

Do you have data that's looking at protocol *a* versus protocol *b*? If we're not doing that, why do you think we're not doing it, and how can we start doing it?

Dr. Jeffrey Hoch: I think that's a very smart way to go about using cost-effectiveness analysis: find things that aren't helping people and that we pay a lot for, and try to do less of them.

One of the challenges in health care is that after you say yes and start paying for it, it is very difficult to bring that back in.

The Chair: Thank you so much.

We'll now go into our second round. I'm sorry, Dr. Carrie, but time is up.

● (1640)

Mr. Colin Carrie: I was just getting really interested.

The Chair: I know you were. You can hold that thought and carry on in our next round. How's that?

We'll go into our second round, which is five minutes, so you will have to be a little more conscious of time. We are going to suspend at 5:15.

We have 35 minutes and we'll begin with Dr. Sellah.

[*Translation*]

Mrs. Djaouida Sellah (Saint-Bruno—Saint-Hubert, NDP): Thank you, Madam Chair.

I would first like to thank all the witnesses who are here today for their relevant presentations.

My question is for anyone who can answer it.

There are numerous academic, government and hospital-based organizations and agencies that undertake health technology assessments (HTAs) in Canada. The Canadian Agency for Drugs and Technologies in Health (CADTH) is a non-profit organization established by the federal, provincial and territorial governments in 1989 to ensure that policy makers have access to evidence-based assessment of the clinical and cost effectiveness of pharmaceuticals and health technologies.

How does the work undertaken by CADTH differ from that of other health technology assessment organizations in Canada? Furthermore, in your view, what steps could CADTH take to coordinate efforts in health technology assessment in order to avoid duplication of efforts and possible inefficiencies in this area? Finally, in your view, are policy makers more likely to adopt the recommendations made by CADTH regarding funding decisions for drugs and technologies, or are they more likely to adopt the recommendations made by local health technology assessment organizations?

Thank you.

[*English*]

The Chair: Who would like to take that question? Dr. Lehoux?

Dr. Pascale Lehoux: Yes, I could.

[*Translation*]

Thank you for your question.

A few years ago, I studied the assessment organizations in the provinces and across Canada. In terms of duplication, I can assure you that these organizations work together, they meet and get together on a regular basis. The last thing they want is to have to redo a study that another organization has already done. So that should not be a concern.

I think the question about the national and provincial cooperation is more complex. Provincial agencies have forged special ties with policy makers under their jurisdiction. The national agency's position has always been against making recommendations, for the simple reason that health falls under provincial jurisdiction. So its opinions are consulted and reviewed, but the responsibility for the decision is in the hands of the policy makers.

Mrs. Djaouida Sellah: So that is the responsibility of the policy makers in each province. Okay.

That is why pCODR is a good example. I noticed that Quebec was not included.

Dr. Pascale Lehoux: I will let my colleague Jeff answer that.

[*English*]

The Chair: You're in the hot seat, Jeff.

Dr. Jeffrey Hoch: Could I ask for the question again, and how much time do we have?

The Chair: You have about one and a half minutes.

Dr. Jeffrey Hoch: Could you take a long time asking the question again?

[*Translation*]

Mrs. Djaouida Sellah: Ms. Lehoux partly answered the question by saying that it was up to the policy makers in each province to make the decisions.

Let me ask you another question. In your view, how effective has CADTH been in disseminating the findings of its research to policy makers, health care providers and other HTA organizations across Canada?

[*English*]

Dr. Jeffrey Hoch: I think CADTH does a good job communicating. The challenge is that with devices, the payer or customer is often the hospital. So even if CADTH gives its recommendation and even if Ontario gives its recommendation, if hospitals have the resources they will set up their own HTA units. There's one at McGill. There's one in London, Ontario. The decision is always local, but the problem is that we don't have the resources for everyone to set up their own HTA.

CADTH is necessary and people want to add their own context.

● (1645)

The Chair: Thank you very much, Dr. Hoch.

I'm sorry, Dr. Sellah. The time is up.

We'll now go to Mr. Lobb.

Mr. Ben Lobb (Huron—Bruce, CPC): Thank you very much, Madam Chair.

At the root of the issue of innovation, or having somebody develop the next great idea, is that you've got this person who goes through elementary school and high school, a brilliant person who goes off to university, and let's say he or she goes off to the University of Waterloo and does four co-op terms. Then comes the decision, “What do I do?”

