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# Standing Committee on Health

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**EVIDENCE**

## Tuesday, April 16, 2013

## Chair

**Mrs. Joy Smith**

# Standing Committee on Health

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● (1530)

[*English*]

**The Chair (Mrs. Joy Smith (Kildonan—St. Paul, CPC)):** We will come to order, and I want to welcome all the committee members back. People always say “back from break”. I don't think so. We actually come back to get a rest. It's usually pretty busy during our break. I want to welcome everyone back. It's very nice to see you.

We have an outstanding panel today that's going to present to us. Pursuant to Standing Order 108(2), we are doing a study of technological innovation.

We have with us, from Health Sciences North, Branden Shepitka, emergency department health record project lead. You're from the Ramsey Lake Health Centre. Welcome. We're glad to have you here.

From the University of Ontario Institute of Technology, we have Dr. Carolyn McGregor, Canada research chair in health informatics, professor and associate dean of research, faculty of business and IT. Welcome, Dr. McGregor.

From the Huron Perth Healthcare Alliance, we have Dr. Andrew Williams, president and chief executive officer. Welcome, Dr. Williams.

From the University of Ottawa....

Pardon me?

**Mr. Andrew Williams (President and Chief Executive Officer, Huron Perth Healthcare Alliance):** I'm not a doctor, actually.

**The Chair:** Well, you look like one. They wrote this down on my crib notes. We'll inspire you. You're so well respected you are now a doctor.

We also have from the University of Ottawa, Dr. Doug Coyle, professor of epidemiology and community medicine.

Welcome to you all.

At 4:30 we're going to have a video conference with Dr. Pascal-A Vendittoli, professor of surgery.

We have a great lineup of people today. I'm going to begin with Andrew Williams, president and chief executive officer.

Welcome. Please begin.

**Mr. Andrew Williams:** Thank you very much for the opportunity to speak with you today. As you mentioned, my name is Andrew Williams, and I am the president and chief executive officer of the Huron Perth Healthcare Alliance. We call it the HPHA. We represent four hospitals located in southwestern Ontario, including the Clinton Public Hospital, St. Marys Memorial Hospital, Seaforth Community Hospital, and the Stratford General Hospital.

As an organization, we employ 1,200 staff, we grant privileges to 160 physicians, and we are fortunate to benefit from over 500 volunteers who support the services we provide. Our annual operating budget is $126 million, and we have a primary catchment population of 130,000 people who live in the two counties we provide service to.

The communities we serve are largely rural in nature. I think that's important because when we're talking technology, one of the more challenging areas to ensure appropriate access is in our rural communities across the country. Farming is the major economic driver. The population we serve is slightly older, with actually one of our census subdivisions being the oldest average age in Canada. Of course that has implications in health care delivery and the services we offer.

I personally have had the pleasure of serving our public health care system for over 25 years and have held positions in some of our largest and smallest organizations, including actually starting my career here in Ottawa. I also survey for Accreditation Canada, which takes me across the country, and when combining this with the experiences I've enjoyed throughout my career, I have developed a pretty good perspective of the challenges and opportunities we face in health care in this country.

I have come to realize that while the scope and size of organizations may vary, the basic principle is the same: namely, being able to directly provide or facilitate the provision of safe, accessible, affordable, appropriate care.

I'm keeping my opening remarks reasonably general, and I'll assume if additional details are of interest we can pursue them during the dialogue period.

When we look at technology in health care, and more specifically at the costs of technology, it is important to understand the degree to which technology now defines us. It wasn't that long ago that people were in hospital for two weeks for gall bladder surgery. Now, through keyhole surgery, they're in and out the same day. It wasn't that long ago that we were typing our health records on triplicate pieces of paper; now we're doing it through voice-activated dictation that goes right to electronic health records. It wasn't that long ago that radiologists were picking up X-ray films and hooking them into the bright screens that you used to see on TV. Now we can have radiologists read digital images from all around the world. So there's a huge change, and it's all driven by technology. When we look at the services we offer as an organization, I would say there's not a single one that is not influenced by technology in one form or another.

The challenge we face is the degree to which technology is available to us, as it varies from organization to organization, from sector to sector, and from province to province. Combined with this, we have a population that is becoming more technologically savvy, and their expectations of what the health care system can and should do for them is increasing daily.

The bottom line, though, is that we will always fall short in our ability to provide safe, high-quality, accessible, affordable care in the absence of a plan that fully maximizes appropriate technology for the people we serve.

I include “appropriate” very intentionally as it does not make sense to have everything everywhere—something that's a bit of a challenge when planning public service delivery, as you would know. A good example of this is that we recently installed a new MRI unit—common technology and well known, I'm sure, to the people around the table. It's in a region that supports eight hospitals. The cost to us was $3.4 million, with annual operating costs of $800,000. It would not make sense to have MRIs in every hospital, although some people would advocate that they would want that because of closer-to-home care. What we need to do is look at what makes sense from an investment point of view, from a health care point of view, and from a regional perspective. Then, within that, make sure patients have equitable access based on their need. When we can't provide the service in a reasonably close geographic proximity, we need to look at technologies in different ways: for example, mobile MRIs that can travel into northern parts of the province or across the country.

I always like to use quotes when I'm talking. One from Charles Darwin sticks out: “It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change”. I think in health care, how well you adopt technology will define how well you survive.

When we look at technology in our organization, we look through a number of lenses. We look at direct patient care equipment: cardiac monitors, dialysis machines. We look at support equipment in the lab, in imaging. We look at hospital information systems, which provide the basic data for the organization to operate, in our case the MEDITECH platform.

● (1535)

We look at the technology that links various health care providers, both internally and externally. We also look at what systems we need to connect to our consumers, to our patients, making sure that we're taking advantage of technology. And then we need to look at the infrastructure. That's often missed, particularly in rural communities. If you don't have a good infrastructure in your community, it doesn't matter what technology you have in your health care system, it's not going to work. So we obviously have to look at a number of different variables when making investments in health care.

All of these perspectives require investments, and unfortunately organizations rarely have the capacity, in either people or money, to maximize investments in all areas. Therefore, clear and thoughtful technology plans are required, driven by safety, sustainability, innovation, and growth.

Currently hospitals in the country are graded on what's called an EMR adoption scale of zero to seven. Our current score is 3.26. This may seem low, but it's one of the highest in our region, which speaks to how advanced hospitals are—or are not—when it comes to technology. Our goal is to be the first rural group of hospitals in the country to be a seven. That will require probably a further $2 million in investment and three years of planning.

We have an annual IT budget of about $2.8 million, largely towards staffing, and it represents about 2.2% of our budget. Hospitals in our region range between 1.8% and 5% of their budget going to IT, and that's not including the technology they would buy, which I talked about earlier, the equipment for patient care. That's for the actual IT costs. There's a significant range in those. We're always looking, as you can imagine, at ways to refine and appropriately allocate costs.

The key for me, though, in this discussion is that technology is really not a cost. I view technology as an investment. Gone are the days when it would have been “nice to have”, when some organizations and communities would have it and some wouldn't. People expect it to be available, and we have an obligation to make sure it's there.

We have made a number of what I think are innovative investments, which I want to just quickly share with you. They speak to the diversity and the breadth.

First is a system called PatientKeeper. It sits on top of our hospital information system and allows physicians to access health records on mobile devices. Physicians can go anywhere in the organization. They can be anywhere in the community. With their iPads, their mobile devices, they can access information on their patients. This allows for real-time access. It allows for an improved dialogue with patients. And it certainly has streamlined our ability to provide care.

The cost for this type of system is a quarter of a million dollars. Any time you make any investment in health care technology, it's fairly significant. It gets more challenging the more rural you are, because you don't have the ability to raise the funds that larger centres do.

The second investment we've made, which I think is interesting—and in fact, we were told we're the only ones in the world doing this—is that we are engaging patients enrolled in our outpatient mental health program in their care through specific two-way video linkages.

Just this past week, in fact, the Minister of Health for the province of Ontario was in our organization allocating additional funds for this.

Each day at a defined time, health care providers connect with specific patients to discuss their care. It's basically a visit to the health care provider every day electronically. You can actually see the patient, which is important in mental health. This check-in really has improved care. This, I believe, is a sign of the future of health care, bringing care directly to patients through technology, thereby ensuring more accessible and more timely care.

The next area to highlight for you is regional programs. One of the best ways to capitalize on technology is to work in partnerships. We have a number of these in place. The one I'll highlight is a 12-hospital laboratory partnership. That's important, because it reduces the requirement of all hospitals to have all technology. It allows you to centralize some of your high-cost technology while ensuring that the high-volume low-cost tests can still be provided at local hospitals. We just facilitated a major multi-year equipment replacement program across all sites, which ensures best price, best safety standards, and best use of staff. It's a very good way of maximizing technology in a rural community.

The last area to highlight is our efforts in connecting community physicians to hospital information systems. Nothing is more important to clinical decision-making than having timely, accurate information. We have structured our HIS so that it pushes out certain pieces of information to family physician offices so that they're better able to manage the care of their patients.

If l, for example, had an X-ray this afternoon at one of our hospitals, my family physician would be able to access that information in her office immediately. That, to me, is a tremendous way to improve health care.

