HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

45th PARLIAMENT, 1st SESSION

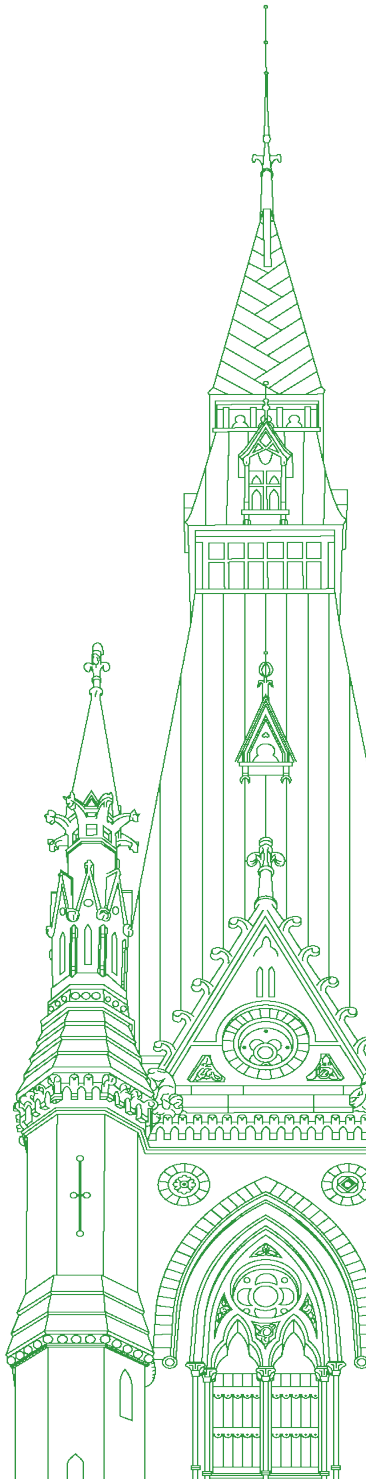
Standing Committee on Health

EVIDENCE

NUMBER 018

PUBLIC PART ONLY - PARTIE PUBLIQUE SEULEMENT

Tuesday, January 27, 2026



Chair: Hedy Fry

Standing Committee on Health

Tuesday, January 27, 2026

● (1540)

[*Translation*]

The Chair (Hon. Hedy Fry (Vancouver Centre, Lib.)): I call this meeting to order.

[*English*]

Welcome to meeting number 18 of the House of Commons Standing Committee on Health.

[*Translation*]

We acknowledge that we're meeting on the unceded territory of the Algonquin Anishinabe nation.

[*English*]

Today's meeting is taking place in a hybrid format, pursuant to the Standing Orders.

I want to remind everyone, especially those of you who are new to the committee, about the following points.

Wait until I recognize you by name before speaking. For those of you who are on video conference, click on the microphone to activate your mic. Please mute it when you're not speaking, or we'll get feedback, and this is very damaging to the ears of the interpreters.

At the bottom of your screen, for those of you online, you can select the appropriate channel for interpretation: floor, English or French. It's the little round globe that you can press on.

This is a reminder that all comments should be addressed through the chair. Members in the room, you know how to raise your hands if you wish to speak. You also know that you have a little decal sitting next to you, where you should park your phone so that you don't cause a lot of feedback for the interpreters.

The clerk and I will try to manage the speaking order as we see you. Because you're on both sides of the room, sometimes we don't get to you first when you put your hand up. We're trying very hard to cover the room.

At the end of this meeting, we have two budgets to pass. We just need to say yes.

Pursuant to Standing Order 108(2) and the motion adopted by the committee on Tuesday, September 23, 2025, the committee will resume the study on antimicrobial resistance.

I want to welcome our witnesses. There's one in the room: Dr. Bogoch. Everyone else—Dr. Leung, Dr. Weiss and Dr. Wright—is online.

Here's how it works. You each have five minutes to speak. I will give you a literal shout-out at about one minute, and then you'll know you have time to wrap up. I'll then give you a 30-second shout-out. At the end of that, if you didn't get to finish everything you wanted to say, we have a question-and-answer period in which you can elaborate.

We will begin. I will start with Dr. Bogoch, professor of medicine at the University of Toronto.

Professor Bogoch, you have five minutes.

Isaac Bogoch (Professor of Medicine, University of Toronto, As an Individual): Thank you so much, and thank you for the invitation to be here today. It's wonderful to see everybody.

My name is Isaac Bogoch, and I'm an infectious diseases physician and scientist, as well as a professor of medicine based out of the University of Toronto. I recently spoke about antimicrobial resistance, or AMR, at the Standing Committee on Science and Research, and I'll be making many of the same points here. I regularly treat drug-resistant infections in my clinical practice, and my research focuses on how these organisms spread around the world, mainly through human mobility patterns. I'm grateful that you're studying this topic, because it has a tremendous negative impact in Canada and around the world.

As you've heard, AMR arises from the misuse and the overuse of antimicrobial drugs, rendering them ineffective and causing substantial morbidity and mortality. I see this at the bedside as a clinician; I appreciate that some of you in the room are physicians as well, and you have dealt with this too. AMR leads to the delayed initiation of appropriate antibiotics, and it results in predictable negative consequences.

Interestingly, although many people might not be aware of this, about 70% of the global antibiotic consumption is in agricultural animals, and only 30% of the use is in humans. This imbalance underscores the importance of what we call the "one health" concept, which basically recognizes the interconnectedness of human, animal and environmental health; because of this, we need to take a collaborative and—pardon the buzzwords—truly cross-sectoral approach to combatting AMR, because it's a massive problem.

A recent study published in The Lancet estimated that there are about 4.7 million deaths per year in which AMR plays some role. To put that into context and perspective, that's more deaths than from HIV, TB and malaria combined; every country is impacted, but of course, lower-resource settings are disproportionately impacted.

We're not going to invent our way out of this issue by developing new drugs. In an arms race between creating new drugs and microbes adapting to these drugs, the microbes are going to win every time, as they've done in the past.

Canada, relative to the rest of the world, is doing well, but—pardon the pun—we're not immune. We have national strategies and regulations for antibiotic use. We have infection prevention and control initiatives that mitigate the impact of AMR spread in health care settings, but the uncomfortable truth is that we can do everything right in Canada and still fail. We know that AMR, like just about every other pathogen, doesn't respect political borders. We can see the development of resistant organisms on one side of the planet, and they move to Canada and elsewhere around the world through travel and trade.

While AMR is appropriately framed, as I mentioned, as a one health issue, I would also urge you to consider this a health security concern. As we saw during COVID-19, our supply chains for diagnostics and therapeutics are fragile, and they might be further strained by growing geopolitical instability. There is an ongoing war in Ukraine, for example, that could spread to other NATO countries. We already had two allies invoke Article 4 in 2025. For an example, in this conflict, up to 80% of the combat wound infections are resistant to conventional antibiotics. This would pose a serious risk should Canada be drawn in. In addition, Russia's past biological weapons program is well known to have developed drug-resistant pathogens. At a time when Canada has pledged to raise security spending to 5% of GDP, failing to integrate AMR research and preparedness into that investment would overlook a critical threat.

Do you know what? I can't say this with a straight face. I was going to say it's not all bad—but it actually is. There are large surveillance programs to study and track AMR. The WHO which leads a big program. The U.S. CDC leads a big program. Of course, as you are well aware, major partners are massively scaling back funding, and global health leadership is imploding. This leaves us more vulnerable, but it also presents a major opportunity for Canada to fill the vacuum as a global leader in health care, public health and health security, with a focus on combatting AMR.

What is a smart path forward? We can take a true intersectoral approach, with a national and global perspective.

We can strengthen antimicrobial stewardship programs and infection prevention and control programs in Canada and abroad. This means not just in health care but also in agriculture and veterinary sectors.

We can enhance AMR surveillance in Canada and abroad. We don't need to reinvent the wheel. These programs exist. We can just help support funding them.

We can invest in research and innovation in Canada and abroad—supporting public-private partnerships, enabling Canada to be self-reliant, supporting R and D for new diagnostics and therapeutics.

We can raise public awareness campaigns for various sectors on the dangers of the overuse and misuse of antibiotics.

We can then leverage the security aspect of AMR to fund many of these initiatives.

AMR isn't a distant threat—it's already here, and it endangers both Canadian and global health. We can act now, or we can face far greater consequences in the future.

Thank you very much for your time.

● (1545)

The Chair: Thank you very much, Dr. Bogoch. That was on the button, really good work.

I'll now go to Dr. Victor Leung, infectious diseases physician and medical microbiologist. He is here by video conference.

Hello, Victor. It's good to see you.

Victor Leung (Infectious Diseases Physician and Medical Microbiologist, As an Individual): Good afternoon.

I work as an infectious disease physician and microbiologist in Vancouver, British Columbia. Today I want to highlight aspects that I see on a daily basis and that are important to emphasize because they highlight the problems we face when dealing with infections. I'm going to divide them into three categories.

The first is treating infections that have multidrug resistance. The second category is the problems we currently have with infection prevention and control and some of the antimicrobial stewardship work. The final one is to emphasize the importance of vaccines and how we need to strengthen our national vaccination programs, because the current approach is not meeting the necessary demands...for what we can achieve with benefits from vaccination as an approach to AMR.

From a clinical access point of view, on a daily basis, we deal with infections that are often multidrug-resistant. When we see patients with drug-resistant infections, we're already downstream from the preventive approaches. We're then dealing with access to antimicrobials and selecting the best antimicrobials to help control the infection.

The problem in Canada is that our special access program is outdated. Several years ago, at the national meeting, changes that I think we all advocated for were made in terms of accessing drugs that are essential in treating some of these multidrug-resistant Gram-negative infections.