Nine times out of ten, the choice is to take the highest-paying job and go do it. They don't take the entrepreneurial approach of living like a university student for five more years to develop their brilliant ideas. That's part of the problem with what we're facing, not just here in Canada, but around the developed world. I'm quite certain of that.

So how do you turn the tide? Do you have to go back to the ministry of education provincially and try to re-establish the pride in entrepreneurship? What do you do with that? That isn't a silver bullet, but that's one of the pillars.

Yes, Mr. Holbrook.

Prof. Adam Holbrook: Thank you. I have two quick answers to that. I've already been asked that question by the Government of British Columbia. My answer was that I'm not certain you can teach people to be innovators. I have this feeling that there is some kind of innate ability to innovate and that the real question for educational institutions is to identify those who have that innate ability; hence my disparaging comment that you can't teach a health sciences graduate to be an entrepreneur.

On the other hand, you can also provide an environment for innovators and that's the other part about the social innovators and intrapreneurs. That's the big thing that's missing. We're assuming that innovators are automatically entrepreneurs in the commercial sense and that perhaps, particularly in the health care sector here in Canada, which for the most part is in the public sector, we should be asking ourselves how we reward the nurse, the technician, as well as the doctor, who comes up with an idea. These ideas need not necessarily be R and D related. There are all sorts of operational changes and procedural changes. I'm not talking about operations as in surgical operations, but just simple day-to-day changes within the operating fabric of the hospital.

How do you reward somebody for that? How do you get people interested in thinking about it?

Dr. David Jaffray: We wrestle with this issue from the point of view of modelling. How do we model entrepreneur activity in these alternate environments? Within health care, there has been a lot of discussion, specifically on the intrapreneur, someone who's doing entrepreneur activities within an organization. It often happens in large companies, and hospitals and health care facilities are large companies.

What we found is that individuals will migrate to an environment where we're doing commercial activity, where we're doing things that translate more readily, and I think it's really important to create these environments where we are actually driving these innovations. That will pull in summer students and undergrads. We've seen them now, as a stream, start to flow because they see the opportunity to have impact based on their experience and then the potential to go further and turn that into product.

Mr. Ben Lobb: You alluded to the Fraunhofer institutes, and there's one at the University of Western Ontario. I would say that model has really pushed the auto industry in Germany for a long time and kept their automobiles ahead of the curve of almost everybody else's. There's a professor at the University of Windsor, a co-founder of Auto 21, who is looking at the Canadian Automotive Research Institute, at what would be very similar to a Fraunhofer that would help to push innovation and research in Canada, mainly Ontario and Quebec.

The next thing I'm thinking about is the report we're looking to do from our study here. Is there a piece in there that should say that we should look at this, where you have this created to help take a small or mid-sized company, which maybe doesn't have the biggest and most robust R and D department, and to help them work with academia, to help them work—

● (1650)

The Chair: You only have 30 seconds, Mr. Lobb.

Mr. Ben Lobb: I was just about done my question so it should work out pretty good. Is that something we should come out of this study with as a recommendation, or is there already something out there like this?

Prof. Adam Holbrook: The quick answer would be hospitals themselves are probably these intermediary institutions anyway. So the question then comes, how do you get that sort of research pool, how do you get hospitals going back to the university saying, come on, we need this piece of research to do something, and then turning around on the other side to a commercial entity and saying, okay, now we need the black box, now we need the home device for kidney dialysis?

The Chair: Thank you, Dr. Holbrook.

We'll now go to Dr. Morin.

[*Translation*]

Mr. Dany Morin (Chicoutimi—Le Fjord, NDP): Thank you, Madam Chair.

My first question is for Ms. Lehoux.

On the third slide of your PowerPoint presentation, you recommend setting up an intersectoral body. Do you know how much this initiative might cost? If we are talking about setting up new programs or new bodies, the federal government will obviously want to know what the costs are.

Dr. Pascale Lehoux: I don't want to take a chance and hazard a guess, but somewhere else in the presentation it says that there are large budget envelopes dedicated to health research and development. I also mentioned the envelopes discussed in the Jenkins report. Those envelopes are dedicated to industrial research. So it's the equivalent. We are talking about $6.4 billion.

I think there are major levers at the federal level. However, I cannot say how much that would be. We would need to do a bit of research to determine which model to follow. But I can tell you that the United Kingdom is the country we should turn to. The way its health and wealth policy is developing is very interesting.

Mr. Dany Morin: Thank you. I will take note of that.