When we talk about information in health care, we often refer to it as e-health, which is sometimes viewed as a bad word, unfortunately. In truth, though, in my view, now we're looking at a new word, which is m-health, which means mobile health. Make no mistake about it, we're at a point in time when mobile devices and information clouds are defining us, and they're defining health care.

Imagine the impact on recruitment if a graduating medical student were to come to a community, mobile device in hand, only to be told she could not use it because bandwidth would not support it. Imagine trying to recruit a nurse who has just come out of an environment in which they were surrounded by....

● (1540)

Do I have a few more minutes, or one minute, or...?

**The Chair:** You have about 30 seconds.

**Mr. Andrew Williams:** Okay.

The bottom line of this little piece is that the recruitment and retention of health care professionals in the absence of technology is almost impossible in today's environment. They expect the tools to be available, and if they're not, they'll seek out communities where they are.

That to me is the biggest challenge we face. It's leveraging technology in a way that maximizes health care but ensures that we can recruit health care professionals to our communities.

**The Chair:** Thank you very much, Mr. Andrews.

We'll now go to Dr. Carolyn McGregor.

**Dr. Carolyn McGregor (Canada Research Chair in Health Informatics, Professor and Associate Dean of Research, Faculty of Business and IT, University of Ontario Institute of Technology):** Bonjour. Good afternoon.

Madam Chair, members of the government, and members of the New Democratic Party and the Liberal Party, thank you for the opportunity to present to this House of Commons Standing Committee on Health my views on the costs of adopting new technologies in the health care system.

My name is Professor Carolyn McGregor, and I am the Canada Research Chair in Health Informatics at the University of Ontario Institute of Technology, at Oshawa, in Durham region.

I'd like to talk about the costs of implementing and using new technology in the health care sector, specifically as related to transforming health care through the adoption of new technology, and how doing so can impact upon the patient's journey, because this is a fundamental focus area, and about integrating that new technology with other existing technologies and analyzing the implementation and integration with analytical tools.

Patient journey modelling is using business processes to create diagrams that show the path a patient takes through the health care system: what health care workers see, what steps and procedures are performed, which technologies are used to support their care, and where the information about them is stored within the health care system. The ultimate goal is to reduce duplication, build efficiencies, streamline processes, and improve patient outcomes.

I have led collaborative research engagements between the University of Ontario Institute of Technology and two Ontario mental health providers, Ontario Shores in Whitby and Providence Care in Kingston, for this express purpose. Both were planning to move to new electronic health records.

The first engagement was with Ontario Shores. The move to the new electronic health record had the support of the senior leadership team. We worked with their health informatics department to help them determine what types of personnel should be involved in the project in addition to them. We assembled a team of health care workers from various areas of Ontario Shores and various roles, including a psychiatrist and nursing staff from several of the units.

We gathered some initial information about the patient journeys for a couple of their units and were then able to show the initial diagrams for their review. We were able to show that our diagram approach allowed them to see the patient journey more clearly than just doing a flowchart or describing what they do in words would permit. In the hour that followed, they were able to recognize that there was duplication from one role to another that could be removed to create immediate benefits for their patients.

To create the models for the whole organization would take time, so we provided them with some of our fourth-year health science students to assist with creating the models, as part of an all-year research course. This provided fantastic real-world experience for the students and gave Ontario Shores the additional resources they needed for the task. The models contained as much information as possible about the amount of time activities took, which health care workers were involved, what forms and systems, etc., and if there was a wait, they reviewed and noted how long it could be.

Through the remainder of the year and through summer internships, the students and project team worked to adjust the new models to show what life would be like with the new electronic health record. They were able to see what activities could be removed altogether, as they would be automated by the new electronic health record, such as communicating information between departments. They were also able to see what activities would require staff in various roles to work differently as they began to work with the new electronic health record.

These new and old models were put on the walls in the lunch and meeting rooms all around Ontario Shores so that all the staff, as they went about their work, could stop to look and think about how their work was going to change. This really helped the staff to see how their working environment was going to change and to see what that change would mean for their patients and the caregivers. We provided Post-it notes on which they could put comments on the old and new models, so that they could provide input as well. We followed similar steps in our partnership with Providence Care.

The results of the two partnerships clearly outlined current processes. We identified potential areas for change, gaps in processes and policies, and a pathway to improved care. Ontario Shores is now using the new electronic health record, and Providence Care is well on the way to full adoption. Our collaboration with Providence Care was reported in the February 2012 issue of *Hospital News*, on page 32.

As for the students engaged in the research, some were offered positions within the organizations, some have gone on to medical school, one became a consultant in the area, and the others continued at our university, in graduate studies.

The benefit of patient journey modelling is that it goes beyond current practice. It will allow you to appropriately plan for future adoption of new technologies and processes and for how best to integrate them into the health care system.

● (1545)

My primary research area is the creation of clinical decision support tools or analytical tools that help clinicians in critical care settings, and in particular in neonatal intensive care. I collect physiological data from medical devices within neonatal intensive care units for every breath and every heartbeat to see whether, through this data, we can detect illnesses such as infection earlier or can improve surveillance to reduce such complications as blindness or brain damage.

This is one of the earliest research projects in health care under the area known as Big Data. This research project, known as Artemis, is in conjunction with the Hospital for Sick Children in Toronto and the IBM Canada Research and Development Centre. We have partners in the United States and in China.

This research is also one of the flagship strategic initiatives of the FedDev-funded Southern Ontario Smart Computing Innovation Platform. SOSCIP is the acronym. It is also a recognized research project of the CIHR-funded Canadian Neonatal Network. Eventually this research will lead to new decision support tools for improved patient care, but this type of transformation will require a dramatic change to clinical guidelines, and patient journey modelling will help us to address how best to implement these transformations.

The costs go beyond the technology itself. Budgets for technology adoption within health care need to include funds to support informaticians and time release for clinicians and practitioners so that accurate patient journey modelling can be developed to support the new technology adoption.

The American Medical Informatics Association, together with the American Board of Medical Specialties, has defined recommendations for a clinical informatics subspecialty within medicine. Within the recommendations for that subspecialty, they state that clinical informaticians need to use their knowledge of patient care, combined with their understanding of informatics concepts and methods, to assess information and knowledge in order to characterize, evaluate, and refine clinical processes, to help develop and refine clinical decision support systems, and to lead across all of those initiatives.

The establishment of clinical informatics as a recognized subspecialty within the medical profession in Canada will reflect positively on the maturation of technology adoption in health care. Patient journey modelling essentially addresses Health Canada' s stated initiative to implement business process changes for efficiency gains. This is an initiative I fully support, as it provides the mechanism to identify efficiencies, streamline processes, and provide better patient care at reduced cost.

We also need to plan for long-term costs associated with fully integrating new technologies with other associated technologies within the health care system. Technologies need to be able to send and receive information in direct support of the patient journey easily, efficiently, and accurately.

In the case of Ontario Shores, they require technology for the electronic health record, but also systems for pharmacy, bed allocation, finance, accounting, billing, human resources, and analytics, and these are not all usually available within the one software solution.

Finally, the true costs, benefits, and savings of each new technology adoption are best understood through the use of organization analytics with metrics from before and after the business process change. Funding must be allocated to the establishment of new or adaption of existing analytics tools to enable the recording and visualization of the metrics relating to increased efficiency, reduction in medical errors, and improved patient outcomes.

In Ontario, the balanced scorecard has been used as a standard way to report health care organization performance. This approach enables not only the reporting of financial results but also patient quality outcome metrics, together with information about the degree of organizational improvement. We need to ensure that as much as possible, the information to create these balanced scorecards or other forms of organization performance reporting is gathered automatically from the other computing systems to ensure accuracy and timeliness of information.

In closing, funding for only the technology itself—the hardware, the software, and the networking—is not enough. Policies and funding frameworks are needed that holistically support technology adoption in health care, if we are to truly capitalize on the benefits of new technologies leading to better health care for all Canadians.

As a Canada research chair, l would be pleased to continue to support this working committee to help develop these policies and funding frameworks.

*Merci beaucoup*. Thank you.

● (1550)

**The Chair:** Thank you very much, Dr. McGregor, for your presentation.

Now we'll go to Mr. Branden Shepitka.

**Mr. Branden Shepitka (Emergency Department Health Record Project Lead, Ramsey Lake Health Centre, Emergency Department, Health Sciences North):** Thank you, Madam Chair and committee members, for the opportunity to speak before the Standing Committee on Health today. I'd like to first take a moment to introduce myself. My name is Branden Shepitka. I'm a registered nurse by training, with a clinical background in emergency and trauma care. Currently I'm the emergency department electronic health record project lead at Health Sciences North, Ramsey Lake Health Centre. In this role, I'm responsible for the development and implementation of an electronic health record within our hospital's emergency department.

I also maintain a clinical practice as a sexual assault nurse examiner with our hospital's violence intervention and prevention program, and I'm clinical faculty with the Laurentian University school of nursing. I have previous experience as a board of directors' member of the Canadian Nurses Association and have been previously the president of the Canadian Nursing Students' Association.

Health Sciences North, Horizon Santé-Nord, is a 454-bed academic health sciences centre based in Sudbury, Ontario, affiliated with the Northern Ontario School of Medicine, Laurentian University, Cambrian College, and Collège Boréal. Our emergency department is one of the busiest in the province, providing care to approximately 63,000 patients each year, and is one of only 11 hospitals in the province of Ontario designated as a lead trauma centre.