There have been some improvements. Locally at our hospital, we're the only hospital in British Columbia with future use applications for two of these antibiotics, but that's not the case in many hospitals across the nation. When they see an infection that requires treatment with antimicrobials that are not available on formulary, they have to go through an inefficient process to get access to the drug, and the delays in access are problematic in dealing with AMR.

What needs to be considered in a solution for this is revamping our incentive programs so that, like other G7 countries, we have better access to antimicrobials, along with built-in antimicrobial stewardship mechanisms to ensure that we're not overusing them. The problem, as mentioned before, is overuse, but at the same time, access to essential antimicrobials in Canada is important as we face increasing trends in antimicrobial-resistant infections.

Second, from an infection prevention and control point of view, many programs have been strengthened and surveillance systems have been developed to collect data and try to understand trends. The biggest problem I see nationally is that our surveillance systems are fragmented. If we look to other countries, we see that they're scaling back investments in infection control surveillance systems; the problem in Canada is that the access to data is delayed. As an example, if we look at the Canadian nosocomial infection surveillance program and the timeliness of data, we often see lags of one to two years. Similarly, in provincial surveillance programs for other infections, the data is not collated, aggregated and shared publicly with the users on a timely basis. This defeats the purpose of a rigorous surveillance program in Canada.

Finally, as for vaccinations, we know that vaccinations have many off target benefits, and the impacts on preventing diseases, hospitalizations and subsequent hospital-acquired infections are tremendous. The problem with vaccinations in Canada is that although we have national standards and recommendations based on science, the current supply chain funding model in public health budgets needs to shift. It can't be seen as just a pot coming from public health. It needs to come nationally from a health budget, and we should rethink a national vaccination program on vaccine procurement and distribution to improve vaccination uptake.

Thank you for your time.

● (1550)

The Chair: I'll now go to Dr. Karl Weiss, chief of the division of infectious diseases and medical microbiology at the Jewish General Hospital.

You have five minutes, please, Dr. Weiss.

Karl Weiss (Chief, Division of Infectious Diseases and Medical Microbiology, Jewish General Hospital, As an Individual): First of all, hello. Thank you very much for inviting me today.

I would like to talk about five different topics. Some of them have already been discussed by the previous speakers. I've been involved with antibiotic resistance and antibiotic issues since 1995, and I was present at the Montreal conference in 1997 when, for the first time in Canada, we started talking about antibiotic resistance.

My first message is that antibiotics are essential for human health. Life expectancy in Canada in 1900 was about 40 years old; in 2025, it was around 82 or 83 years old. In 1900, 40% to 50% of newborns did not reach the age of 18. Three things changed this dramatically: hygiene, of course, but mostly antibiotics and vaccines.

Without antibiotics, we would not be able to do any major surgery, chemotherapy, dialysis or travel, so antibiotics are really essential for the modern health care system.

It's very important that, even though we talk about antibiotic resistance, we shouldn't do antibiotic bashing under the cover of antibiotic resistance. It's extremely important not to scare people about antibiotics when we talk about them but to try to enhance the good perception of antibiotics. It's an important message.

The second message is about the challenges of antibiotics. First of all, there's consumption. About 80% of all antibiotics are being used in the agricultural world, and this is mostly for economic purposes and not really for health purposes. In Canada, only about 20% are used—or 25%, depending on the statistics—for human consumption. Of these, about 70% to 75% of all the antibiotics are being used in outpatient care—mostly for respiratory tract infections. This is in the community, and we don't have a lot of data on antibiotic use in the community.

I'm a hospital-based physician at the Jewish General Hospital in Montreal, so I'm biased, as are many of my colleagues, who are distinguished experts. We always look at the problem from a hospital-based perspective and not necessarily from a general, more community-based perspective, so that's an important point to underline.

Next is prescriptions. In the vast majority of the world, you don't need a prescription to get an antibiotic. Since we live in an open world, out of about 200 countries, in the vast majority—140 to 150—you might be able to get an antibiotic without necessarily having a prescription. It's not the case in our country, which is a very good thing, but we have to be careful about this because whatever happens somewhere else will end up impacting our own environment.

The other thing is that we're opening prescriptions to more and more prescribers for all kinds of reasons. Thus, we need continuous education for health care professionals who are not necessarily very good at prescribing antibiotics. Very often, in a defensive model, they prescribe antibiotics not to be scared to provoke some problems.

● (1555)

[*Translation*]

The third point is the production of antibiotics.

We need to understand that, in order to achieve our goals in this country, the production of antibiotics is vital. One key component in the production of antibiotics is what we call the active pharmaceutical ingredient. The production of this ingredient is currently outsourced, mainly to India and China. Sometimes, we're unable to produce certain antibiotics locally. As a result, we depend heavily on logistics chains outside the country.

Another major issue is counterfeit antibiotics. This is the biggest issue facing all drug classes worldwide. Many poor-quality drugs can enter the market directly or indirectly, which significantly affects the emergence of antibiotic resistance.

[*English*]

The fourth point is what we call antibiotic resistance itself. We have to make sure that, in terms of definition, measurement, monitoring and comparators, we are on par with other countries.

Defining antibiotic resistance is not very easy; it's sometimes difficult. As for measurement, there are many ways to do it, and we don't have a good way to measure it all the time. On monitoring, we have silos in Canada, so sometimes it's a bit more difficult.

We have weaknesses in our country—mostly that we don't have a major pharmaceutical giant to produce antibiotics and that we are a small market. We have certain things that do very well, such as agriculture. We have to improve our human networks; we have to share health data between provinces, and we have to educate the Canadian population a lot better.

Thank you very much for your time.

The Chair: Thank you, Dr. Weiss.

I now go to Gerry Wright, professor, McMaster University.

You have five minutes, please.

Gerry Wright (Professor, McMaster University, As an Individual): Thank you very much, Madam Chair and honourable members.

Permit me to offer my condolences on the news that Kirsty Duncan passed away yesterday. She was a huge champion of this file. She was a colleague to many of you in the room and a huge help to those of us working in AMR.

I want to speak to you today in my role as an academic researcher. I started my lab at McMaster University over 33 years ago, working in the area of AMR and antibiotic discovery. I have advised industry, government and not-for-profits on antibiotic innovation, and I founded a spin-out company called Symbal Therapeutics in this area.

As you heard from Dr. Weiss, antibiotics changed the way we die. Before we had antibiotics, before the discovery of these agents and vaccines, 56% of Canadians died of infectious diseases. We're down to about 3% at this stage. We've also gained over 20 years of life expectancy. This is unprecedented in human history, but we're poised to lose this because of AMR.

My role as an academic researcher is to uncover the molecular basis of AMR, to identify potential solutions and to train the next generation of scientists. My lab uses chemistry and biology to study resistance mechanisms and to advance antibiotic discovery.

I've trained over 100 master's and Ph.D. students, post-doctoral fellows and technical staff. The sad news is that very few of them have remained in Canada, and very few are working in AMR research. The reasons for this are structural. Canada currently has limited biotech and pharmaceutical R and D capacity, especially in antibiotic discovery. Graduates are drawn abroad to vibrant biotech sectors in Boston, California and Europe.

In addition, building and sustaining an internationally competitive AMR lab is also incredibly difficult in Canada. Academic scientists operate like small businesses. We recruit talent, produce a product—high-impact research—and constantly compete for revenue, which comes primarily from the CIHR. These grants are reviewed by volunteers and panels organized by scientific discipline. However, there's no AMR panel at the CIHR. In fact, all the AMR work is lumped into work on bacteriology, fungal research and parasitology.

In contrast, in cancer research or cardiovascular research, there are multiple sources or multiple panels at the CIHR to fund these areas. This structure completely disincentivizes young investigators from pursuing AMR work, so Canada risks losing research capacity in this field.

Beyond fundamental research, translating these discoveries into innovative solutions remains incredibly challenging. Over four decades of experience, we've learned that academic findings often seed new biotech ventures, yet Canada lacks early-stage funding mechanisms to bridge the gap between discovery and application. This lack of support leaves us completely reliant on advances in other countries. We have to wait for others to discover and develop the medicines that we need to keep our citizens and our soldiers safe.

We don't need to be in this situation. There's a proven model out there. The U.S. small business innovation research program, or SBIR, provides competitive, non-dilutive grants to support start-ups that commercialize academic discoveries. A Canadian SBIR-style program would foster biotech entrepreneurship, create jobs and accelerate AMR innovation.

To illustrate, my lab recently discovered a new antibiotic, which was published in the journal Nature last spring. It targets several pathogens on Health Canada's priority list. We want to develop it in Canada, but without early-stage push funding or downstream pull market incentives, these assets risk moving abroad, along with their economic benefits.

In closing, I want to urge the committee to act on two priorities. One is to increase the overall CIHR funding and to create a dedicated AMR research stream to strengthen Canada's scientific foundation. The second is to establish a Canadian SBIR equivalent to enable the translation of discoveries from academia to industry, ensuring that Canadians benefit from homegrown innovation.

We are in strange times. Other countries are shuttering or reducing their research and development in infectious diseases. This is an opportunity for us in Canada. With strategic investment, we can help lead the global stage in response to AMR, protecting both our public health and our life sciences economy.

Thank you very much.

● (1600)

The Chair: Thank you very much.

I will now go to Dr. Semret, associate professor of medicine, infectious diseases and medical microbiology at McGill.

Dr. Semret, you have five minutes, please.

Makeda Semret (Associate Professor of Medicine, Infectious Diseases and Medical Microbiology, McGill University Health Centre): Good afternoon. My name is Makeda Semret. I appreciate the opportunity to address this committee.

I lead the antimicrobial stewardship program for a network of McGill-affiliated hospitals in Montreal. I also serve as an associate director for the McGill AMR centre. I'll try not to repeat what has been very eloquently stated by my colleagues and friends around the table. My focus instead will be on antimicrobial stewardship. I will give a bit more granularity in this area, which is close to my heart.

