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Chair

Mr. Bill Casey

Standing Committee on Health

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● (1600)

[*English*]

The Chair (Mr. Bill Casey (Cumberland—Colchester, Lib.)): I'll call the meeting to order.

Welcome to meeting number 77 of the Standing Committee on Health and our study on antimicrobial resistance.

I have a couple of little things.

I understand our sound system is not working yet on our teleconference, but hopefully we'll get that fixed shortly.

I'm leaving a bit early, and the vice-chair is going to take over.

At the very end, we're going to have a look at the letter we wrote about Bill C-45 to see if everybody approves of the letter.

I'll introduce our guests, and we'll get into our discussion.

From Halton Healthcare, we have Dr. Neil Rau. He is an infectious diseases specialist and medical microbiologist. Welcome very much.

From the Canadian Patient Safety Institute, we have Sandi Kossey, senior director of strategic partnerships and priorities. Welcome.

Also from the Canadian Patient Safety Institute, we have Kim Neudorf, patient advocate with Patients for Patient Safety Canada. I understand you two are going to share your opening statement.

As an individual, by teleconference we have Dr. Yvonne Shevchuk, associate dean for academics and professor at the College of Pharmacy and Nutrition, University of Saskatchewan.

We'll open with 10-minute opening remarks, starting with Dr. Rau.

Dr. Rau, would you like to fill us in?

Dr. Neil Rau (Infectious Diseases Specialist and Medical Microbiologist, Halton Healthcare): Thank you very much for inviting me.

I'm going to begin by saying I've read the summaries of many people's statements and I think we need to bring some perspective to the discussion. That is not to say this is not a problem, but I think there are many interventions to consider. There's no single intervention.

I think we also need to keep the scope of this problem in perspective. Comparisons have been made to the opioid crisis. I don't think those are entirely fair. We expect to have zero deaths from opioid overdoses in the ideal world. When it comes to antimicrobial resistance, we are still unfortunately going to see some deaths from it. They're not all preventable. The idea of getting to zero antibiotic use is also a utopian goal that we are not going to achieve. Antibiotics also save lives.

Let me begin by talking about the so-called epidemiologic triangle that I think a lot of people forget about.

There is an interplay between the status of the host—how healthy the host is, how old the host is, any underlying disease the host has—the agent, or the bug; and the environment.

When I speak of environment, if somebody with a tracheostomy is on a breathing machine for a prolonged period of time in an intensive care unit, and they've been on it for a month, they're going to be at much higher risk than a marathon runner who falls and cuts her arm.

Here's a superbug story for you about somebody with cystic fibrosis, a 19-year old cystic fibrosis patient I saw two weeks ago. She's been in and out of hospital, with repeated rounds of antibiotics, and she's on the verge of a lung transplant. She had an almost untreatable infection. If she ends up dying of an infection, did she die of cystic fibrosis or did she die of the infection? This is the existential question that comes up.

Pseudomonas aeruginosa is a bug I'll talk about. That bug is something of an opportunist. This is the bug that causes severe disease in someone with an underlying disease. It doesn't cause infections in otherwise healthy people. There's always this interplay between these three, and we have to remember it's not just the bug and its superiority and smartness that's winning; it's an aging population.

Dr. Morris spoke to the fact that he didn't see drug-resistant infections 20 years ago. Well, average life expectancies have increased in the past 20 years. We're transplanting more people than ever before and we're putting new heart valves and grafts into people like never before, so of course we are seeing more infections. People used to succumb to other diseases that would kill them; now, unfortunately, infections can be the end of the lives of some people. Obviously we try to keep that to a minimum, but there is something of a crisis in that some people reach the point where there are no options left in terms of antibiotics. We need more antibiotics. I'm not completely diminishing this problem, but I'm trying to bring some perspective: life expectancies continue to increase.

Let me show you an example of pneumococcal sepsis. This is an example of what happens with death before and after the advent of antibiotics. This is from Robert Austrian in 1963, when he looked at the pre- and post-penicillin era. If you look at the curves, they actually overlap for the first two days. There's no difference between having antibiotics and not having antibiotics. We often forget this. Things improve after day two and beyond. That's where antibiotics make a difference, but some people will still succumb to an illness whether or not they have antibiotics.

Let me go to the World Health Organization priority pathogens list that has been spoken of as an imminent crisis or "slow-moving tsunami", to quote Dr. Margaret Chan.

TB is a huge problem, especially in developing countries. Again I speak to the epidemiologic triangle. There's a whole factor about the environment: people live in crowded conditions, so there's more spread; they don't have access to care; they don't get proper rounds of first-line therapy, so they have resistance generated because they're being improperly treated. That's an environment factor that's driving resistance. Is this a problem? Of course it is. There need to be new drugs for TB. A few are in the offing, but this has been an ignored disease.