Our facility is also a founding partner of the North Eastern Ontario Network, which is a consortium of 22 hospitals within the North East Local Health Integration Network, who share an integrated patient record strategy to allow seamless delivery of health care services within northeastern Ontario.

As part of this vision, each facility has adopted the MEDITECH electronic health record system. While system-wide cost savings have been realized through our participation in the North Eastern Ontario Network, there have been a number of areas where significant cost has been incurred or will be incurred in the future related to our transition to an electronic health record.

Our current implementation is happening in two phases. Our phase one originally was supposed to go live last month. However, we've delayed until the fall. That includes nursing documentation and clerical documentation. Phase two will occur next spring, spring of 2014. That will involve physician documentation as well as computerized physician order entry.

I'd like to highlight a few areas where we have incurred additional costs that were not expected at the beginning of the project. The first of such areas is in physical infrastructure. Although our facility only opened in March 2010, it has become evident through our implementation process that the facility was not designed for electronic practice. Our emergency department lacks ethernet connections and power outlets for additional computer workstations, and we're now having these installed post-construction at significant cost over what would have been incurred if installed during initial construction. These additional costs take into consideration the need for work to occur during nighttime hours to limit interruption to department operations and stringent infection control procedures required during construction in a patient care environment.

Related to physical infrastructure is also the ability to implement clinical tools to support electronic practice. A systematic review of the literature published in 2009 in the *Journal of the American Medical Informatics Association* supported the use of mobile, handheld technology in facilitating rapid response, medication error prevention, and data management and accessibility. Our original implementation plan included the deployment of wireless devices for use by physicians and nursing staff for bedside documentation and patient data access. However, through an analysis of our infrastructure, we determined that our facility did not have a clinical-grade wireless system and that a multi-million dollar investment, approximately $2 million to $3 million, would be required to upgrade even just the emergency department to be able to have a wireless network and actually use handheld devices. We're now having fixed computer workstations installed throughout the department, which is a barrier to clinical adoption by both our nursing staff and our physicians.

As part of our implementation of electronic documentation, as I mentioned, we're also proceeding with a computerized provider order-entry system, where physicians and nurse practitioners enter their own orders in the computer, negating transcription and interpretation errors.

A study published in the 2006 *Journal of Healthcare Information Management* examined the effects of implementing computerized provider order entry and nursing documentation on emergency department nursing workflow. It found that a majority of nursing staff felt positively about the efficiency provided by electronic documentation templates, leaner processes for non-nursing interventions such as diagnostic imaging, and increased clarity of physician orders. However, nurses also commented on additional required functionality that would improve workflow. These solutions increase clinical adoption of the system but also have the potential to incur substantial capital and ongoing maintenance costs, in terms of both the software and hardware implementations and human resources.

At our facility we're currently investigating a number of solutions, including third-party clinical content to enhance documentation, interfacing systems to integrate patient vital sign information directly into the patient record without it having to be entered separately by the nurse, solutions to allow for proximity-based computer sign-on to secure patient information, order sets to improve clinical workflow, and evidence-based patient discharge instructions to improve continuity and quality of patient care.

● (1555)

Through implementation we've discovered that while many of these systems require a significant investment in order to implement within one department of an organization, only a small additional investment in comparison is required to expand the implementation throughout the entire facility. However, mechanisms and funding are not currently in place to support these capital purchases throughout the organization.

Another area of cost that we've encountered is in software cost. In addition to our expected costs—the capital purchase of our electronic health record module and software licensing fees—we've had many unforeseen costs. These costs are for items including software upgrades to medication-dispensing machines to allow integration with an electronic medication administration system, and custom functionality requests from our health record vendor. These custom requests were extremely unexpected. Our initial thought was that when we purchased the health record module it would allow us a great deal of the functionality we required. However, as we began building and testing the system, we found a number of areas where a lack of functionality in the system posed a threat to either clinical adoption or patient safety.

Canada Health Infoway has been a key driver of Canada's transition to electronic health record systems; however, areas for growth in the world of health informatics in Canada exist. Even within individual institutions, a divide continues to exist between health informatics, clinical and information technology staff, and between the teams managing individual modules of the electronic health record. Essentially, we are still functioning in silos, although the clinical users and the IT users really do need to work together to make a system that both works on the back end for data collection, data analysis, as well as being functional for clinical end users.

Mechanisms should be advocated for that allow for collaboration and best practice sharing between individuals across organizations, and also a more integrated strategy must exist both internal to and external between organizations in their development of electronic patient records in order to ensure continuity of care both within institutions and between communities.

Additionally, funding should be targeted toward supporting capital purchases by organizations to upgrade infrastructure related to electronic practice, so that transitioning to this practice model does not lead to inefficiencies, increase in workload, and disruption of workflow for health care practitioners.

The benefits of electronic health record systems are numerous, but a large amount of funding for capital purchases and human resources are required for a proper implementation to meet clinical needs.

Thank you again for this opportunity to speak.

● (1600)

**The Chair:** Thank you very much for your very insightful presentation.

What we'll do is start with the Qs and As—

**A voice:** What about Mr. Coyle?

**The Chair:** Oh, I'm sorry.

Go ahead, Doctor. My apologies. You're kind of over there....

**Dr. Doug Coyle (Professor, Epidemiology and Community Medicine, University of Ottawa):** I tend to try to hide in the shadows, so it's okay.

My name is Doug Coyle. Thank you very much for giving me the opportunity to present my views today.

I am a health economist and have worked in this research area for the past 24 years. I am based at the University of Ottawa, where I teach graduate students on the methods to appraise new technologies in terms of their costs and benefits and whether or not they represent value for money.

I've conducted a number of studies assessing the cost-effectiveness of a range of technologies, including drugs, devices, vaccinations, screening programs, and exercise programs.

I'm a member of the Ontario Ministry of Health's Committee to Evaluate Drugs, where I help make recommendations on the funding of new pharmaceuticals. I was previously a member of the Canadian Expert Drug Advisory Committee, which gives similar advice at a pan-Canadian level, and also of the Ontario Health Technology Advisory Committee, which makes recommendations on the funding of new technology to hospitals.

I have in the past consulted for industry, but have no such commitments at present.

The topic today is the cost of adopting new technologies into the health care system. I'm going to take a very broad definition of what we mean by technology. I'll assume that we refer not just to devices, diagnostic tools, and information technology, but also to drugs, health care practitioners, and other health-related services, including those related to the prevention and not just the treatment of disease.

I have three points to make today. The first point I'd like to raise is that not all new technologies represent value for money. Despite the claims of manufacturers, most new technologies are unlikely to save money. The downstream costs that are averted through their adoption are not sufficient to cover the upstream costs of their purchase.

We need to assess whether prices given for new technology are justified given the benefits that are being forecasted. Thankfully there are techniques to assess the cost-effectiveness or value for money of new technologies. These techniques are mature. We can make decisions using all available evidence through synthesizing the information available. We should focus on the opportunity costs of adopting new technologies. In other words, what are the health care interventions and disease prevention interventions that we cannot adopt because of the costs of taking on these new technologies?

I'd like to give you today the example of Soliris. Soliris is a new drug for the treatment of a disease called paroxysmal nocturnal hemoglobinuria. Thankfully, we call it PNH, which makes it a little easier for us to follow.

PNH is a rare blood disorder. Soliris is effective. It reduces the incidence of thromboembolism, the major cause of mortality in this disease, and reduces the need for blood transfusions, the major management cost of the disease. However, Soliris costs $500,000 per patient per year. The funding of Soliris would cost almost $25 million per annum even if only 20% of those eligible would receive treatment. With that $25 million, we could provide many other services in terms of health care to Canadians, which would provide much greater health benefits.

The second point I want to raise is how best to provide support for innovative products. When I present my research, such as the Soliris study, a question I often get from the audience is, “When will Canada start paying for innovation?” The implication of this question is that by restricting or denying funds to new technologies, we are ignoring innovative products. However, we have to define what we mean by innovation. Innovation must include considerations of effectiveness and cost-effectiveness.

In Canada we do reward innovation. We provide patent protection to new products and we give tax credits for research and development. Funding technologies that do not represent value for money simply leads to our inability to fund other technologies that provide greater benefits to the population as a whole.

Much of the focus on innovative products and their lack of funding, and the focus on new technologies rather than existing technologies, emanates from industry, those who support industry, and those who industry supports. We need to take a more considered approach to funding decisions relating to all technologies, not just those that are commercially sponsored.

We should ensure that funding is given to those technologies that represent value for money, including those that are not commercially sponsored. We need to encourage risk-taking in our manufacturing industry related to health care technologies. By guaranteeing funding to new technologies, we are not helping industries. Industries that become too reliant on government subsidies and preferred supplier arrangements stagnate and decline.

● (1605)

We need a much more transparent process in making decisions as well as transparency in agreements between manufacturers and health care payers. Such agreements at the provincial and federal level are typically confidential. Openness encourages innovation and assures fairness.

The third point I'd like to raise is the one I really want you to take home—the need for a more comprehensive approach to technology funding. The focus currently is very much on the funding of new technologies that have a commercial interest. This leads to funding decisions that do not recognize the current funding situation, such as the fact that we have limited resources available for health care, nor does it consider all the alternative technologies available for health care.