Stewardship is how we govern the use of our existing antimicrobials. Effective stewardship ensures that antibiotics are used only when necessary and with the correct agent, dose and duration so that we preserve the effectiveness of our existing drugs, as well as the future pipelines. In hospital settings, as you've heard, we see rising counts of infections caused by such organisms as the carbapenem-resistant Enterobacterales, particularly among the at-risk populations we increasingly see in acute-care hospitals—patients with advanced comorbidities, undergoing complex procedures and generally staying in hospital for a prolonged period of time.

While infection prevention and control are crucial for limiting transmission, antimicrobial stewardship, or AMS, limits “selection pressure”—the emergence of clinically significant resistance—at both the individual and system levels. In AMS programs, we aim to reduce the overuse and misuse of antibiotics. This is through a set of coherent and coordinated activities, such as surveillance of antibiotic consumption and resistance; development of treatment guidelines, which is harder than you'd think; education of prescribers; very resource-intensive monitoring, evaluation and feedback for individual prescriptions; and research, obviously, into effective interventions.

In Canada, acute-care hospitals are required to have at least some basic components of AMS programs for accreditation standards. This requirement has been very beneficial. Successful programs can reduce antimicrobial use by 15% to 20% in the first few years. That has certainly been our case. Even though we have a very complex patient population, and we offer such services as transplantation, advanced cancer care, complex surgical procedures and so on, since 2019 we have been able to reduce our per patient antibiotic consumption by 20%. We have also decreased the proportion of antibiotics prescribed inappropriately. With these decreases, there are well-documented benefits, such as reduced rates of drug-resistant infections, including *C. difficile*; reductions in the length of stay in hospital; lower drug costs; and so on.

We do face challenges. I'll touch briefly on just three points that are relevant to stewardship in acute-care settings. The first is quite obvious. It is resource allocation. In our network, for example, antimicrobials account for only 3% of the total pharmacy budget. That's $4 million per year out of a total pharmacy budget of $130 million. You can imagine that this does not grab a huge amount of attention from the C-suite. Even when we reduce our antimicrobial consumption by 15% to 20%—that's a nice budget decrease—after initial gains after implementation of programs, we reach a plateau in terms of cost reductions, yet we need to maintain sustained effort that's very resource-intensive just to maintain the plateau.

The second challenge I would like to touch on is a bit more conceptual. This is the fact that AMS programs aim to prevent outcomes that have not yet occurred. The impact of our programs is much less visible compared with the impact of many other acute-care interventions done in health care. Infectious diseases are generally an area of medicine in which outcomes are not systematically measured.

The third challenge is integral to our objective. It is about assessing the appropriateness of antibiotic use. This is a very complex endeavour. We conduct audits with teams of experts. There is no single standard definition of appropriateness. It is context-dependent. There's even variability among experts who have similar training and practices.

In these challenges lie opportunities that may be interesting for Canada. We have a single-payer system. We have harmonized clinical practices across provinces and a well-connected community of infectious disease experts. We have an opportunity to develop pragmatic definitions and approaches to rating prescription quality. We can move from qualitative standards of accreditation to scalable, quantitative metrics that would measure prescription quality and program effectiveness.

● (1605)

I will conclude right there, and I will be happy to take any questions.

Thank you.

The Chair: Thank you, Dr. Semret.

I'll go to our last—but not least—witness: Ms. Neudorf, who is a patient partner.

You have five minutes, Ms. Neudorf.

Kim Neudorf (Patient Partner, Patients for Patient Safety Canada): Madam Chair and committee members, thank you for this opportunity.

I represent Patients for Patient Safety Canada. We are a not-for-profit, volunteer-driven organization representing those who have experienced harm within our publicly funded health care system. We view AMR, sepsis and health care-associated infections as patient safety issues with physical, psychosocial and cultural manifestations.

Patients for Patient Safety Canada is a strong ally in supporting the reduction of AMR infections nationally and globally. We collaborate on research, help to develop national standards and public resources, raise public and professional awareness and participate in policy discussions. We accept 100% of all requests to participate in AMR initiatives.

Having the family's permission, I will share an experience that illustrates the profound human tragedy behind the science, as well as the clinical, economic and psychosocial burden of AMR.

A healthy 70-year-old sustained a simple foot fracture. Within two days, the person developed severe pain beneath the cast, accompanied by concerning changes in her vital signs and cognition. When the cast was removed, her foot was gravely infected. Sepsis was eventually diagnosed. MRSA, the most common health care-associated AMR pathogen, was identified. MRSA is notorious for causing persistent wound infections and, in more serious cases, life-threatening bloodstream infections. What followed was 419 consecutive days of hospital care. The person lost her foot and averted the amputation of her arm by two hours. Sepsis returned, as it does, and ultimately, MRSA and sepsis claimed her life.

The estimated health care costs incurred exceeded $750,000. This person never received a prosthesis, but a prosthetic foot can cost $15,000, and it can potentially cost $250,000 for a hand. Her husband was at her side each of those 419 days, incurring hotel, food and fuel costs, and he wasn't able to return to work.

Patients for Patient Safety Canada hears stories of stigma and harm. We see an opportunity for quality improvement. The lived experiences of patients and residents intersect with all five pillars of the action plan. This perspective unifies the plan's purpose by centring on the patient, the family and the community. Our recommendations will benefit the public, mitigate the moral distress and burnout experienced by health care workers, and reduce health care costs.

Many civil society organizations dedicated to AMR struggle financially. Therefore, in our first recommendation, we call on the Government of Canada to establish dedicated grants for patient organizations such as Patients for Patient Safety Canada and the Sepsis Canada patient advisory council to enable us to continue our collaborative work.

The remaining recommendations focus on people-centred engagement and empowerment. Respectfully, a supportive action that speaks to these isn't clear in the action plan.

Recommendation number two is to strengthen health promotion, infection prevention and patients' early recognition of sepsis through an equity lens. If three-quarters of a million dollars can be spent on valued treatment, can the same investment go toward community programs that promote healthy choices and living conditions, as well as bolstering our ability to prevent infections in the home and in hospital? Patients and residents do not expect to leave a health care facility more ill than when they arrived. It is crucial that high-quality infection control standards are measured and monitored in health and congregate care settings.

Recommendation number three is to develop resources for patients living with AMR, providing accessible, high-quality resources for patients, who at times feel dismissed, stigmatized and uninformed about how to live with infections complicated by AMROs. The psychosocial impact on people experiencing AMR infections or living with chronic colonization or post-sepsis is poorly understood, and support is needed.

Recommendation number four is to expand public literacy on AMR and AMU. AMR is technical. We should build on our basic knowledge of infection and antimicrobial use. This should start in primary education and continue through to university programming. We should measure the distribution of resources developed by Health Canada and PHAC. We can't learn from resources that never reach the intended audience. We should also measure the public's knowledge over time.

Recommendation number five is to integrate patient voices and national AMR strategies. The current action plan does not adequately incorporate patient and family perspectives. HESA can play a pivotal role in ensuring that patient and family voices are embedded in policy development, implementation and evaluation.

Thank you. There is more detail in my submitted brief.

● (1610)

The Chair: Thank you very much, Ms. Neudorf.

I want to congratulate the witnesses. None of you went over time. You were great. Some of you even went under time. That's something we parliamentarians could learn to do sometimes.

We'll now go to the question-and-answer session. The questions in the round we're doing now are six-minute questions, but that includes the answers—so remember, six minutes for questions and answers. I would urge everyone to be as succinct as you can, please.

We'll begin with Mr. Bailey for the Conservatives.

You have six minutes, please.

Burton Bailey (Red Deer, CPC): Thank you, Madam Chair.

Dr. Leung, Canada seems to lag behind other G7 countries in providing access to new antimicrobials.

Could you elaborate on specific examples of programs or pilots in other G7 nations that Canada could copy to improve timely access?

Victor Leung: There are two countries I'm aware of. One is the U.K., and the other is Italy. In Italy, they have access to many of the antimicrobials, but they have also developed a system of oversight so that contracts are negotiated between the government and the manufacturers to have criteria for use and criteria to re-evaluate the program based on whether there are exceptions to overutilization.

In the U.K., they have a model based on contracted pricing to incentivize companies to participate through a subscription model.

There are other examples among the G7 countries, but what's clear is that Canada, compared to these other countries, is behind in terms of our mechanisms for procuring and accessing antimicrobials when they're needed. We can learn from that through...an example is a hub and spoke model, in which there would be oversight through a more distributed system rather than centralizing it through the existing special access program.

● (1615)

Burton Bailey: We've heard about the benefits of a national licensure program for medical professionals. You advocated for a coordinated federal-provincial approach, and you just spoke about the hub and spoke model for high-volume antimicrobials, similar to malaria treatment.

How should the federal government structure its central role to ensure equitable access across provinces, given patient mobility and the rapid spread of resistance?

Victor Leung: One thing is to ensure that hospitals aren't the ones facing the budget challenges when accessing these antimicrobials, because it becomes very problematic for various hospitals to deal with this on their own. Any kind of federal model that ensures equitable access would have to address some of the financial challenges faced by hospitals when trying to access these antimicrobials.

The second criterion that would be important is accountability in how the funding is distributed so that the federal government has measures in place for at least some oversight or some accountability when the funding is transferred to provinces, if they go by a model that's decentralized.

Burton Bailey: I have one last question.

I've heard in meetings with various stakeholders that Canada is known for having excessive administrative burdens—paperwork and red tape.

What suggestions would you put forward to improve this reality so that Canadians may gain access to the best health care possible?

Victor Leung: We need to modernize some systems. Currently, when accessing SAP drugs, for example, if relying on the standard system, it's through faxing and telephone calls. Subsequently, there are outdated mechanisms for tracking.