On the sixth slide, you indicate that we have to preserve the future of care systems by focusing on design. But health care systems vary from one province to another. The provinces are basically the ones that can innovate on the ground, in their own health care system.

How can the federal government innovate? Is it by setting up an intersectoral body or by creating something else that you have not mentioned yet? Furthermore, what do you mean by "focus on design"?

Dr. Pascale Lehoux: In terms of health care systems, it is important to understand that, even though each system falls under provincial jurisdiction, the challenges and needs are similar. Actually, Canada is not the only one to deal with those challenges and needs; every developed country is dealing with the same ones. Technology and staffing costs are high everywhere. It is difficult to reach patients outside urban centres everywhere. The challenges are the same. Innovation must address the challenges of health care systems.

In terms of design, we need to be able to look at technology from the perspective of how it is actually used. I think, in a number of cases, we look at doctors—in many cases, specialists—as the main users of the technology. But for many health problems, including chronic illnesses, the patients should be the main users. So we are talking about promoting the patient's autonomy, their ability to have access to user-friendly equipment. Patients are a very important niche.

Mr. Dany Morin: Thank you.

In your presentation, you said that it was unfortunate that foreign companies are buying our start-ups that have a lot of potential. You are not the only one to point that out. At other committee meetings that dealt with those issues, a number of people also mentioned that Canada has a commercialization problem.

In Canada, we have an investment act, but it does not really apply to investment. First, the companies have to be worth at least $312 million, which is probably not the case for most start-up companies.

Do you think we should use the act as a deterrent, by making specific amendments, or would it be better to focus on the positive side of things and should the federal government take these companies under its wing to some extent and help them in various ways?

Dr. Pascale Lehoux: I am not an expert on that issue. Perhaps the colleagues around you are in a better position to give you an answer than I am.

Mr. Dany Morin: In that case, I have one final question for you.

Do I still have one minute?

[*English*]

The Chair: You have one minute.

[*Translation*]

Mr. Dany Morin: That's fine, I will be quick.

In your third message, you are saying to “design and market much more ingenious innovations than those that are currently on the market”.

Are you really weighing your every word when you talk about innovations in Canada? Many witnesses we hear from are telling us that we are a country of pilot projects, but that we are unable to share our best things. Do you really feel that we are not ingenious enough?

● (1655)

Dr. Pascale Lehoux: I come from public health. I have spent a lot of time researching health care services, policies and organization. Unfortunately, what we are seeing is that many innovations are not adapted to either the context or the needs.

That is why I am more critical. I think more ingenious innovations will enable us to minimize our dependence on specialized services that keep going up in price. That is what we must avoid.

[*English*]

The Chair: Thank you very much.

We'll now go to Ms. Block.

Mrs. Kelly Block (Saskatoon—Rosetown—Biggar, CPC): Thank you very much, Madam Chair.

I join my colleagues in welcoming you here today. I also join them in their observations in terms of how difficult it is to get our heads around some of the things we're hearing today.

Certainly, what we've heard today really has taken us down the path of examining a number of reasons why innovation is important, not only in the health care system, but in other industries as well, and ultimately for our country. As you stated in one of your slides, Dr. Lehoux, from the economic perspective, innovating businesses should contribute to job creation and the vitality of Canada's industrial fabric. So we know that innovation is important in a number of areas.

We've heard many challenges today. Mr. Hoch, you talked about the suitcase. I'm thinking that the way to get a bigger suitcase is to encourage private investment. Yet Dr. Jaffray, you talked about your experience in the United States and said you wouldn't necessarily support the notion that the economy of innovation would be a return on investment.

After all of our discussion today I'm wondering what the economy of innovation should be.

Anyone can answer that.

Dr. David Jaffray: We have to look at taking the existing investment in health care, realizing that it's not just a service, it's actually the way we figure out what will work for our population, and fund that activity to be a dynamic learning system that pulls technological or pharmaceutical innovations in, and we bolt health technology assessment onto that to confirm we have those delivered.

At this point in time that requires investment. Nobody can invest in a vehicle that's not built to give a return. We have to put together some kind of economy. It's going to have to be a financial return—maybe that's a U.S. model. It could be a quality metric. It could be letting hospitals roll their budgets over. It could be intellectually stimulating, with benefits to inventors. But we need to figure out how to turn our health care system from something that's service oriented to something that continuously improves the health care we deliver.

It shouldn't take money from basic science to do that, because that's pushing technology. It should be new funding in health care innovation that draws and capitalizes on the throughput and the innovations we have within Canada.