In economics we call this isolation bias: the focus on the decision of funding one technology while ignoring all the alternatives available. It causes bias because individuals have the idea that we can fund everything if we only consider one technology at a time, as opposed to taking an approach that considers all available technologies.

We need to consider all the technologies that are out there. Many of these existing technologies are under-funded, yet have the evidence to support their effectiveness and cost effectiveness. Many of these do not have commercial sponsors.

I'm going to give you a list of some of the technologies that have been shown to be both effective and cost effective:

-physiotherapy appointments to assist recovery from and the prevention of surgery can actually save us money;

-chiropractic care for lower back pain;

-exercise programs for patients with chronic illness, which have been shown to be more effective and less costly than drug therapy;

-elimination of co-payments for necessary heath care such as transportation by ambulance;

-improved housing conditions to reduce health care expenditures in the long term;

-providing well newborn visits by public health nurses;

-providing hospice respite care, so those who look after their loved ones can have some breaks and carry on providing unpaid services, which saves our health care system a very large amount of money;

-providing services to support the mentally ill living in the community, which is one of the few technologies we have shown that actually saves us money in the long term;

-providing harm reduction services such as needle exchange programs and safe injection sites.

These technologies suffer from a lack of commercial interest in promoting them. No one is conducting research to highlight their benefits, and there is no limited lobbying, because of the lack of a commercial sponsor.

To summarize, I'd like to reiterate three points. First, not all new technologies represent value for money. Second, innovation must mean representing value for money and is rewarded through patent protection. Third, decisions relating to health care funding of technologies cannot be taken in isolation and require consideration of all potential technologies, not just those for which there are commercial interests promoting them.

I thank you all for your time.

**The Chair:** Thank you, Doctor.

We're expecting another doctor to come on, but we're experiencing a few technology problems. So we're going to go into Qs and As. If you'll bear with me, as soon as the doctor comes on, we'll interrupt the question period to hear his presentation.

We will begin with Ms. Davies.

● (1610)

**Ms. Libby Davies (Vancouver East, NDP):** Thank you very much, Chairperson.

And thank you to the witnesses coming today.

I think as we get into this study more we're beginning to realize how complex the issue is that we're taking on in looking at technological innovation. The questions that keep coming up for me...there are two questions, really, one of which is, what is the federal role? Health care is delivered provincially, but there is a federal role in terms of oversight under the Canada Health Act and in terms of research. The other question that keeps coming up for me, which you've all tackled, but particularly Dr. Coyle, is really the value for money. I think we realized at some point in our study that we actually needed to speak to people who are researching the economic issues in health.

Most of the discussion today is focused on acute care facilities, and I find that very interesting. I'd like to begin with you, Dr. Coyle, because I see that you're also involved in community medicine.

What I really wonder is who's doing the research, or is there research being done, more at a primary level of care? If we shifted to that and we focused more on keeping people out of the emergency rooms, keeping people out of acute care, and having much better primary care, which was multidisciplinary, where there was an array of services, community-based, with community involvement so that we could address some of the social conditions that you have raised here today, to me that makes sense. It seems intuitive that this is the right way, but of course one always has to look for the evidence.

I wonder if you can address that and tell us, first of all, if you have knowledge in an expert way about that evidence of value for money, if we have that kind of shift. Secondly, if that is the case, what should the federal role be, then, in really advocating for that and trying to make that shift in this very complex system we have?

**Dr. Doug Coyle:** Thank you.

I will try to answer the first question. I'm not sure I can provide much input for the second.

There is research that's been done on trying to reorganize primary care to try to make it more efficient, and doing some of the services you've mentioned, which is the delay of acute emergency care, which occurs because of lack of primary or community medicine initiatives. There's a fair amount of research being done, but the research funding for that pot is pretty limited. It's research that would have to compete with what's called the Canadian Institutes of Health Research for funding, and it's up against people who want to do research on new drugs, new technologies, etc.

Part of the problem, as I said before, is the issue that there's not much of a commercial interest in terms of trying to improve primary care and trying to make it more efficient. Therefore, that's not a very, shall I say, sexy topic for people to do research, and therefore there isn't much money available. Much of the work that gets done, in terms of presenting the value of money of new technologies, is industry-sponsored. When I sit on committees such as the Committee to Evaluate Drugs, in Ontario, the only research we see is industry-funded research because the Ministry of Health doesn't have the resources available to look at the cost-effectiveness or value for money for technologies that aren't being pushed by industry.

Either we have a mind change in terms of the fact that we need to provide a pot of money to evaluate existing technologies that have no commercial sponsor or we're going to still be stuck with the situation that the type of research that's being done, in terms of primary care, is fairly limited in comparison to other technologies.

**Ms. Libby Davies:** And the federal role? You've identified one already, which is that we need to have more research done.

**Dr. Doug Coyle:** I think the idea that CIHR should focus on the evaluation of the organization of health care, not just the evaluation of the value of new technologies, would be a good step forward.

**The Chair:** You have a few more minutes.

**Ms. Libby Davies:** Okay.

I'd ask the other witnesses if they'd like to weigh in on this. You're more in the acute care field, but do you agree that if we had a shift where we were focused more on primary care and innovations in that area we would actually be helping the job you have to do? I know you presented us with some very specific issues that you're facing, but is that kind of shift something you advocate for in your expertise?

● (1615)

**The Chair:** Ms. Davies, Mr. Williams would like to make a comment.

**Mr. Andrew Williams:** Even though I work in the health care sector, I will say to anybody who listens that the most important part of our health care system is our primary care, the health promotion, disease prevention components. I think if you look at some of the initiatives we're doing, one is aimed specifically at keeping people out of hospital by providing care at home. The other is ensuring that the primary care providers have information on their patients in real time. I think that's probably the biggest barrier to research in primary care. It's the lack of electronic health records to be able to pull information in an easy way.

We've seen in the last five years, with the introduction of family health teams in the province of Ontario, a much more robust ability to generate data. I think there are really great opportunities now if we can approach the physician groups that are now in place across the province with specific questions that will allow research. I think it's really important.

The sustainability of the acute care system depends on how strong the primary care system is, quite frankly, and how healthy the population is. Isn't that right?

On the role of the federal government, personally, I feel there's a very important role around ensuring standards, ensuring that the five principles of the Canada Health Act are adhered to provincially, and ensuring that infrastructure is available in a consistent way across the country. Canada Health Infoway is a good example of that, where we can access pipelines for data flow, which is hugely important to our ability to provide care.

**The Chair:** Thank you very much.

We'll just have a quick comment, Dr. McGregor.

**Dr. Carolyn McGregor:** I just wanted to comment that while my research around Artemis was really focused on what we're doing in neonatal intensive care, we see benefits when you step down a baby and graduate them and take them...[*Technical difficulty—Editor*]... monitoring, and when you're trying to monitor a patient in a home, if they're older, before they go into intensive care. The technologies we're building have direct applicability in the primary care setting because we're able to create this complex observation, and then we can watch patients in their home if they're developing infection or other things. So there are relevant benefits in this.

**The Chair:** Thank you so much.

Dr. Carrie.

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

I want to continue with Dr. McGregor on the thought process she was just going through. First of all, it's great to have all the witnesses here, but especially somebody from Oshawa. I think all of us can tell from your accent that you're from Oshawa.

We've heard a lot about Canada Health Infoway and the government investments in research, but we've also heard a little bit about challenges with physical infrastructure. At the end of the day, it's all about the patient and the services and how we can better serve patients in Canada. I was wondering if you could provide the committee with more details about cloud technology and computing-based software, and how that would impact on the cost of innovation and improve the quality of care, things like access portability—things along those lines. Perhaps you could comment for us.

**Dr. Carolyn McGregor:** I'm going to comment as well that in a rural or remote setting you're really limited in your ability to expend money for certain care practices. That's where cloud computing platforms can really be of great benefit right across the country. What are they? It's a means of providing a service to the health care organization without their having to pay for a full holistic package, and having it supported inside the organization. Whether that be through an electronic health record or whether it be the acute care support that we're trying to provide, you have that mechanism to work with economies of scale, and you have a number of hospitals in their own isolated environments but working across and using a cloud infrastructure platform.

I can give a number of reasons that this is a benefit, and one particularly from the neonatal intensive care setting. At the moment, we can have premature babies born in the north of Canada. Unfortunately, when these babies are born they have a very low immune system and they can develop an infection in the hospital. When they're trying to support that baby, they're usually finding out about that infection when they're quite unwell. Currently they're on the telephone to a neonatologist in an open centre. It's our goal through the platform we're building that we'll be able to watch every baby, ultimately across the country, no matter where they are. We can give them the most expert care we can through computing systems wherever they're located, and we can track when they're starting to develop certain conditions and intervene straight away.

The benefits of that cloud computing infrastructure is that you can give the maximum benefit for patient care in any health care facility across the country.

Speaking also to what the government can do, I fully endorse what Mr. Williams was saying before, about that need for holistic policy infrastructure in mechanisms like Canada Health Infoway. There's a definite role for a national holistic view.

● (1620)

**Mr. Colin Carrie:** Thank you very much, Dr. McGregor.

You touched a little bit on clinical informatics. You talked a bit about efficiencies and streamlining and better care. You talked a little bit about how taking a business approach using analytical tools, technology, and score cards could help decrease errors.