However, it's also important, if we're going to develop any kind of improved information transfer system, that we don't follow the mistakes we have made in the past—for example, with some of the information system issues we learned about during the COVID pandemic. In re-evaluating how data is transferred, both for surveillance purposes and access purposes, we would have to keep in mind some of the major mistakes we made when trying to develop IT systems.

Burton Bailey: Thank you.

The Chair: You have one minute and 15 seconds, Burton.

Burton Bailey: I would like to be under time like our witnesses.

The Chair: My goodness. Wow. Thank you very much.

I'll go to the Liberals for six minutes.

Ms. Sidhu.

Sonia Sidhu (Brampton South, Lib.): Thank you, Madam Chair.

Thank you to all the witnesses for sharing your insight.

My first question is for Dr. Bogoch.

Dr. Bogoch, you said that roughly 70% of global antibody consumption occurs in agriculture animals compared to about 30% in humans. You emphasized the “one health” approach and that resistance can emerge and spread across human, animal and environmental settings. Based on the evidence, what do we know about how much antimicrobial resistance affecting human medicine is driven by human antibiotic use versus use in animals?

Isaac Bogoch: That's a great question. Thanks for bringing it up.

We know a lot, given that 70% to 80% of the global consumption is in non-human animals. There's intimate interconnectivity—pardon the term “intimate”—between animals and humans, and this is how it spreads. If the goal is prevention, but we're just focusing on family physicians' not giving an antibiotic for a viral upper respiratory tract infection, we've failed.

If you look at where many of the significant issues with AMR have developed, you'll see that it's overseas, where antibiotics are being dumped into agricultural animals. The reason antibiotics are being dumped into agricultural animals is that they grow bigger and stronger and have more muscle mass, and you can sell them for more money. There are programs internationally to reduce that, but they're not really enforced.

I think—if we want to look at bang for our buck—if we, coupled with other powers that be, can pull international levers to ensure that there's less use of antibiotics in that setting and the taps are turned off, namely through global stewardship programs, that will go a long way.

● (1620)

Sonia Sidhu: You talked about global stewardship. What approaches or best practices are most worth adapting to the Canadian context? Whether in surveillance, drug access or innovation, where do you see the most significant gaps, and how do we fill them?

Isaac Bogoch: There's really no silver bullet. It's doubling down on our efforts toward antimicrobial stewardship at a hospital level, as well as at an outpatient level, for which a lot of the antibiotics are used. This is being done.

The question is with regard to implementation. There are best practices and guidelines available. One of the issues, of course—as we already alluded to in some of the earlier conversations—is that Canada doesn't have a health care system; it has 10 health care systems. Within each of the 10 health care systems, you have an inpatient system, an outpatient system, a rehabilitation system and a home care system, none of which communicate. These are very challenging hurdles to overcome. Of course, they can be overcome, but again, we have standards and guidelines to adhere to. A lot of work needs to be done to ensure that people actually adhere to the guidelines.

Sonia Sidhu: The other thing you mentioned in your speech is incorporating AMR into defence investment. What specific capabilities should Canada fund under a security lens? How should the federal government integrate AMR into national security and defence planning?

Isaac Bogoch: I'm glad you brought that up.

When we talk about health security, we often talk about different things. There's the health side of health security, in which we talk about vaccine independence, creating rapid diagnostic tests and access to antibiotics. Sometimes we call that health security. However, there's also the security end of the spectrum of health security, as in preventing bioterrorism events.

There are nefarious actors out there. There are bioterror agents out there. Certain countries have developed drug-resistant pathogens like anthrax and botulism. We know that. People have tried to steal Ebola virus, for example, and that's why there's security around such outbreaks.

What can Canada do? It's extremely important, first of all, to recognize that bioterrorism is a real threat. We also have a funding mechanism. We can appreciate that we are going to spend a lot of money on security. We can appreciate that this is a true security threat. This can help fund RDTs, medical countermeasures, vaccinations and drug development.

It's not as though there are completely separate pots for health and security. They are closely intertwined. When you benefit security, you can have a cross-benefit to health, and vice versa.

Sonia Sidhu: Dr. Leung, in your previous testimony, you highlighted that while Canada has multiple AM surveillance systems, our core problem is fragmentation, in that data is not being aggregated across settings in a way that's timely.

Today, I see that everyone is talking about timely data that is actionable. You pointed this out for hospital surveillance in particular, in which reports can be out of date and may not support planning. What should be done so that we can improve the system?

Victor Leung: For the systems that are currently in place, we need to look at them again and understand their governance structures, along with their accountability for reporting, so that there's more transparency and understanding of why there are delays in data sharing, and as well, when they receive the information, what their role is in ensuring accessibility to help inform practices and measure the impacts of the programs.

Right now, for example, if I wanted to understand gonorrhea resistance in Canada as we implement a program in British Columbia, it is very challenging to get any of the data across not only for British Columbia but also for other provinces. That's not for research purposes. This is for program implementation purposes and understanding AMR interventions.

The Chair: Thank you very much, Sonia.

I'll now go to Monsieur Blanchette-Joncas.

You have six minutes, please.

● (1625)

[*Translation*]

Maxime Blanchette-Joncas (Rimouski—La Matapédia, BQ): Thank you, Madam Chair.

I would like to acknowledge the witnesses who are here today. I would also like to acknowledge my colleagues. I'm honoured and delighted to be joining this committee. We look forward to a great deal of co-operation and success in committee business.

Dr. Weiss, does federal underfunding for public health, prevention and monitoring actually limit the ability of Quebec hospitals to effectively prevent and control antimicrobial resistance?

Karl Weiss: I think that the main challenge lies in the fragmented nature of the system as a whole, both in Quebec and across Canada. Quebec, for example—but this also applies to the other provinces, as some of my colleagues have already said—faces a type of dichotomy between so-called inpatients, meaning the hospital setting, and the outpatient setting. That's the first issue. We're fully aware, for example, that most antibiotics are consumed in the outpatient setting.

The second issue concerns the additional fragmentation between animal and human environments. We talked about this aspect. There are occasional collaborations. I'm well acquainted, for example, with my colleagues at the agriculture, fisheries and food department, as I am with my colleagues at Agriculture and Agri-food Canada. By the way, they do an excellent job, sometimes even better than the human health sector, up to a point. However, these collaborations are often academic, ad hoc and limited, so to speak.

I would say that both Canada and Quebec lack the integration needed to monitor antibiotic consumption in real time and to set up computer systems that would give us a quick idea of potential problems. I would say that our major problem in Canada is what we offer on the international market in terms of drug consumption. We are a small market of 2%, which is shrinking in the face of other emerging markets. No major Canadian or Quebec company or multinational company produces antibiotics. We often have subsidiaries that depend on foreign countries, and hence on foreign goodwill, for investment and research, for example. Sometimes debates and battles take place within Canada to attract these foreign companies. Sometimes, in the end, the provinces compete to try to get someone in from the outside, when no major local players are available to take over.

One problem with all this, as we saw during the COVID-19 pandemic, is our heavy dependence on the goodwill of others. This is a key issue to resolve for the future of the Canadian market. For example, one company tried to produce the 100 most important drugs in Canada, in the event of a local production problem. I think that this is worth noting. I would say, as many of my colleagues have already stated, that the monitoring and research network in Canada remains fragmented.

As my colleague, Gerry Wright, said earlier, Canada and Quebec often have excellent but fragile research teams. My colleague, Michel G. Bergeron, at CHUL in Quebec City, helped pioneer the field of antibiotic resistance in Canada. He often works in relative isolation. In order to break into the international arena, researchers must often start collaborating with organizations outside the country, precisely because of the difficulty of working inside the country.

So I know my colleagues quite well, especially Dr. Leung. We worked together.

Maxime Blanchette-Joncas: Dr. Weiss, I must move on, since time is running out. However, this still answers my question. Look, I understand what you're saying. I've heard it all before. We're too dependent.

Let me remind you of a very inconvenient truth. Canada was the only G7 country unable to produce its own vaccine against COVID-19. The reason isn't a lack of talent, but rather a lack of investment. In the past 20 years, from 2000 to 2020, we were the only G7 country to cut research and development investment. So, I've already heard and analyzed what you're telling me.

You spoke about the major pharmaceutical companies. They were all operating in the greater Montreal area in the early 2000s. So, I'm trying to make a correlation. If we want to reduce our dependence on major foreign pharmaceutical companies, and if we want our own supply chain, we need a solid action plan for innovation. Yet I've noticed that Canada remains at the back of the pack. It's all well and good to have better coordination. However, when we don't invest in research and development, it's harder to attract vaccine suppliers and producers.

● (1630)

Karl Weiss: Let me say two things. Indeed, if we look at the G7 countries, Canada probably invests the least overall in research in proportion to its gross national product. So there's definitely room for improvement.

Then again, when it comes to COVID-19 vaccines, you could also say that the only country that ultimately succeeded—for reasons involving investment and money—was the United States. Neither France, nor Great Britain, nor Germany, nor Italy succeeded in creating vaccines. In the end, everyone depended on the United States.

However, ultimately, I would say that, if we wanted to increase investment in research in proportion to the gross national product, which would affect the health sciences in particular, with our aging population, and given what Dr. Bogoch rightly said earlier about the strategic threats facing Canada and Quebec, we would indeed need more investment, including in rapid diagnosis, production and logistical capacity. I would even add that this matter doesn't just concern vaccines. It also concerns all aspects of infection prevention and control, which were lacking during COVID-19, such as masks. Other materials could also be considered.

[*English*]

The Chair: Thank you very much, Doctor.

I'll now go to a second round. The second round is a five-minute round.

I want our new member from the Bloc to know that you will have six minutes in this round, because we're having a full two-hour meeting. In two hour-long meetings, you get two sixes. The committee all decided to be very co-operative, and you are going to have a six-minute round in the second round.

I'll go to the second round with Ms. Konanz from the Conservatives.