Mrs. Kelly Block: Is there anyone else?

Dr. Jeffrey Hoch: I apologize if what we've said has been complicated. From my perspective it seems very simple. We have people who are making things, we have people who are getting what's made, and we have a third group of people who have to pay for what's getting made. You can focus on how we get more things that we don't have money to buy. We could focus on making people appreciate the value of what they're not getting. Or we could think about, once we do have this, how we're going to get the money.

The costs are going to translate into someone's revenue. If you're a business person you're not going to invest in something you're going to lose money on. If you're thinking of something that you're going to be making money on, there's someone on the other side who's thinking he or she has to pay for it. It seems to me it can be as simple as that from a payer's perspective.

The Chair: You have one more minute.

Mrs. Kelly Block: There is another answer.

The Chair: Go ahead, please.

Prof. Adam Holbrook: I have an observation, and that is when we come to setting out this economy of innovation, we forget one of the other players, which is a fairly large player in the field of health sector research: the private non-profit foundations. The interesting thing about a private non-profit foundation is that by its very nature it collects money from people who have a specific interest. For example, the Breast Cancer Foundation people are marketing that idea. The money they have comes from ordinary Canadians. They're in a position to influence what is being done in that field, because not only do they collect money for research, but of course they lever money for research as well. This past year about $800 million to $900 million was raised by health sector private non-profits. That probably was multiplied two or three times through various federal and provincial contributions.

● (1700)

The Chair: Thank you very much.

We'll now go to Mr. Kellway.

Mr. Matthew Kellway (Beaches—East York, NDP): Thank you, Madam Chair.

And thank you to all of you for coming today and sharing your thoughts with us.

I'm well into today's meeting and I confess I'm not sure how much I've understood quite yet. One of the reasons I'm a bit uncertain is that I think you've told us something that we haven't heard before, and that is the issue about how much technology is out there and available to us that we are not taking in and adopting. Maybe it's a definition issue.

Dr. Jaffray, I think you said, “There's more technology in the world for health care than we know what to do with”. Yet what we've been hearing so far—and maybe this is the prejudice we come to this with—we had some genomics people here the other day, and one of them was talking about how only a few of the 20,000 genes are getting studied. There's this great undiscovered world out there, and we've got this science system in the universities, and I guess industry too, and everybody goes zooming in on the same ones. You seem to be suggesting today that it's not about what's undiscovered, it's about adopting stuff that's out there and that we know.

Am I right about that?

Dr. David Jaffray: Yes. Ten years ago the idea of putting your computer in your suitcase would have been absurd, but clearly you could put 50 iPads in your suitcase now. Technological innovation is constant. This is very important, there's science and discovery and then there's innovation in health care. We've said we should encourage people to go across there. But this is a different problem. This problem requires an understanding of the issue in health care. It requires bringing in people who understand design and understand the challenges and complexities. Companies come to us with technology and ask for help to get this into health care. They don't understand.

We also need to evaluate this. We need to turn the health care system into something that innovates and comes along. There's so much opportunity around us. We haven't figured out how to get those two markers fully integrated within heath care yet, not to mention the thousands that might come later. It's a different problem, and I don't think we've addressed it.

Mr. Matthew Kellway: This is the second thing I'm a bit uncertain about: the sequencing of evaluation and the economy that you've been talking about. Again, we haven't looked at it this way, but if the health care system is this learning, living place, and you're investing billions upon billions, don't just think about it as giving a service, but leverage that into innovation and creation. But if the health care system is also part of your evaluation process, which I think you've been pretty clear about, how do you set up the economy in advance of the evaluation?

Dr. David Jaffray: It's about chicken and egg. Quite frankly, it's a lot more egg than chicken right now. A lot of technology goes in and is not evaluated, but we have a culture developing on the HTA front right now, a key development that will bridle that innovation appropriately.

Mr. Matthew Kellway: I take it you're not necessarily supporting this model, but one example you gave of the economy is, “Can you cut our costs by 15%?” Right? How do you make that assessment to figure out whether it's going to save you 15% before it goes into the health care system?

Dr. David Jaffray: The model I would suggest is endorsing the hospitals to create innovation teams of some sort. They would, for example, bring forward a proposal that they would see savings, let's say, of 10%, in a certain set of procedures. They would then communicate that to an office that says, “We have this plan. If we actually achieve that, let us keep that 10% and we'll use that for further innovations within the system. If we don't achieve it, then we won't be able to keep it.”