What do you think the challenges are to getting the health care system to implement these types of business approaches?

**Dr. Carolyn McGregor:** I think one of the biggest challenges is that every health care role within the organization sees the service it provides as opposed to seeing the holistic overall view of the experience a patient has within a health care organization. Whether they have a chronic condition or an isolated event brings them into the environment, through their lifetime they are going to deal with a number of different people. You need to look at that holistic view across all of those different health care providers to be able to provide that integrated care.

When you look at it from a business perspective, if you can work with health care providers to allow them to change their focus—and we were able to do this very successfully with both Ontario Shores and Providence Care—that can change their perspective and how they think about the way they work.

We described narratively the same journey of a patient in two different ways. We had it as different roles: "I see these types of patients. I do this as the psychiatrist. I do this as a nurse. I do this." We asked them to construct what the patient's journey looks like and they couldn't do it. But when we got them to step back and actually see what the experience was like for the patient, then they could do that.

One of the major things that needs to occur is that reorganization of thinking. Certainly the new CIHR initiative on patient-centred research and the SPOR initiative for patient-oriented research are starting to help people to really put the patient at the centre and first, as well as helping a lot with the economic assessment.

**Mr. Colin Carrie:** That leads me to my next question. We've heard a little bit about the challenge of the cost of technology and about how sometimes we aren't really going to save overall by implementing the new technology.

The way I see it, if we change the technology without actually changing the system we're utilizing, we can buy the most expensive things, but maybe we won't be implementing them and using them to do the best we can for Canadian patients.

I wanted to ask if you could expand a little bit on what you said earlier about patient journey modelling and looking at outcomes. You talked a little bit about this diagram approach. It sounds like a very patient-oriented way of looking at things as far as costs, quality control, and things like that go. I was wondering if you could relate how this could be translated into the overall health system, but also how you could utilize this type of method to see what we're going to get in terms of costs versus reward.

**Dr. Carolyn McGregor:** One of the things I found very interesting when I was listening to Mr. Shepitka's presentation was the discussion around some of the challenges. One of the things that stuck in my mind was that he said some of the health care workers have great ideas about ways they now want to change things now that they have seen what the new environment will be like. They want to change the way they will work with the electronic health system, but it's going to be at a cost.

I thought that was a really good example of something we learned through the way we were implementing. We did a lot of planning. We really spent a lot of the time beforehand visualizing and helping people to see how they were going to work. They may say to us, "If you just put a workstation out in the hallway as you're planning"—because that's what the system requires—"then I'm going to have to go in and see my client, I'm going to have to write notes, and then I'm going to have to come outside and type them in." They could automatically see that was going to lead to medical errors.

**The Chair:** Thank you, Dr. McGregor.

We'll now go to Dr. Fry.

**Hon. Hedy Fry (Vancouver Centre, Lib.):** Thank you very much, Madam Chair.

I want to thank everyone for their presentations, but there are some things. I agree with everyone who talked about the fact that outcomes, efficiency, quality of care, and timeliness of care are all things we should be rewarding and creating incentives for as we go about building a system based on patient-centred care. Primary and community care models will keep patients out of hospitals, and this is all good.

There are a couple of ethical things that arise out of something Dr. Coyle said. I'm not agreeing or disagreeing with him; I just want to clarify this. There have to be some commercial considerations when you're looking at research. If a drug, a device, a new treatment, or a new way of delivering care has proven to be good, one would want to commercialize it and use it.

At the same time, what are we going to do about patients who cannot be kept out of hospitals? We cannot do prevention and promotion to keep them healthy, because they have certain diseases that are rare or that may or may not be genetic. Are we helping to treat those patients if all we do is look at the cost? Are we going to be denying patients who have rare diseases and are going to be costly to the system because there are a small number of these people and it's the only way to keep them alive? Are we going to suggest that we look at ways of deciding who should get what care, that we ration care for people who do not make up a large portion of the community?

I would like to have you clarify these things. I think they're very important. I agree with all of the things you've said, but there comes this flip side to it and this ethical model that one has to consider. To whom do we say, "Sorry, baby, there are only 20 of you in the country and we can't be bothered to keep you alive"? I know you're not saying that, but I'm saying that is a slippery slope. How do we deal with not going down the slippery slope but still look at evidence?

● (1625)

**Dr. Doug Coyle:** It's a good question.

I didn't mention this earlier because I wasn't sure it would be coming up in the discussion today; I'm a member of the drugs for rare disease working group in Ontario. We have developed a completely new framework for making decisions about technologies for rare diseases, which is different from the framework that's made for common diseases, mainly for the reasons that you have suggested already today. Rare diseases are different for a number of reasons. They're different because we don't have as much natural history. We don't actually know what happens in these diseases. They're very heterogeneous. They're not homogenous, like some of these heart failures that have a fairly standard flow of patients. Rare diseases tend to be very, very different for individual patients.

We don't have the evidence for what's effective to the same degree. Because there are not enough patients to study, we don't know whether or not these new technologies work. As I mentioned already, these drugs and other technologies are very, very expensive: it's $500,000 per year for Soliris, which is supposed to be the most expensive drug in the world, and there are many other rare disease drugs that cost over $300,000 per year per patient.

We had a focused approach in Ontario to try to find a way to fund these drugs by giving them to those patients with rare diseases where we think they might work, and then following the patients to see whether or not they do work, and then denying care or taking therapy away when there's evidence that the drugs aren't working. There are approaches to take to do this.

However, the ethics you're looking at are very individualistic ethics. What's the right of the one patient with the rare disease? We have to take a more collective ethics approach as well. If we decide to fund a technology for which the benefits are not substantive compared with the $500,000 a year that it costs to purchase the drug, then we're denying health care to other individuals. The collective ethics say we should do what's best for society in general.

We have to weigh it all up. It's a very difficult to weigh up the demands of individual ethics versus collective ethics. Those are decisions that, I have to say, politicians have to make. They have to make those decisions, because they represent the society in general. We have to realize it is not simple. If we decide to fund these technologies, we are necessarily denying care to other patients with more common diseases.

**Hon. Hedy Fry:** I agree with you that it's not simple. I'm asking you whether politicians are the ones who should be making those kinds of decisions. As a physician, I can tell you that when my patient comes to me with a rare disease, my first duty is to my patient, and I have to do everything I can. There's going to be a huge push-back on this. Politicians won't want to make these decisions, because there would be a backlash from the people who suffer from these diseases. They will say, “Are you telling me that I'm not worthwhile, that I have no value in your society?”

It is a difficult thing for politicians to do, as it is a difficult thing for physicians to do. The big question is, who's going to bell that cat and make the decision on what those guidelines are going to be? Have those guidelines been made? What are they?

● (1630)

**Dr. Doug Coyle:** In Ontario, there is a Citizens' Council. The Citizens' Council has explored the issue of rare diseases and has made recommendations on how we should make funding decisions concerning treatments for rare diseases. I suggest you look at that approach that is taken there. They have recommended an approach that is very similar to the approach that has been adopted in Ontario by the drugs for rare diseases working group. It's recognizing the special case of rare disease, but it's not as straightforward.

**The Chair:** I want to give some time to Mr. Williams as well. He wanted to answer that.

Can you go ahead, Mr. Williams? We have one minute.

**Mr. Andrew Williams:** Obviously, treating people with rare diseases is hugely important, and I think the system has other areas that need to be focused on to find efficiencies.

In Ontario, there's a major initiative currently looking at the high users in the system, not those who have true needs but those who just use the system a lot. The numbers are staggering. Upwards of 80% of our resources are consumed by 5% of the population. So it's not looking at the people who need it; it's looking at those who are using the system and don't need it.

Part of the challenge for us is that because we don't have technology and information systems that connect primary care with hospitals and with community, these people are falling through the cracks.

If we can focus on that population, we can free up a lot of money to ensure that the people who truly need it have it on a go forward basis. That requires political fortitude, because you're telling people that they've used the system, but they have used it inappropriately.

**The Chair:** Thank you, Mr. Williams.

We're going to suspend for one minute to allow Dr. Vendittoli to join us.

● (1630)

(Pause)

● (1630)

**The Chair:** We'll resume now and go right into your presentation, Dr. Vendittoli. You have 10 minutes and you may begin now.

[*Translation*]

**Dr. Pascal-A Vendittoli (Professor of Surgery, Funded Clinical Researcher, As an Individual):** Good afternoon.

Allow me to introduce myself. My name is Pascal-André Vendittoli. I am an orthopedic surgeon and professor at the University of Montreal. I receive funding from the Fonds de la recherche en santé du Québec. My research program involves the clinical assessment of new arthroplasty technologies for the lower limb. The inclusion of new technologies in clinical practice is a key aspect of my research program.

I will attempt to explain how we assess new technologies and their benefits in an orthopedic context. As you will see, what I will explain can apply to all areas of health care. We will mainly be discussing the use of new implant technologies. When it comes to implants, we are not talking about medication, but technological tools and devices which are implanted in certain patients, which engender a major proportion of health costs.

This is not unique to Canada. Across the whole world, the use of implants and their introduction into clinical practice are different from what is done for medication. Indeed, the various design and marketing stages medications must go through do not apply here. Some very innovative people in the field working in Sweden, including Henrik Malchau, have developed a strategy to introduce new technologies which they've called “Stepwise Introduction of Innovation into Orthopedic Surgery.”