You have five minutes, please, Helena.

Helena Konanz (Similkameen—South Okanagan—West Kootenay, CPC): Thank you, Chair.

My first question is for Dr. Weiss.

You've touched on and talked a lot about the overuse of antibiotics. You mentioned that they're sold in other countries over the counter. They're given out less and less here in Canada. People, when they travel, stock up on antibiotics, because they can buy them. Who knows? Some of it may be counterfeit, but they're stocking up and bringing it back.

What do you say about this, and how much of an issue is it?

Karl Weiss: In fact, this is a very interesting question that you're raising. How much of an issue is it? We don't really know, because we don't monitor these types of things.

There are definitely people bringing them back on a volunteer basis or not on a volunteer basis. Sometimes it's because they simply bought antibiotics outside the country, and they're bringing them back here. That's definitely an issue.

The issue we have in Canada is that we are in this global village in terms of antibiotic use. I always tell people that infectious disease is the only specialty in medicine in which anything that happens on the other side of the world will have an impact on you. I tell my patients, if their neighbour has diabetes, it's very sad, but it's not going to impact the patient directly. If their neighbour has Ebola, the first thing they're going to ask is, “When was the last time I saw my neighbour?” Obviously, infectious conditions can be transmitted to people. Whatever happens in Asia, Africa, South America, Europe or wherever, you can bring back resistance with you.

In fact, I think there was a study done in Switzerland and another one in Sweden in which they decided to swab tourists who went abroad and came back, and they asked them to give a stool sample. They asked them to make sure they were healthy and that nothing had happened during their trip. About 25% of these people were carrying resistant bacteria in their gut. Obviously, these bacteria are not being declared to customs officers when people come back, but they travel as a Trojan horse—entering the country and potentially creating issues.

We see this every day in our hospital, for example, in young, healthy women coming back from the Indian subcontinent with simple infections such as cystitis, a bladder infection that is sometimes caused by a very resistant antibiotic, and we have to give intravenous antibiotics, with all the logistical consequences, costs, etc.

I would say that the flux of bringing back antibiotics into the country may be marginal. I don't know the answer, because nobody is looking at this carefully. Yes, it could be a problem in certain things. I think the fact that people are travelling and bringing back resistant micro-organisms is also part of the bigger picture.

● (1635)

Helena Konanz: Thank you. That's a really interesting answer.

My next question is for Kim Neudorf.

How do you see the present ability of the federal government to act with urgency to bring in or develop new medicines for Canada? Is it still too bureaucratic, from your point of view?

Kim Neudorf: Based on everything I've heard from the experts and people around the panel today, it does seem to be problematic. It seems to be cumbersome.

I was recently reading about gonorrhea AMR. Something exists currently in the U.S. that's a different medication and doesn't fall along the antibiotic line. Two different medications are ready and available to them, whereas here in Canada, my understanding is that we have increased the dose of the antibiotic in order to try to curb this resistant organism.

Helena Konanz: I'm sorry to interrupt you. I think I only have a little time left. I just want to follow up with a question.

I represent a region of the country in which patients' access to health care is not consistent. We literally have ER rooms that suddenly close at least one day a month.

You're talking about patient safety issues in everything, including AMR and health infection prevention. What do you think about the danger of having ERs closing throughout my region and throughout the country?

Kim Neudorf: It is very much a concern, and I think it drives some of the public's misuse of antimicrobial medications. We can look at access from many different angles—not just crowded emergency rooms. It will push us to stockpile or hoard medications and only take part of those medications, so we can perhaps use them when we think we need them. We put them on our shelves and use them when they're five years old.

The Chair: Ms. Neudorf, can you wrap up, please?

Kim Neudorf: That's because we don't want to sit in an emergency room for five hours. Then, of course, there are other issues around sepsis as well; maybe we are sitting at home too long when we need an antibiotic for that particular issue.

The Chair: Now we're going to Mr. Eyolfson for five minutes, please.

Doug Eyolfson (Winnipeg West, Lib.): Thank you, everyone, for coming.

Dr. Bogoch, you spoke about how 80% of antimicrobial use is in animals and how a lot of that is put in feed for growth.

I've asked this question previous times. I've never been able to get a really solid answer about this. In the human setting, at least in Canada, you cannot get antibiotics for human use unless you see a doctor and get a prescription. The doctor has presumably diagnosed an infection, prescribed the antibiotic and then it is dispensed to you.

What is the mechanism that there is not such a control on dispensing antibiotics in the agricultural sector? How are people getting a hold of them when they are so restricted in human use?

Isaac Bogoch: That's a great point.

For starters, I'm not going to comment on veterinary practices in Canada. I just don't know the answer to that.

Globally, as one of the other speakers mentioned, you don't need prescriptions. These drugs are readily available. They're commercially available, and they're used en masse in agricultural settings and in human health settings. You can literally walk into a pharmacy, write something on a napkin, give the pharmacist whatever you want, and they'll sell it to you. This does not just happen at an individual level. Sadly, it happens at scale in several Asian and African countries. It's not happening so much in North America, where we have tight regulatory controls, and the same with Europe.

As we mentioned before, the drug resistance develops and through people travelling or through trade we see the spread of dangerous antimicrobial organisms. For example, NDM-1 started in India. Another, MCR-1, started in China. These spread around the world.

● (1640)

Doug Eyolfson: Thank you.

As for the Canadian perspective, is this still permitted, or have they restricted this practice in Canada?

Isaac Bogoch: It's tremendously restricted in Canada. I don't know all the details of the restrictions, but I know that we're not pouring antibiotics into livestock in Canada—

Doug Eyolfson: Okay. Thank you. That is good to know. That was an important part of the question.

To your knowledge, are there international bodies trying to get a global strategy on this? Is the World Health Organization working on this? Is the UN working on it?

Isaac Bogoch: Yes.

There is a program called GLASS—the global antimicrobial resistance and use surveillance system—that is run by the WHO, and the CDC runs a program called the global antimicrobial resistance laboratory and response network.

As we've seen over the last 12 months or so, the WHO have been significantly impacted when major funders have pulled out. They're just not able to run the same programs to the level that they were before. They're in a bit of a remodelling mode because of the significant funding crunch.

Certainly, in the United States, the CDC is having significant changes as well.

A lot of the global funders and global players, as well as these programs, aren't going to be running as effectively as they once were, despite this growing issue.

Doug Eyolfson: Okay. Thank you.

Do you know what the change in funding was, particularly from the United States? Do you know what the proportion of their budget was on these programs when the United States was funding the World Health Organization, versus currently, when they have stopped?

Isaac Bogoch: It was announced that they pulled out of the WHO yesterday. I believe that was about $100 million a year of funding, which is pretty significant. The WHO budget is not that big, considering their enormous mandate.

Doug Eyolfson: Yes.

Isaac Bogoch: They don't have enough money at the best of times. Having a major donor pull out is very problematic for global public health.

Doug Eyolfson: Thank you.

Dr. Leung, I'll ask very quickly: You talked about vaccines. With viral illnesses such as flu, we can get secondary bacterial infections. Canada has a tremendous problem with decreased vaccine uptake. Given the setting that there are often secondary bacterial infections, would you say that Canada's decreased vaccine uptake is contributing to AMR?

Victor Leung: Overall, when you have a decreased vaccine uptake, depending on the type of vaccine, that will definitely contribute to AMR. One specific example is the *Streptococcus pneumoniae* vaccine, which is for the bacterium that is the most common cause of bacterial pneumonia. It leads to invasive infections.

The reason the uptake is low is not necessarily issues related to vaccine hesitancy but rather how public health distributes the vaccine in each province. When you look at opportunities for vaccination when people interact with health care systems, that's not just in the community. The big gaps are in hospital-based vaccination opportunities and how they tie into the spectrum of care, as individuals have problems with access even if they want to get the vaccine. Improving access is one of the important things that need to be addressed when thinking about vaccines and AMR.

The Chair: Thank you, Dr. Leung.

I'm going to ask members to remember that when you have only 15 seconds left, please try not to ask a difficult, long-answer question.

I'm going to Mr. Blanchette-Joncas for six minutes, please.

[*Translation*]

Maxime Blanchette-Joncas: Thank you, Mr. Chair.

I'll turn to you, Dr. Weiss.

In its report entitled “Disruptions on the Horizon”, published in 2024, the government's Policy Horizons Canada centre pointed out that antimicrobial resistance is now the leading cause of death globally. So, as we know, this phenomenon is already disrupting food systems and increasing costs for the producers responsible for ensuring animal and plant health. Action is urgently needed.

I also liked what you said a bit earlier about fragmentation. According to my own data, in 2020, 82% of antimicrobials sold in Canada were for animal use. So, clearly, there isn't much left for humans.

I would like to hear your comments on this information. I would also appreciate your expertise and analysis.

● (1645)

Karl Weiss: Antibiotics are used in the animal world first and foremost for economic reasons. The goal is to encourage animals to grow faster, so that they can reach a saleable weight more quickly. However, using these products also offers an advantage. We can think philosophically about the type of agriculture that we want, but I'll give you the following example. If you have a farm with a million chickens, but you don't give them antibiotics, there may be an outbreak, a very quick die-off and economic losses. So the use of antibiotics also involves a balance of sorts.

In Canada, we do have good regulations. Animals are weaned before being sent to slaughter. People wonder whether they're going to eat antibiotics. I'm not a veterinarian. However, having spoken to some of my colleagues, the use of antibiotics is stopped some time before slaughter. Moreover, cooking will also denature antibiotics, which are often highly thermolabile molecules. So, when all is said and done, a certain structure does exist in Canada.