Basically, you could propose an innovation, register it, and if you do have the savings you get to keep them in your budget and roll them forward. You would turn the hospitals into environments that would look for innovation because they would then have more resources to address the other pains that many of them are fighting.

● (1705)

Mr. Matthew Kellway: Playing that out, then, a team in the hospital, let's call them entrepreneurs or something, would say, “We can save you 15% in this department. Let us do this.”

What do they then use their savings for?

Dr. David Jaffray: They would use them for what the hospital already suffers from, which is underfunding on a bunch of other fronts: lack of capital support, new technologies they cannot afford, or replacing failing systems.

The budget issues in hospitals are always a problem.

The Chair: Thank you, Dr. Jaffray.

We'll now go to Mr. Brown.

Mr. Patrick Brown (Barrie, CPC): Thank you.

Thank you for your testimony today.

One question I've asked previous panels we've had on health innovation is in regard to the regulation of medical devices and products. I've heard different opinions on whether we can do a better job in Canada. We heard from one doctor who said it was incredibly difficult, and others who said it was actually quite easy in comparison to the United States.

In any of your roles, have you had any interactions or viewpoints on what we could do better, or how we're doing in terms of that federal role? A lot of health care isn't a federal role, but obviously it is for the regulation of medical devices. Medical devices can certainly be a tool for innovation.

Dr. Pascale Lehoux: I can answer part of your question.

I think the USFDA process is more stringent, more demanding. It's a class-based system, so depending on the level of risk associated with a technology, the requirements will be high or low. This might explain why there are different perspectives.

The FDA is more stringent, and most companies go to Europe first. The CE marking system is easier to pass through. It's a better way to get some revenue out of commercialization, and to then go to the FDA. The FDA is the big market, not Canada, so that's the way.

Dr. David Jaffray: If I could add to that, many of the companies we work with will submit to the FDA, and then because of the way that Health Canada requires submissions, they'll submit those later. Even if we co-create a technology with them, we're the last ones to be able to use it on humans, even though we co-created that. They go to the CE first, the FDA, and then finally to Health Canada.

It would be great if we could move this innovation evaluation curve forward by having our regulations support the adoption and keep the bar high but increase the response of regulatory submissions. Then people would bring us technologies early on and we could begin this evaluation cycle. It would make our innovators who do technology development logical partnerships because we're in this environment.

I know right now, for example, we're waiting on technology that was supposed to be back from Health Canada in 70 days. The backlog is months more than that. Our industry partners globally are saying they'd love to do something sooner but they know there are impediments.

There is room to improve.

Mr. Patrick Brown: The question I have, I think would be for Jeffrey and David.

I come from the riding of Barrie. We were involved there for a while in building a regional cancer care centre. It was a huge project, over a long period of time. With Garth Matheson, who is now with Cancer Care Ontario, and was with RVH, we were looking at ways we could.... To have a regional cancer care centre meant hiring loads of people all at once. He found mobile cancer bunkers in the U.S. They hadn't been used in Canada yet. He pitched to us that we should use them in Barrie, so we used them to build the physician population, to help the regional population, and then we moved to Peterborough.

That was neat. But I know it took some time to get that approved in Canada, to get the different levels of approval that were required, both federally and provincially, to have something that hadn't already been used in Canada.

Are there opportunities we are missing? I remember thinking it was brilliant. It really made the transition to a brand new cancer care centre, which we had never had, so much more effective. Are there opportunities that we could do in the health care system in Canada that are being done elsewhere? He said those mobile bunkers have been used readily in other countries, but we just haven't used them in Canada.

● (1710)

Dr. David Jaffray: I could comment as it's a specific area of my expertise, but the issue there I think was related to people becoming comfortable with an alternative approach to using these mobile bunkers. I would have thought that it should have been relatively straightforward to get those cleared and approved through the regulatory agencies that govern the shielding-related issues. But I think it does raise another interesting element, which is the opportunity to work with our regulators to bring innovations forward. We've actually been quite successful with the Canadian Nuclear Safety Commission on bringing innovations forward. Over the past several years we've worked with them on specific technologies and they've helped us bring them forward safely.

The Chair: Thank you, Dr. Jaffray.

We'll now go on to Mr. Wilks.

Mr. David Wilks (Kootenay—Columbia, CPC): Thank you, Chair.

I understand my colleague, Dr. Carrie, has some questions he didn't get to finish, so I'm going to defer my time.