This technological development includes four main stages: preclinical assessment of the implants, clinical assessment with specific methods to permit the assessment of these implants in the short term, the use of randomized controlled trials using patients, and finally, the marketing stage, during which the effect of these implants will be observed in patients, through registries, in populations such as Canada's.

When faced with a clinical problem for which a new technology is available, as clinicians, we must ask ourselves the two following questions. What results are we obtaining from the treatments we are currently using? What costs and risks are associated with the new treatment being offered? As you can imagine, if in most cases we have a very effective treatment for the condition, the new implant will have to be highly effective and outperform the treatment that is currently being used.

In most cases, when it comes to orthopedic surgery, we have very effective treatments. Take for example a total hip replacement. As you no doubt are aware, that treatment has the same cost-effectiveness as coronary bypass surgery. In all the countries of the world, it is used as an indicator to measure the effectiveness of a health care system.

Here are two examples of implants that have been on the market for over 25 years: a Corail femoral stem and a CLS stem. We have results from patients who received the implant 15 and 20 years ago with a success rate of approximately 98%, which means a failure rate of only 2%. These implants, for example, are quite inexpensive. In fact, the price is around $1,200; the price varies according to the annual rate of inflation.

However, manufacturers are currently developing new implants of all shapes and forms. For example, several of these implants are approved by Health Canada each year then marketed. As you can imagine, these implants are far more expensive than conventional implants and are put onto the market without any assessment of their clinical value.

● (1635)

Let us look at a very simple example. The Accolade implant was marketed by the Stryker company about seven years ago. After only five years, its failure rate was 5%. That femoral stem had been approved by Health Canada although its initial cost was two to three times that of conventional implants. If you consider that its failure rate is about four to five times higher than that of an implant being used for the last 15 to 20 years, you can see monster costs for the health care system.

The company recalled this implant in 2013 and replaced it by the Accolade II stem, which was just approved by Health Canada once again. You must understand that manufacturers are putting implants on the market here in Canada and elsewhere in the world in order to maximize their own profits even if their implants have not demonstrated that they are more beneficial than other established products.

Here are some other examples. Some implants look alike and the photographs seem identical. With respect to hip resurfacing, a Smith & Nephew implant demonstrated excellent results. After 10 years of follow-up, the failure rate was only between 2% and 5%. Since then, the company has marketed a similar product whose failure rate is 20% after five years. For the health care, that means many revisions, with all the associated costs, for an implant that was not sufficiently tested in a clinical setting before being marketed here.

There are many other examples. I could spend a whole hour showing them to you. There are cone-shaped modular stems that will fracture, and implants that cost the health care system a great deal, without presenting any proven clinical advantage. They were approved by Health Canada because they resembled older implants which had worked quite well.

We find ourselves in a situation of chaotic innovation in the world of implants. If you look at the graph and compare it to the first one I showed you, you will see that we have very few preclinical tests. These implants are being put on the market rapidly in order to meet manufacturers' needs and maximize their profits. Then, clinically speaking, we attempt to assess their performance retroactively. This has major repercussions on the Canadian health care system, on patients and their health.

Formerly, the patient enjoyed major benefits and faced minor risks, whereas today's patients receiving implants based on new technology are receiving few benefits and being exposed to much higher risks. You cannot see my slide on the screen, but I will continue to try to show it to you. My PowerPoint document does not seem to be going forward.

Please look at the bottom line with the short columns. For example, the number of hip implants inserted in Canada has slightly increased, whereas the costs have increased far more rapidly over the last 10 years, without any noticeable improvement of the care patients received or the quality of the surgeries.

So who is benefiting from this change, if not the manufacturers and those who sell the implants to the Canadian government and the provinces? At this time, the choice of implants is left up to surgeons and hospitals. It's much more about what is fashionable than scientific knowledge. Therapeutic choices made by Canadian doctors, when using implants, have no basis in science and should be monitored by organizations.

We should turn the clock back and develop a government plan to move from the chaotic introduction of implants and new technologies towards phased innovation, meaning premarket trials that include preclinical tests, high precision metrics using small groups of patients, and technological methods which I will explain to you, as well as clinical studies. Once the implant is approved for use, national registries would obviously be most useful.

● (1640)

One example of high precision metrics available in orthopedics is testing through radiophotometry or stereophotometry. During the surgery, tiny tantalum beads are inserted in the bone, which allows the measurement of the implants' performance in the very short term. A two-year follow-up—

[*English*]

**The Chair:** Dr. Vendittoli, excuse me. I have to say you have a rather long presentation—it's a very interesting presentation, but we've gone quite a bit over time. We have your presentation right in front of us now, and I think there are committee members who would like to ask some questions before too long.

Our bells are going to be ringing at 5:15 today, and we have to go to votes at that time. We have only a short time.

Can you wrap up within the next 30 seconds so that we can get those questions in, please, Doctor?

**Dr. Pascal-A Vendittoli:** Sure. I will do it in two slides.

In this first slide, if you compare the revision rate or the re-operation of patients in the U.S.A. versus Sweden, you can see that the Swedish action taken on the introduction of new technology was very effective, and I would say in Europe there is a broad change to move forward with the evolution of new technology, including precision technology.

I conclude by saying that the introduction of new devices is driven by the industry and its financial benefit. New device introduction in the Canadian health care system should follow a similar path as drug introduction, and clear rules should be determined to protect patient health and reduce costs.

Thank you.

● (1645)

**The Chair:** Thank you very much, Doctor.

There are seven minutes for Mr. Lobb, please.

**Mr. Ben Lobb (Huron—Bruce, CPC):** Thanks to all the guests for appearing here today.

Mr. Williams, you talked briefly about a rating system that your Huron Perth Healthcare Alliance has. Could you tell us more about that and where you stand in the province? Is that the Canadian standard or is it provincial only?

**Mr. Andrew Williams:** It's a Canadian grading standard to identify how far along you are in adopting electronic health records. They look at how many areas of the organization are electronic. They look at the level of complexity of the systems, how integrated those are, and they score you.

The major areas that affect the scoring most are when you get into things like physician order entry, where physicians can order medications directly on the computer system, which improves safety significantly. They require you to have a number of systems in place to score at the highest level.

As an organization, we're a little higher than most in our region, but we're probably where most are. A significant investment is required to get to the top of the scale and you need to have a very clear plan to get there. We have that, but right now we're probably two-thirds of the way through.

**Mr. Ben Lobb:** You mentioned in your presentation that you've been doing this for 25 years. Obviously, technology has changed a lot, in the last couple of years especially. Given that you have four hospitals under your administration, what challenges have you seen with having four hospitals to try to implement, versus, say, one?

**Mr. Andrew Williams:** The biggest challenge stems from not having consistent standards at all the sites. That's something we have tried to do, and I'm sure that NORTH Network is the same with its MEDITECH platform. When we introduce an IT system, you have to say to organizations that everyone is going to have the same standards, which can be a challenge sometimes when you have unique practice patterns.

We have it in over five hospitals, in fact. We have our four, and we have a fifth hospital that purchases services from the IT program. The key is making sure that the procedures and processes are the same, making sure you standardize. Going back to something the government can do, more mandating of standards would help with uptake of information technology and would allow us to move along the scale faster.

**Mr. Ben Lobb:** Maybe just to help us, or walk me through it anyway—when you're implementing something like the Patient-Keeper you were talking about, is that something you would go through the province and Canada Health Infoway federally to implement, or does that come out of your operating budget?

**Mr. Andrew Williams:** That would come out of our operating budget. It would be an identified need the organization has, and then we would go through a competitive process to identify a vendor. One of the challenges we face with information technology adoption is the funding. It typically has not been something that has formed part of the budgets, and I think that's something that needs to change. There needs to be an expectation that organizations commit a certain percentage of their budget to information adoption so that we can get to the same playing field.

There was a comment made earlier about research. You have some organizations that do an awful lot of research and are able to introduce the latest practices and technology, and you have some that can't do any of it. I think we need to get everybody at least to a basic level of information adoption. Part of that requires a shift in the funding philosophy we have. That's going to require us to shift funds from other aspects of the organization to information technology.

In the case of PatientKeeper, we knew it would improve outcomes because physicians would be more engaged electronically and would have faster access to information. It costs $250,000 to implement, but then you see savings down the road with respect to length of stay, ordering practices, and things like that.

**Mr. Ben Lobb:** I'm wondering if you can, for the benefit of this committee, maybe give an example of where in the last five or eight years you've implemented a certain piece of technology, equipment, or software into the alliance—innovation and savings—and then been able to reinvest those savings back into something else for the benefit of the patient. Are there examples out there you could give?

● (1650)

**Mr. Andrew Williams:** One that's not very sexy, I suppose, is around transcription and using remote transcription, which has lowered our costs in the health records area and allows us to reinvest those dollars back into the organization. It's taking advantage of a new technology that does reduce your overall operating costs and frees up money to invest in other locations.

On the information technology side is the example I mentioned about putting technology at home. That significantly saves time and money for the system that we can put back into our mental health program to actually increase the number of patients we can see.

What we're actually trying to do as we identify efficiencies through technology is reinvest in the programs that identify them so we can see more patients. We've got some good examples of that.