Countries such as Denmark, for example, tried to take further steps to reduce the use of antibiotics in agriculture, especially in pig farming. They have had mixed success, but there has been some progress nonetheless. So, yes, many more antibiotics are used in the animal world than in the human world. Obviously, the objectives are different. Antibiotics are used in humans for therapeutic reasons, but in animals for economic reasons. The exception is a very small portion of animals. Pets such as cats and dogs also receive antibiotics for therapeutic reasons, just as humans do.

So there's certainly room for improvement in the farming industry. Then again, we depend heavily on agricultural movements and flows around the world. We talk a great deal about animals. Remember that many antibiotics are also used in aquaculture. So, when you go to buy, for example, shrimp from certain parts of the world, a large number of antibiotics may have been used. I don't know how this is monitored in Canada, but is it? We should certainly try to meet with an expert in this field to find out whether and how much, for example, antibiotics have been used to feed shrimp farmed in other parts of the world. This could certainly affect our environment.

Maxime Blanchette-Joncas: Dr. Weiss, if you don't mind, I'll focus on matters no doubt familiar to you concerning the situation in our hospitals. You know, when a resistant infection no longer responds to standard treatment, you understand that hospital stays are longer and that more resources are required. In your opinion, is antimicrobial resistance already contributing to bed congestion and pressure on the hospital system, particularly in Quebec?

Karl Weiss: Certainly. As you know, our population is getting older and older. We have people undergoing more and more procedures at increasingly advanced ages. This is the case in Canada and all over, in every province. I often say that, nowadays, people are kept on hemodialysis until the age of 90 or more, with all the potential complications of dialysis and the risks of infection by resistant bacteria in this group. However, the same applies to people undergoing complex surgery and to people receiving chemotherapy.

So, of course, the cost of antibiotic resistance lies in the increased length of hospital stays. We know this. Canadian and Quebec studies have shown this. We know that this will increase the cost of using antibiotics and that it will then cost more to treat these people. Obviously, we know that this can also affect mortality.

So all the risks of antibiotic resistance for the system's most vulnerable patients arise in the very places where the impact takes its greatest toll. Take antibiotic resistance for ear infections, for example. If you look at young and healthy children, the impact is mainly that they'll be taking other antibiotics. However, the impact will be relatively limited. If you look at a dialysis patient who needs antibiotics and who has developed antimicrobial resistance, the impact may be sepsis or death.

Maxime Blanchette-Joncas: Dr. Weiss, the important word that you used in your first remarks, following my initial questions, was “prevention”. It seems that prevention is currently being sacrificed with the required financial choices. So, from a clinical perspective, do you feel that prevention and monitoring are still the poor cousins when it comes to funding, despite their recognized effectiveness in avoiding costly complications?

● (1650)

Karl Weiss: Certainly. You know, in a system in constant deficit, it's always difficult to see prevention as a profitable investment from the outset. It's often seen as an expense rather than anything else.

The easiest example is the good pneumococcal vaccines. Fortunately, these vaccines are administered in pediatrics from birth. It took a long time to provide them free of charge to seniors given the high cost, even though pneumococcal septicemia is often fatal in seniors. So this is a concrete example of a double standard.

Yes, investments should be made in prevention and rapid diagnosis, absolutely.

[*English*]

The Chair: Thank you; that's time.

I'll now go to Mr. Viersen for five minutes, please, for the Conservatives.

Arnold Viersen (Peace River—Westlock, CPC): Thank you, Madam Chair.

Given that I was reading Mr. Wright's bio, my series of questions is directed towards him.

Mr. Wright, my questions are about not only prevention but also the treatment side of things. Our instincts have been, over the last number of years, to pursue hard surfaces such as plastic, stainless steel and the kinds of surfaces we are now discovering these bugs can actually live on for a very long time, but we've abandoned other products, such as wood, silver and brass, that we are discovering are very antibacterial. I would like some comments around the use of those materials in, say, the building of hospitals and things like that.

Also, I represent about a quarter of Canada's honey production, and my beekeepers say they have a solution to some of these superbugs, and that's bee propolis. I'm wondering if you have any comments on whether this is being used in medical settings. Are the beekeepers telling the truth when they tell me they have a solution for some of these superbugs?

Mr. Wright, the floor is yours.

Gerry Wright: Thank you for that.

Let me dodge the last question first and say your beekeepers are no doubt telling the truth, but I don't know a lot about those compounds. Bees are social animals, but they are highly susceptible to infection, so they very often produce a lot of interesting compounds, or they're associated with organisms that produce interesting antimicrobial compounds.

The area I know the most about is leafcutter ants, which actually harvest and embed in their skeletons antibiotic-producing bacteria so that they can protect themselves. I would not be surprised if your beekeepers are right. Whether it's a solution for non-bees, I couldn't comment.

With regard to your first question about surfaces, it's really important. We think of bacteria as just growing in a solution and then dividing, but a really important physiological lifestyle aspect of bacteria is something called biofilms. In fact, probably most bacteria in the world are found as biofilms. These are embedded in sugar matrices that form what you would almost think of as a slime. They bind to surfaces, and when they bind to these surfaces and enter these physiological states, they're highly resistant to antibiotics and very challenging to get rid of, and they can come off. This is why you often get chronic infections due to, for example, catheters that are inserted, because the bacteria grow biofilms around the plastics.

The challenge of using other materials, such as wood and metals like silver and brass, which have well-known antibiotic properties, is really one of practicality. It's hard to think of how you could implement that in a lot of indwelling devices that are used in humans. In many cases, it's much easier to pull them out and toss them, but I will make the point that, many times, important indwelling devices such as artificial joints are made out of heavy metals like titanium for the reason that they have inherent antimicrobial properties.

To wrap up the first part of your question, there are certainly different surfaces always being looked at as means to prevent infections, but balancing out the cost is a significant challenge.

● (1655)

The Chair: You have 39 seconds.

Arnold Viersen: I will go back to Mr. Wright and ask about public perception. We think about a wooden surface as probably being dirtier than a stainless steel surface. Maybe there needs to be some change to our thinking around those things. Do you have any comments around that?

Gerry Wright: I honestly have no expertise to be able to say that for sure. I used to work in a kitchen in a hospital as a high school student—

Arnold Viersen: Could you point us towards somebody who would have some expertise in this?

The Chair: Given that you're out of time, Mr. Viersen, I think we could see if somebody wants to throw that into their question next time.

I'll now go to the Liberals.

Ms. Jaczek, you have five minutes, please.

Hon. Helena Jaczek (Markham—Stouffville, Lib.): Thank you so much, Madam Chair.

Thank you to all the witnesses.

Dr. Wright, I'd like to start with you. You have talked about push-pull incentives. Specifically, I would like to drill down a bit as to the role of the federal government.

One suggestion we've heard today was that CIHR form a specific stream related to AMR. Would you see this as a good recommendation on the push side in terms of advancing research?

Second, on the pull side, could you be more specific as to what the federal government should do as an incentive to encourage development of new antibiotics?

Gerry Wright: Thank you for that. That's something I actually know about.

An increase in the budget to the CIHR for fundamental upfront discoveries is a classic push mechanism. We're going to push the science. We're going to make this kind of science attractive to the best, youngest scientists available to us. This would have a huge impact.

On the pull side, we're trying to pull discoveries into patients, and usually the best people who know how to do this are with large pharmaceutical companies that know how to make drugs, can do this at scale and have the facilities to do it. We have to make it profitable for them to do it.

We do this in vaccines all the time. We promise vaccine developers that we're going to buy *x* number of doses, so there's no mystery for the vaccine developer about return on investment. We don't do that with antibiotics, but we should. Other countries—Norway, the United Kingdom—are doing this, and I hope Canada will too, going forward.

It's especially a challenge for us because we have such a small market. We need to get these drug companies excited about selling their products in Canada, because the market is so small, but if they had a guaranteed income, they would do it.

Hon. Helena Jaczek: Thank you.

Dr. Semret, you're very involved in surveillance, stewardship and so on. One recommendation we've heard at this committee is that we should look more closely at long-term care facilities for both stewardship and surveillance. We have, as pointed out by many of you, a very fragmented system in terms of data collection across the country, within provinces, between institutions and so on.

Would you see it as an important source of information if we looked more closely at long-term care facilities?

Makeda Semret: Yes, I would, absolutely. We definitely need to expand beyond acute care hospitals.

In my remarks, I mentioned that the resource-intensive nature of performing effective stewardship interventions is the reason we're not doing it in the community or in long-term care facilities. If we start coordinating to make some of these definitions more pragmatic and if we have better ways of implementing stewardship, I believe it will be very organic and natural for these good practices to be deployed across the spectrum of health care institutions. There are many things we can do before forcing mandatory stewardship programs in settings that are poorly resourced.

Hon. Helena Jaczek: Do I have any time left, Madam Chair?

The Chair: Yes. You have one minute and 19 seconds, Helena.

● (1700)

Hon. Helena Jaczek: Dr. Bogoch, we've heard a tragic story from Ms. Neudorf related to sepsis. I think most of us are aware of MRSA, VRE, *Clostridium difficile*, and so on, as being very difficult infections to treat.

In your experience as a clinician, what kind of progress are we making? Are we lacking some appropriate new antibacterials or antimicrobials? What is your experience around some of these very tragic situations?

Isaac Bogoch: Thank you.

Yes, it's very challenging. Anyone who practises hospital-based medicine, whether it's an infectious disease physician, a general internist, a surgeon or an intensivist, is going to see them every day. We see them every single day.

Much of the time we have the existing tools, but when we don't have them, we have to go through the special access program, SAP, which is extremely cumbersome and actually delays care. There are drugs that we need but that just aren't available to us.

Sadly, we need them more frequently. It's easy to say that SAP doesn't work, that it is cumbersome and outdated, but I think it's time to actually implement something better. It would be a good idea to get smart people in the room to sort out a much more efficient mechanism to gain timely access to antibiotics that we don't have readily available to us and that we're needing more and more.

The Chair: Thank you very much.