The Chair: Dr. Carrie.

Mr. Colin Carrie: Thank you very much, Mr. Wilks.

I want to start off by giving Dr. Hoch the opportunity to finish off where we left off last time, because I do find it amazing how we analyze and test the validity of some of these protocols. You can have an old drug, but I think sometimes a new drug doesn't have to be tested against the old drug. They're just tested against placebos. The new drugs sometimes cost 10 times the cost of the old drug. I was just wondering if you could give us some insight on your comment that we should invest in research to determine the value of these things. That's question number one.

The other question was for Dr. Jaffray. You mentioned that you did have a number of patents, commercialization, and I was wondering if you could comment on how you did it? You seem to be one of these guys who's been successful through the system. Do you have any suggestions for the federal government, perhaps recommendations on how we could cut the red tape and have more innovators such as yourself go from an idea through the commercialization, trying to get a patent and getting it out?

So those would be my two questions. I'd better shut up so you have some time to answer them.

Dr. Jeffrey Hoch: Thank you. I'll answer very quickly so we can hear about dealing with innovation successfully.

The short story is, the stuff you need to go through regulation is different from the stuff that people who pay care about. So if you're doing regulation, you could do placebos, you could have super-healthy young patients. When you go to the real world, it's possible doctors aren't treating people with placebos. It's possible some people who get sick aren't young and healthy. It's also possible you'd want to study people for longer than, say, six weeks. The evidence we need for the regulation part is different from the evidence we need for the payer part. If you can produce pressure to get it paid for by doing just the regulation, why would you collect the other stuff for the payers?

Dr. David Jaffray: I'd like to talk on that, too, madam. I'll talk about what you asked me about.

In my case, I was a physicist who worked in a hospital. Radiation delivery systems need to be managed by physicists. The technology we developed was really related to a direct observation within the clinic of a problem, and detailed insight into what was feasible. We could make this technology, but if you increase the treatment time by more than five or 10 minutes, it would not be accepted economically. It would destroy the economics of radiotherapy cancer treatment. So we had to understand that.

We had to understand what technologies were available, and we had to find an industry partner who would allow us to bring those through, all the way through, to a return to market. This is where the realization on my part came, that it's clear insight into the details of the health care system that enables technologies, which in many ways are already out there, to come together to have an impact. We patented that and it was licensed and so on and so forth. It was actually produced in the U.K., and parts of it all over the world have come together. The way the global economy works now, you work with multinationals because the time it takes them to take something to market is very short compared to a start-up. We work a lot with multinationals because you can have an impact sooner.

In terms of what the federal government can do, I think it would be outstanding if we could have some kind of responsibility communicated to the provincial health care systems that they need to innovate within their care delivery process, not just do clinical trials. Let's go back to what Jeff said, let's talk about getting data beyond six weeks. Let's turn the routine follow-up visits into a mechanism by which we collect outcomes data that is months, years. That's incredibly powerful. So turn the health care system into something that's using its internal understanding, taking the service delivery and building intellectual property. That's a huge opportunity.

That's why I was concerned about the U.S. change. It's a good thing, but in 2012 they put out a paper that said, you need to do this, you need to show us the performance and we'll pay you for it. The U. S. is investing. They're putting IT systems in, they're facilitating data collection. They're turning their health care system into something that's got an economy based on innovation. We could discuss the motivations, I agree with you, but the data collection is key. We need to do that in Canada.

● (1715)

Mr. Colin Carrie: Do you want to want to make a quick comment on what Dr. Hoch was saying and elaborate a bit more?

Dr. David Jaffray: Yes. I mentioned this at the end. Outcomes collection in health care has been largely the hobby of academic clinicians. We need to turn it into something we do as a matter of course and to supply the systems that collect that data, because we will then have one of the best systems in the world to bring technologies in, begin the health technology assessment process, and look at long-term effects. In health care you have to look for years to really see the value.

Mr. Colin Carrie: We're doing electronic health records. Is that something we could do?

Dr. David Jaffray: That's technology, but not the process. We don't have the process issues.

The Chair: This has been extremely interesting, and we could have you back again and hear so much more.

Thank you for coming today. It's really interesting to compare what witnesses say who come here. You brought some new perspectives today, all of you, and we really appreciate it very much. It's very stimulating; the time just flew by.

I will suspend for two minutes, and then we have to move into an in camera business meeting.

[*Proceedings continue in camera*]