**Mr. Ben Lobb:** Again, the area that you're in is obviously the same area I'm in; it's rural and some of it is remote as well. On the mental health side, how does the apparatus work at the person's home? I'm thinking of somebody who could be in a farmhouse where there's no Internet, there's no cellphone coverage, or somebody who may be low income or a senior who doesn't have Internet. How does that machine work in that instance?

**Mr. Andrew Williams:** It's an excellent point. One of things we are doing with some of the savings we've realized is actually paying for Internet into the house, because you do have that problem, that accessibility issue.

Going back to the question earlier about how we adopt the cloud technology, a large part of it is driven by your consumers of health care. Up until now, the majority of the consumers aren't into that technology. It's a big challenge for us. We work with our individual clients and make sure they have the tools they need, that they have the Internet and they have the supports. We will do home visits to make sure they're using the technology appropriately, but it is a big challenge. When you're dealing with a rural population and an older population that may not be used to technology, it does require a little more focus.

As it becomes more the norm, as the baby boomers start to really use our health care system, they'll come in and expect certain types of technology, and you'll see the system shift then. Right now, we're kind of in both camps, where we've got a large piece of the population that's not comfortable with technology and a large piece that expects it, so it's having to bridge both of them. But in the home technology we work very closely, individually, with our clients to make sure they are comfortable, and they all love it.

We have one great example of an individual who is going to university in Toronto and needs access to outpatient mental health, and because of this technology that person can actually stay in Toronto and doesn't have to go back and forth.

**The Chair:** Thank you, Mr. Williams. That was very insightful.

Thank you, Mr. Lobb.

We're now going to go into the five-minute rounds.

Keep in mind that the bells ring at 5:15, and we'll have to dismiss then.

We'll begin with Dr. Sellah.

[*Translation*]

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

First of all, I would like to thank the witnesses who have joined us today, as well as Dr. Vendittoli.

My question is for you, Dr. Vendittoli. I must admit that when listening to your presentation, I was surprised to hear that things are now worse than they were in the past. You mentioned chaotic introduction. I know you are aware of how things are being done elsewhere, for example in Sweden and Australia.

Could you give us more details so that we can correct our problem here in Canada.

**Dr. Pascal-A Vendittoli:** Thank you.

Those who are familiar with the introduction of new drugs into the Canadian therapeutic arsenal, or elsewhere in the world, know that there is a very strict process to follow. In many cases, those costs are covered by provinces or the state. Furthermore, it must be demonstrated that this medication is superior to the current treatment.

In the case of implants, it is quite the opposite. The introduction by the industry of implants into the therapeutic arsenal was never subjected to that kind of performance requirement. To be admitted as a treatment, the implants only had to be safe. That was the main criterion. They also had to resemble an implant that was being currently used.

But why would implants or new technologies being introduced not be subjected to preclinical trials, as is the case for medications? This would allow us to avoid failures, repeated surgeries and enormous costs for health care. It would be even more relevant in cases where pre-existing treatments are working quite well.

In the absence of a functional treatment for patients, an accelerated introduction of drugs or treatments may be desirable, of course. However, when effective treatments are available to us, we should be more particular and ensure we are offering our patients better care, and not worse care than current treatments.

● (1655)

**Mrs. Djaouida Sellah:** Thank you.

My next question is addressed to any of the witnesses.

Could you provide the committee with an example of the situation where health technology assessments allowed the health care system to save money?

[*English*]

**The Chair:** Who would like to answer that question? I can see you're all clamouring to do it.

Okay, Mr. Williams. Thank you for volunteering.

**Mr. Andrew Williams:** I can give one example, and it ties in with the orthopedic discussion we're currently having. There has been a lot of research around hip fractures and the impact on outcomes based on how quickly you set a hip fracture. By assessing patients and taking them into the OR within 48 hours, the health outcomes improve dramatically, which lowers the cost on the health care system.

That's just one example of where you apply a research-based study to the industry and set performance expectations and hold the system accountable for that.

[*Translation*]

**Mrs. Djaouida Sellah:** You have just raised one of the principles of the Canada Health Act, accessibility. You said that results are better if this is done within 48 hours. However, we know very well that our health care system is not perfect for the time being.

How could we correct this?

[*English*]

**The Chair:** You have 30 seconds to correct the health care system.

**Voices:** Oh, oh!

**Mr. Andrew Williams:** In our case, where I work, we have 22 hospitals, five of which do hip fractures. What we did was we brought those five hospitals together and said let's look at hip fractures from a system point of view instead of our individual patients. So if someone has a hip fracture outside of one of the five centres, there's a queueing theory and they get right into the mix.

It's by looking at regional systems that we deal with the accessibility piece. In this particular case, it's a challenge, and you have to look at things like standardized databases—

**The Chair:** Thank you, Mr. Williams.

Thank you, Dr. Sellah.

We'll now go to Mr. Wilks.

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

And thank you to the witnesses for being here today.

My first question is to Dr. Vendittoli with regard to the replacements of any prosthetic limb. What would you suggest is a sufficient test period for a new device, and should it be tested against the ones that are already on the market to ensure that we're not going from bad to worse? It seems to me as though we've heard evidence before that we don't compare what's already on the market with what we're introducing into the market. Do you have any comments on that?

**The Chair:** Dr. Vendittoli, do you want to answer that one?

[*Translation*]

**Dr. Pascal-A Vendittoli:** With respect to total hip replacements, we are in a very good position to assess the implants' performance. There are methods such as radiostereometric analysis, which allow us to measure any change of position in the implants for a period of two years. If, over the course of those two years, the implant being tested does not demonstrate abnormal migration, we can predict that implant will work well for the next 15 to 20 years.

The National Institute for Health and Care Excellence, in England, and the Dutch government, have asked that preclinical tests using radiostereometric analysis be mandatory before any new hip or knee implant can be marketed. These are national standards set up in England and Holland. It takes approximately two years to do these tests. As you know, these implants are designed to last 15, 20 or 25 years and that is a bit long to wait before being able to market a new implant. That is why we must rely on available, very precise preclinical tests to assess performance properly before marketing anything.

● (1700)

[*English*]

**Mr. David Wilks:** Thank you very much for that.

This question is for Mr. Shepitka and anybody else who wants to answer. There was mention earlier of cost savings. I come from the riding of Kootenay—Columbia, which is in the southeast corner of British Columbia, and two of our hospitals in two of our remote areas have been closed and replaced with primary health care models. Although I had some reservations—I was the mayor of one of the towns when it happened—about this happening, what I did recognize over time was that people started to take better care of themselves because there wasn't the ability to just walk in to a hospital.

From that perspective, do you see that in northern Ontario? Could anyone on the panel comment on primary health care vis-à-vis a regular hospital setting?

**The Chair:** Go ahead.

**Mr. Branden Shepitka:** In northeastern Ontario you have higher numbers of smoking rates, obesity rates, and chronic disease rates, which have led to our hospital having one of the highest percentages of patients admitted through the emergency department. Somewhere upwards of 20% of patients who present to our emergency department are admitted, so we're looking at different ways we can get back into the community more quickly with resources, especially with our elderly populations. We have a few new programs that have nursing follow-up after discharge. Patients are being visited in their homes. There is also teleconference for follow-up care, so that we can prevent a readmission to hospital due to a relapse in illness.

What was the second piece?

**Mr. David Wilks:** With regard to primary health care, the model is that you don't see a doctor as prescribed under a normal system, but you're encouraged to keep better care of yourself.

**Mr. Branden Shepitka:** It's partly that. We do have preventative care services, but they are lacking. Over the past 20 to 30 years the focus of health care in Canada has been hospital care. We are trying to make a transition towards primary care, but the dollars right now are being budgeted and it's hard to make that transition, because such an upfront expense is required and the will is not there.

**The Chair:** Thank you.

Thank you, Mr. Shepitka, very much for your answers.

Now we'll go to Dr. Morin.

**Mr. Dany Morin (Chicoutimi—Le Fjord, NDP):** Thank you very much.

I would first like to say that I'm glad to be back with you guys after two weeks being away in my riding.

My questions are also for Mr. Shepitka. You mentioned in your presentation the different challenges to upgrade existing infrastructure to become mobile-friendly work environments. It kind of boils down to money. It is a big question, but if you can answer this, it would be fantastic. What kinds of funding programs do you think would be appropriate to fund exactly what you would like to implement this transition for work environments—hospitals or emergency care—to become mobile-friendly?

**Mr. Branden Shepitka:** That's a great question. It would be a physical infrastructure funding program. A lot of these costs have not been budgeted by health care facilities. Most of their funding comes from pay-for-result services, but that funding for physical infrastructure is not there.

With an upgrade in especially wireless technology, we can realize efficiencies in the health care system that by using a fixed computer we just can't get. I know there's been some research regarding patient perception of provider contact. Patients actually feel that if you are face to face and not looking at a computer, instead having a tablet between you and the patient, sitting down rather than standing, the patient perceives that you're actually spending more time with them. So there are great benefits in having these wireless technologies that can improve patient experience as well as clinical workflow.

**Mr. Dany Morin:** Thank you. That's interesting. I do know that the Conservative government is still putting money into the infrastructure fund and I hope that what you desire can be included in such an infrastructure program. If not, it might be a good pointer for those on the other side of the table.