I'll go to one final round. I will begin with the Conservatives and Mr. Mazier for five minutes, please.

Go ahead, Dan.

Dan Mazier (Riding Mountain, CPC): Thank you, Chair.

I thank all the witnesses for coming here today.

In October 2023, the Auditor General released a report examining the federal government's approach to antimicrobial resistance. One theme identified by the Auditor General is that, while the federal government recognizes antimicrobial resistance as a serious public health threat, the national action plan does not include clear targets, timelines or accountability mechanisms.

From your perspectives, what are the risks of responding to antimicrobial resistance without measurable goals or clear accountability outcomes?

I'll start with Dr. Bogoch.

Isaac Bogoch: Thank you. That's a great question.

Yes, we have to measure it. We have to have outcomes, and we have to measure them. We have to know how we're doing.

One of the challenges, though, as I mentioned earlier, is that we can do everything right and still get throttled by AMR because of what's happening elsewhere in the world. This doesn't mean we shouldn't be acknowledging that this is an issue and setting up programs to better measure and control it.

The measurements don't necessarily have to be morbidity and mortality—which, of course, are important measurements. They could be on how many programs you have set up, the timely access to drugs that might not be available in Canada and training programs.

These are very important issues that obviously need to be implemented, but we also have to measure how we're doing.

Dan Mazier: Dr. Semret, I believe you made some comments around feedback, so I would like to hear from you on this as well.

Makeda Semret: Yes, I think the issue of what we measure is a really important one.

In acute care hospitals, we've been focused on what I would call process outcomes on what we're doing—how many antibiotics and prescriptions we are reducing and the quality of the prescriptions. We have been less focused on patient-centred outcomes, which I think would be an important incentive for hospitals and for health care in general.

Antimicrobial stewardship, as has been said by multiple people, is about patient safety and health system sustainability. The success of our stewardship efforts should not be judged only by the reduction of antimicrobial use or even the improvement of prescription quality; it should really include clinical cure.

You'd be surprised, but we don't systematically measure outcomes from infectious diseases anywhere—not in acute care hospitals, not even in the intensive care units of our hospitals. I think that's an incentive that should be created and that acute care hospitals should start measuring this systematically.

This could be rendered much easier with IT support. Victor and several of my colleagues mentioned that electronic prescribing systems across settings would facilitate the development of structured datasets. This would not only make processes more efficient but would also give us very useful metrics.

● (1705)

Dan Mazier: Thank you very much.

With that, I'll hand my remaining time over to Ms. Konanz.

The Chair: You have one minute.

Helena Konanz: Thank you.

Yes, I'll take this time to make a motion.

I move:

> That, given the Order in Council appointment referred to the Standing Committee on Health on December 4, 2025, by the Board of Directors of the Canadian Centre on Substance Abuse; the committee invite all Governor-in-Council appointees currently serving in the Canadian Centre on Substance Abuse, to appear for one meeting to discuss their work before February 13, 2026.

I just want to add that this is a new committee, and we haven't met them. I think it's important that we all get to chat with them.

If, for some reason, we need to move the meeting to a week later than February 13—I know we're running out of time a bit—we can do that. We can move it by a week.

The Chair: I'm sorry, Helena. What did you just say about a week?

Helena Konanz: Well, the motion says that we need to discuss their work and meet them before February 13, 2026. That's the original motion I made. If we need to extend that by a week, then that would be fine, because we have a lot on our plate.

I think it's a good idea for the committee to meet with—

The Chair: I just want to ask everyone if they have the motion in English and French. It was moved a while ago, but she's now amending it somewhat.

Here we go. I'm going to read the motion slowly. It was submitted on December 10.

The motion was:

> That, given the Order in Council appointment referred to the Standing Committee on Health on December 4, 2025, by the Board of Directors of the Canadian Centre on Substance Abuse; the committee invite all Governor-in-Council appointees currently serving in the Canadian Centre on Substance Abuse, to appear for one meeting to discuss their work before February 13, 2026.

Ms. Konanz has just added that she's prepared to extend that by one week, given that we have a lot on our plate.

You have a motion on the table that had been duly circulated awhile ago.

Maggie, go ahead on the motion.

Maggie Chi (Don Valley North, Lib.): Chair, may we suspend the meeting for a quick moment, so we can examine the motion? It was tabled a while ago, so we just need to take a look.

The Chair: We'll suspend.

● (1705)

_____(Pause)_____

● (1710)

The Chair: We will resume the meeting. I will entertain discussion on the motion.

Go ahead, Ms. Chi.

Maggie Chi: Do we need to change the motion, Chair? We just need to update the date.

The Chair: She said a week.

Helena Konanz: We agreed on another date—February 26.

The Chair: You've all agreed on that. That's good.

Helena Konanz: Do we need to change any of the wording?

The Chair: Instead of “before February 13”, we would say “their work before February 26, 2026”.

We have a motion. Do you want me to read it? Do you all have it? Do you all know what it says?

If there is no further discussion, we can call the question on the motion.

Dan Mazier: Does the clerk have everything she needs?

The Chair: Yes.

Do we just call the question, or do you want a recorded vote?

Dan Mazier: UC is good.

(Motion agreed to [*See Minutes of Proceedings*])

The Chair: We can move now to finishing up the round we were doing.

We'll go to Ms. Chi for five minutes, please, for the Liberals.

Maggie Chi: I want to say happy new year to everybody. Before I get into the question, I want to thank Luc and Andréanne for their work on the committee last year and welcome our new member, Maxime, to our committee. I'm looking forward to working together.

Thank you to all the members for attending our very first HESA meeting in 2026. Thank you for starting us in the right way by giving us really pertinent information on this topic.

My first question is for Dr. Wright.

In your testimony you mentioned the research environment in Canada and some of the challenges you experienced or the gaps that you see. I just want to ask if you can outline that a little more.

What do you see in other countries? Give us a couple of examples that are working well that we can really learn from.

Gerry Wright: Thank you very much for that.

Let me first say that there will never be enough money to do this. I get it. I know it always sounds as though we're whining about trying to do this. I'm deeply concerned that this is a massive public health problem and it's only going to get worse. How do we incentivize young people to work in this area if there's almost no chance for them? You would be much better off going to Vegas to get a grant to support your research in AMR these days. Funding is tight across all the health care sectors, and there's really no dedicated funding for this within the traditional CIHR mandate.

My suggestion would be not to steal money from other people but to try to find a way to fund AMR research directly through the CIHR and not lump it in as part of all of microbiology. Other places do this. I would have pointed to the United States a year ago as being better than this, but who knows what's going on there and what's going to happen? If anything, this is a tremendous opportunity for us because it's chaos for the research community south of the border. There are opportunities to repatriate some outstanding Canadian scientists who are away.

Europe is doing this quite well. There's a lot of dedicated funding in a number of European countries that really emphasize this. I'm thinking of Germany, the United Kingdom and France, which have made this a priority and are funding fundamental and applied research. They're actually funding not just the curiosity-driven research but how to solve this problem. How do we incentivize small companies to get into this? How do we make sure that medicines get to patients in the future?

There are lots of lessons out there to be learned. I think we could take a page from Europe in particular in this area.

● (1715)

Maggie Chi: Thank you, Dr. Wright.

My next question may be for a few people on the panel.

We've heard from witnesses that the data is fragmented and there are some disjointed practices and approaches. I want to pick your brains on some of the innovations you see in this space in Canada. Maybe we can cover a couple of areas. Everybody is from different regions. Dr. Leung is from B.C., Dr. Weiss is from Montreal, and Dr. Bogoch is from Ontario. Maybe each of you could give a quick summary.

The Chair: You have one minute to do so. Give a quick summary, please.

Maggie Chi: You have twenty seconds each.

Isaac Bogoch: There's something really interesting called phage, in which you use viruses to target bacteria. It's been around for ages, but there are people who develop this here in Canada, and it's used to treat the most drug-resistant organisms that don't have antibiotics available for them.

Maggie Chi: Thank you.

Karl Weiss: I'll speak for Quebec.

I know the CHU de Québec, when Michel Bergeron was at the helm of it, developed a lot of molecular-based diagnostic tests to look for antibiotic-resistant micro-organisms. It has been subsidized by CIHR, and it's doing a great job in that field. It was, in fact, at one point, [*Inaudible—Editor*] by multinational companies for their innovation.

Maggie Chi: Do we still have time, Madam Chair?

The Chair: Yes. We've asked everyone to answer, I think.

Dr. Leung, do you have anything to add or are you cool?

Victor Leung: From the Vancouver side, one innovation is more of a community-based program that was started by the BC Centre for Excellence in HIV/AIDS, which is the treatment-as-prevention approach. They are using that to address syndemic conditions such as opioid use disorder, blood-borne bacterial sexually transmitted infections and other social conditions. Using the treatment-as-prevention bundle, in which we have measurements through the cascades of care, is something we could borrow from how they've managed HIV and AIDS.

The Chair: Thank you.

Does anyone else want to answer this quickly?

We've gone over time, so I will just say thank you. We'll move on.

I'm going to go to Mr. Blanchette-Joncas for two and a half minutes, please.

[*Translation*]

Maxime Blanchette-Joncas: Thank you, Madam Chair.

I'll continue with you, Dr. Weiss.

If you had stable and predictable funding, what priority measures would you implement immediately to better control antimicrobial resistance in hospitals?

Karl Weiss: The first thing would be to have a much broader integrated computer system than what we have now. This would allow for the real-time collection of information on what's going on with certain organisms. Computer integration would definitely be number one.

The second thing would be intervention at the community level. We talk a lot about hospitals, but let's not forget that the vast majority of antibiotics are used outside the hospital, and that's not something we measure. Therefore we need to reach out to family doctors, for example, but also health professionals, like pharmacists, who now have the right to prescribe drugs, to educate them and gather information. It's important to also look at what's happening outside the hospital.