You also mentioned the software program. I suppose compatibility issues are also part of the problem you mentioned. I would like to have your input on this. Several witnesses mentioned there were some compatibility issues because of all the different software and no regulations to have something unified. For example, patient files at the local drug store cannot be read at the local hospital, and those hospital files cannot be read at the local clinic by the family doctor because there are several authorware and software programs for different reasons.

Is it also a concrete problem that you have in your emergency care?

● (1705)

**Mr. Branden Shepitka:** Thanks for the question. That's a great question.

The interoperability aspect is huge, and I know that is one of the funding priorities of Canada Health Infoway, but that data flow among hospitals and external organizations does not exist to the capacity that would benefit the patient. I know in one of the commercials that Canada Health Infoway put out regarding continuity of care, the patient comes into the emergency department and the physician pulls up their medication list. That would be amazing. However, we have to go on to an external portal, we have to sign in with a user ID that expires after I think 90 or 180 days—so if you don't use it, it's not there—and you're only able to view drugs that a patient has been prescribed and paid for through the Ontario disability program.

So the information is very limited, and it's not integrated with our EMR. There are a number of extra steps that have to be taken in order to access information, which leads to a detriment to the patient.

**Mr. Dany Morin:** Do I have more time?

**The Chair:** You have about 30 seconds.

**Mr. Dany Morin:** You didn't have a lot of opportunity to talk. Do you have some final words you would like to express regarding concrete needs or solutions?

**Mr. Branden Shepitka:** On concrete needs, I really think we need a broad strategy to encourage collaboration in health informatics. Right now, IT is working completely separate from clinical, and that's been our biggest struggle in this project. On this project, there has been me, full time, and then we've had one IT analyst working full time on a $2.4 million e-health implementation. We have four core staff, two nurses and two clerical staff, that are clinical resources for one day, twice a week.

**The Chair:** Thank you, Mr. Shepitka.

Now we'll go to Mr. Brown.

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

Thank you to the witnesses who are here today on our ongoing study.

One question I have asked of the various panels we've had on this topic was this. Given that health care is administered provincially and there are a number of limited ways we can provide a change of direction federally, I'd be interested in your input specifically on some of those areas, for example, the regulation of medical devices. We had one doctor, Dr. Ballagh, who expressed how difficult it is with the regulation of medical devices in Canada, but we had another one, Dr. Emad Guirguis, who said he thought it was much better in Canada than it was in the U.S.

I'd be interested in the experiences you may have had or opinions you have on federal regulations to medical devices. Obviously, a new device is potentially a form of innovation that could enhance sufficiency in health care, so we want to make sure we have the appropriate process in that regulation.

It's an open question to the panel.

**The Chair:** Dr. McGregor, do you want to try that one?

**Dr. Carolyn McGregor:** Yes, I want to speak to your case in point about medical devices, and specifically in my area of medical devices for clinical decision support.

As it currently stands, we're in a different landscape now to the United States in the regulatory process for clinical decision support systems, in that we have actually relaxed in Canada the clinical decision support system medical device ruling and infrastructure that's required, and testing for that.

One of the things that I think we have to look at when we're looking at devices is to stop thinking about them as boxes at the bedside. We need to have a holistic approach nationally to think about the software. We are slowing down our ability to innovate, and we're slowing down our ability to make that translation at the bedside when we have to think of them as boxes as opposed to the software infrastructure on them.

The step we've taken at the moment with the current landscape for clinical decision support is appropriate. In our case, for the types of tools we're building, we're building indicators and metrics that support a clinician in making a decision. We don't definitively say, “This is now infection, this is now intraventricular hemorrhage”, but we provide analysis and show, based on our gold standard research, that we're seeing the same sorts of correlations.

I think we are on the right track with the way we are currently mandating and regulating medical devices, but I do think we need to start looking at how we can make that process move through more quickly and smoothly by considering the software as opposed to a hardware-type device.

● (1710)

**Mr. Patrick Brown:** Are there any additional comments on that?

The other question I had, and I've raised this as well with different panels, is on the issue of collaboration. Are we seeing enough collaboration, specifically in research? Obviously a lot of innovation stems from research. I remember when we had a panel on juvenile diabetes, they talked about the research being done on artificial pancreas in Australia and in Canada, and in that case they were collaborating. I remember when we had the Minister of Health before our committee talking about the collaboration we were doing in Europe on Alzheimer's and dementia with France and the U.K. and Germany. I was certainly excited by that.

Are we seeing enough of that? Are we seeing enough collaboration in research? In any of the fields that you're involved in, do you think there are opportunities for more collaboration when it comes to research and innovation?

**The Chair:** Dr. McGregor?

**Dr. Carolyn McGregor:** I think it's coming. Certainly in my research we have quite an interdisciplinary team. We have anyone from computing and electrical engineers, computer scientists, health informaticians, nurses, pediatricians, obstetricians, neonatologists. When you bring everyone together, that is really when you bring the innovation through, because everyone's working towards that common goal of trying to improve the care at the bedside.

I think there's more that we need to do. One of the challenges we have in working in that interdisciplinary space is that we all speak a different language. As a computer scientist, I needed to learn a lot about the conditions in the medical domains I'm trying to support and the types of care outcomes they're trying to work to. It's something I've needed to do and have worked towards over a number of years, so when I give presentations people assume now that I'm a neonatologist, when I'm not. I just have listened; I've gone on rounds and I've learned.

We need a lot more of that. We need fundamental mechanisms in our educational system, which is why I made the point before about the fact that clinical informatics really needs to be a subspecialty. It needs to be formally recognized across the nation in many different disciplines in health care.

**The Chair:** Dr. McGregor, I'm sorry, we're out of time.

There are two people who want to make a comment, but I have to do that with your permission, Mr. Kellway, because you're up next. Do you want to ask questions, or could we have two more comments?

**Mr. Matthew Kellway (Beaches—East York, NDP):** I do have some very interesting questions I'd like to ask.

**The Chair:** Go ahead. It's your turn. The bells may interrupt you.

**Mr. Matthew Kellway:** That may in fact pick up on where you were going.

Primarily to Mr. Williams and Dr. McGregor, and Mr. Williams first, with a fixed budget—and you're talking about technological development as an investment—how do you know when to dive in on a particular investment so that you don't over-invest in something as technology keeps changing?

**The Chair:** Dr. Vendittoli raised his hand. Did you see him?

**Mr. Matthew Kellway:** Oh, did he?

**The Chair:** Yes.

Dr. Vendittoli, do you want to answer that?

Yes, go ahead.

[*Translation*]

**Dr. Pascal-A Vendittoli:** Yes, if you will allow it.

I believe we have extraordinary research teams here in Canada, and that they have an impact across the world. However, in most cases, research teams can only demonstrate the value of new technologies that were introduced retroactively. That is much too late. The assessment is being done after the technology has already been introduced into the health care system.

But a technology's performance should be assessed beforehand, using very small samples of patients. In cases where performance has been demonstrated, a more widespread use of that technology can then be recommended. Unfortunately, the current manner of proceeding goes in the opposite direction.

● (1715)

[*English*]

**Mr. Matthew Kellway:** Thank you very much for that kind of retrospective analysis.

When you're looking at a fixed budget, how do you know when to go in, in advance? Do you have decision-making criteria?

Dr. McGregor, I'd like your views on this because you were talking about policies and funding frameworks, and maybe on a more global scale, you have some sense of what those funding frameworks and policies might look like to make sure we invest in the right technologies and we don't over-invest or under-invest in light of the pace of innovation.

Mr. Williams, perhaps we'll have you first.

**The Chair:** I have to forewarn you that if the bells ring, we'll have to cut it off—my apologies in advance.

Dr. McGregor, would you like to begin, and then Mr. Williams?

**Dr. Carolyn McGregor:** Just quickly, with the patient journey modelling approach that we had and with the balanced scorecard-driven approach, you can really drive your innovation based on the patient need, and I think that's my take-home message for you today. If you want to improve the health care system, you take it from the patient need, the savings you're trying to make with a patient, and let the technology support that initiative, rather than trying to do it the other way round. Often people do it the other way round; they think they have this great technology and they try to make the patient care fit.

I'll leave some time for Mr. Williams.

**Mr. Andrew Williams:** I agree with that. We have some discretionary funding for IT every year and we look at different projects. A good example is the one I talked about earlier where we're pushing out information to family physician offices. We would identify whether or not it was going to improve accessibility, improve quality of care, reduce costs, and then we pilot it with one particular group, determine whether or not the benefits actually are there, and then if they are, we roll it out further.

We try to introduce innovation in a planned way, but we do it in small increments because the costs could absolutely handcuff us as an organization.

**Mr. Matthew Kellway:** To both of you, do you consider the fact that there may in fact be a new technology around the corner? One of the things I'm thinking about is simply the pace. I get that you're going to fit the technology to the patient, but that assumes a static level of technology. The concept of innovation is that there are going to be new opportunities and new technologies that one would be able to fit to the patient all the time.

These are huge investments, presumably. How do you manage that piece of it, or is that not part of your considerations at all, what may be coming?

**The Chair:** Excuse me. I'm so sorry to interrupt that question, but the bells are ringing and I must suspend now. I want to thank our committee.

Perhaps you want to get back to Mr. Kellway with a written response or give your written answer to the clerk.

Thank you so much for coming today. It is very much appreciated.

The committee is adjourned.