The third thing would be to organize a basic research. We have to try to integrate teams that work in silos. Good teams often discover things, but it stays with them, because they're isolated. Also, their tasks are not integrated, whether across Quebec or Canada. We need to promote the integration of these systems. It's also about selling these teams' capacity in an international market, promoting them, but they should also be promoted across Canada or Quebec to encourage investment in Canada. I think it's important to emphasize that. Obviously, if we can attract outside talent, why not? That's also something that should be facilitated.

● (1720)

Maxime Blanchette-Joncas: Dr. Weiss, is it safe to say the Quebec health care system is compelled to pay more to solve the problems that could have been avoided by investing upstream?

Karl Weiss: Everyone in the country is compelled to pay more.

One of the main issues is that we're caught between a rock and a hard place. On the one hand, there are companies, whether in the diagnostic or therapeutic field, that are mainly American, and they invest heavily in the United States, because it's a big market. On the other hand, there are companies that invest in Europe. There are also companies that invest in emerging markets, such as Asia, India and China. Canada is somewhat left behind in all of that, because we're a small market.

The idea is to use the synergy between our talents to show the world that, even though we're a small market, we can punch above our weight. We can sell and provide certain information and goods that might be difficult to find elsewhere. Creating structures that would make it possible to sell this information might be a way to find our added value across Canada. I would say that data, especially with artificial intelligence—

[*English*]

The Chair: Thank you, Dr. Weiss. We've gone well over our time on this one. I'm sorry.

I'll go to Mr. Bailey for five minutes for the Conservatives.

Burton Bailey: Thank you, Chair.

Dr. Wright, many trainees are leaving Canada for a stronger biotech opportunity abroad. You've indicated that there are opportunities to possibly start recruiting them back to Canada. Do we have room in our labs and universities to accommodate more individuals?

Gerry Wright: First of all, thank you for that. The short answer is yes.

We should never leave talent outside the country. We need the resources to be able to do this. It's challenging enough as it is. We have a tremendous opportunity right now to expand our critical mass in this area, even if we just bring Canadians back home who are working over there, but it won't happen if....

It can't be a zero-sum game. There has to be more investment to make it happen. It is literally an investment in our future.

Burton Bailey: Thank you.

Some provinces are now allowing pharmacists to prescribe. Do you feel this leads to over-prescribing?

Gerry Wright: I don't think there's any data suggesting that's the case. I think most health care workers, such as pharmacists, physicians and nurse practitioners, are incredibly savvy these days about the challenges of resistance. It's important to monitor this, and it's my understanding that it's happening in real time.

Some of my colleagues online, and probably Dr. Bogoch, may have more information on this than I do.

It is not like it was 20 years ago. We understand the problem. If you can decrease the pressure on physicians and hospitals by engaging pharmacists to deal with this, that's a positive overall.

Burton Bailey: Dr. Bogoch, did you want to make any comments?

Isaac Bogoch: Yes, that's a great point. Task shifting has been implemented in different parts of the country. I'll give you a tiny example: Lyme prophylaxis. You get bit by a tick. Rather than waiting in an emergency department or going to a family physician, which you might not even have access to.... Many pharmacies have the authority to prescribe the antibiotic doxycycline. They have very clear guidelines on what drug to use, how much to use and what time frame to use it in. Yes, I think task shifting can certainly be expanded, but on the point my other colleagues have made, it has to be done very carefully in order to not make this issue worse.

Burton Bailey: In Alberta, we have gone to a new MR system called Connect Care, which allows our doctors in all the different specialties to communicate with the hospital. Of course, our patients now have access to their own medical records. I'm wondering if this type of MR system is implemented in more provinces. I don't ever see all the provinces being connected, but can we monitor the metrics better in Alberta? Can you look at data that way because everything is shared?

● (1725)

Isaac Bogoch: Yes, it's a very smart system. One issue in other parts of the country is that there are fragmented electronic medical records. When it's all connected, the outpatient physicians know what the in-patient physicians are doing. They know what's happening at the rehabilitation centre, at the long-term care facility. It's brilliant. There's less redundancy; there's streamlined care. Yes, there are going to be many positive knock-on effects, probably including better care for infectious diseases, which would likely mean less use of antimicrobial agents and less pressure to develop antimicrobial resistance.

Burton Bailey: I overheard that you travel through many provinces. Have you seen a system in other provinces similar to Connect Care?

Isaac Bogoch: In Ontario we have a program called ConnectingOntario. It's not perfect, but it's pretty darn good; you can see most notes written by multiple different hospitals. You can see lab work and even some basic pharmacy information and radiography. It's far from comprehensive, but it's a hell of a lot better than what we had before.

Burton Bailey: In Alberta, of course, we had three systems and we went to one, and we're not even there yet. We're a billion dollars in, and that's why I say that there will never be a day that all provinces are on the same MR system.

You say Ontario has a system. What about British Columbia? Do they have a system?

The Chair: You have 12 seconds.

Victor Leung: In British Columbia we have PharmaNet, which has all the community prescriptions for medications.

The Chair: Thank you, that's it for that.

I will now go to the final round for the Liberals with Mr. Eyolfson, for five minutes, please.

Doug Eyolfson: Thank you, Chair.

Dr. Leung, you talked about a fragmented system. I know that within provinces, we're getting better at interoperating. When I work in emergency in Winnipeg, I can see on the computer the emergency record if they've visited any emergency department in Manitoba. Family doctors can get automatic transmission to their own EMRs if their patient has visited.

However, between provinces, we don't have this. I live in Manitoba. Three years ago, I had bypass surgery in St. Paul's in Vancouver. Why that happened is a long story. When I saw a cardiologist later and the office needed to get my discharge summary and angiogram, they asked if I could fax it to them. The only reason I had it available to me was that they gave me the photocopies in Vancouver to take home on the plane. It seems absurd in this day that there would not be some sort of mechanism by which you could have interoperability between provinces. Would you not agree that an interoperable national system could happen that is equivalent to what is being done within provinces?

Victor Leung: Certainly, there are different types of interoperability that I'm aware of. One specific thing is that you don't have to have the same medical information system or laboratory information system to share information. As long as the data system that they're using meets a certain level of coding for sharing and interoperability, it is sufficient. Of course, it requires data verification and validation aspects, but these types of approaches already exist. It's just the mechanism and how it could be implemented in Canada that is the problem, not necessarily having an agreement that every medical information system across Canada has to be the same.

Doug Eyolfson: Certainly, yes, and I understand that they couldn't be the same. From what you're saying, they have the capability of sharing the information, but they obviously can't today.

What would you say is the main barrier to creating the ability to share, in real time, this information electronically, which could help with, as you say, surveillance and all the other things we're talking about today?

● (1730)

Victor Leung: I could just mention one of the barriers. One barrier that is often brought up is data privacy. Even within a province, there are data privacy teams within each hospital network, and to share information, sometimes you have to go through multiple teams. That is a real barrier we face in trying to access information that's already available.

Doug Eyolfson: All right. Thank you.

Dr. Bogoch, do you have anything to add to that?

Isaac Bogoch: No. I thought that was pretty comprehensive.

Doug Eyolfson: Okay. Thank you.

Dr. Weiss, on that point, do you have anything to add on possible solutions to the barriers that are preventing interoperability and sharing of information between provinces?

Karl Weiss: There are many, obviously.

We have a system in Quebec called the DSQ. It is not working so well. It's a very limited system compared to those of the other provinces.

Interoperability would probably be very interesting; however, as my colleagues mentioned, there are ethical issues. The second thing is that if we want to be optimistic but not go too far, we can at least share certain things. This can be integrated. We don't have to integrate everything, and it's probably going to be a lot easier.

For example, from an antibiotic resistance perspective, should we integrate data from microbiology laboratories so that we can connect and share information? Can we look at certain metrics, such as outcomes in certain infectious conditions—sepsis, for example? Should we look at comparable data between provinces for sepsis mortality throughout the country or outcomes for hospitalized pneumonia, mortality rate, antibiotic use, etc.?

I think we should try to focus on certain things in terms of a Canada-wide structure. That would probably be more feasible, less costly and more effective in a very short time.

Doug Eyolfson: Thank you very much. That's my time.

The Chair: I wanted to ask one question.

If you had non-nominal ways of communicating patient data, would that help the privacy issue?

Go ahead, Victor.

Victor Leung: There are different approaches now in our data analytics team and an exploration of those approaches. One is data management through a process called data federation. The data doesn't have to leave the process. You can still link and unify data for access in multiple locations without giving up the data and where the data is stored.

Consulting data management experts would provide a bit more clarity on how this would work.

The Chair: Thank you.

I had one more question I wanted to ask.

I know there has been an idea floating around in Canada about not reinventing the wheel but instead looking at European or other countries' data on drugs, information and research and then sharing it without having to do it ourselves. A big one that was discussed here was getting things onto SAP and looking at clinical trials, etc.

What do you think of that? I know some people felt it was a terrible thing to do.

Dr. Wright, what do you think about it?

Gerry Wright: I'm a scientist, so I believe in looking at data, and I look at everyone's data. If there are deficiencies in the data, then we need to add more of our own to it.

There's a fair bit of effort going into trying to harmonize these efforts. Why go through all the same kinds of studies in Canada that have already been happening in, say, France, the U.K. or even the U.S.? That makes great sense to me. I think this is happening in some cases.

There are some idiosyncrasies of the Canadian system that we have to take into account, but I think there's effort at Health Canada to try to streamline this as much as possible. At least, that's what I understand, but I'm not an expert.

The Chair: Thank you very much.

I want to thank all the witnesses for coming today and sharing their valuable information, expertise and wisdom with us.

We are now going in camera because we have some work to deal with. I'll suspend this meeting while the witnesses leave.

Thank you.

[*Proceedings continue in camera*]