Let me speak to death rates prior to TB therapy, though. Here's another example of how much of a role antibiotics play and how much they don't. The first part of these graphs looks at the U.K. TB antibiotics were developed in 1950. Death rates were already falling before we had antibiotics for TB, just due to better health and better nutrition. This is the McKeown effect. McKeown actually has a Canadian connection. He was trained at McGill. He was originally from Northern Ireland and he went to England. He wrote the textbook of social medicine. We forget sometimes that the host factor is extremely important.

● (1605)

Of course, TB antibiotics reduced mortality still further, but that was the blip you were seeing at the end. A lot of it was just improvement. This other curve is from Massachusetts, with the same effect.

There are critical priority pathogens, but let me talk about where we're actually seeing them.

If you look at them, you see they're all mainly among hospital patients. This is a problem in hospitals. I spoke about the intensive care unit in the cystic fibrosis example that I gave. You have cystic fibrosis. You have oncology. You have people who've had a bone marrow transplant. You have people who've had an organ transplant.

We do see some drug-resistant infections in people who have not been in hospital. As a case in point, in my practice there is someone who is from the Indian subcontinent, who has gone back and forth, and she comes back with a urinary tract infection and she's pregnant. The only options I have remaining are intravenous antibiotics.

There is a dearth of antibiotics that needs to be filled through a better drug pipeline, which I will speak to. This so-called discovery void is a problem, but the number of these cases is still relatively small. I'm not saying it's not a problem, because that number could change, and because we have foreign travel and interplay with what's happening in other countries, we need to be ready for a change.

For example, I was recently in Kuwait as part of a Royal College of Physicians and Surgeons initiative. The rates of drug resistance are much higher in Kuwait, so they have completely different lab strategies in Kuwait to deal with this emerging threat. We don't have those strategies available here, but we need to be tooled up to respond in that fashion if it does become a problem.

Let me continue. Just focusing on these critical priority pathogens —and the WHO document beautifully references what's critical, what's high priority, what's medium priority—I do want to emphasize that these are mainly hospital pathogens. That's where the theatre of war is right now with this issue. There are some community issues that come up, but these are not widespread. Sexually transmitted infections that are resistant are not widespread and common; they are limited to certain populations. TB I spoke of; it's not widespread here, but if we don't control TB well in Nunavut, we could have that problem here. Again, these are problems that are localized to certain areas.

Hospital-wide, we don't have big problems yet in Canada, but in teaching hospitals in Canada, you'll see some of this. In Canadian cities where we have people from other countries coming and going, even from southern Italy, the Middle East, Asia, or the Philippines, we are going to see more of this and we have to be ready.

I don't have the solution right away. We have this discovery void in antibiotics that the WHO is trying to address with governments. That's something for which we could be contributors, but I don't think we alone as Canadians can solve the problem of a lack of antibiotics.

How am I doing for time, Mr. Chair?

The Chair: You have two minutes and 13 seconds, roughly.

Dr. Neil Rau: The so-called "superbugs" that we should be worried about are almost all Gram-negative bugs. This is where we have the shortage of antibiotics. We've run out of oral antibiotics in many cases, as I cited.

The high-priority bugs are generally food safety issues. If we have a good food safety process, you're not going to get salmonella. If you cook your chicken, even if it's drug-resistant salmonella, that drug-resistant salmonella doesn't care: it's dead. It's cooked. It's the same with campylobacter. If you're looking at *staphylococcus aureus*, a bug called MRSA, this is a problem and that can be community-acquired. However, the community-acquired variant is not as resistant as the hospital-acquired variant.

I want to point out one correction to a statement that was made by some of the prior speakers: not all people with drug resistance have a history of antibiotic exposure. MRSA is a perfect example of a drug-resistant pathogen that can occur in, say, children who have had no history of antibiotic exposure. That doesn't mean we shouldn't reduce antibiotic exposure overall, but it's not a situation of where there's smoke, there's fire—that just because someone has a drug-resistant bug, they've been exposed to antibiotics. There's not a straight line between the two.

What do we need to do? We definitely need much better lab surveillance. When I say “lab surveillance”, I think what we're doing right now is looking backward and saying that in the last two years we've had a problem. We don't have real-time surveillance to know where resistance rates are increasing. We have hospital labs that work in a silo separate from reference labs for each province. We have each province working in a silo separate from other provinces.

We need a very good, integrated lab information system for tracking the rates of resistance to drugs in bloodstream infections, urinary tract infections, ICU patients. We need to have that data at our fingertips so that we know what our rates are. Once we know what our rates are, then we know how much need we have for unusual antibiotics that are hard to come by, except through a special access program.

If new antibiotics are developed, we want to use them conservatively, so we need lab strategies whereby we can pick up this resistance quickly in a hospital lab near where the problem is so we can give very directed therapy. If we don't have lab tests at our fingertips, in the same places where we see the patients, we'll start shooting in the dark and giving everybody the broad-spectrum therapy because we don't want to be wrong. If we have precision testing for resistance markers, as I saw in Kuwait, for example—of course money grows on trees in Kuwait, but not here—if one has that type of access available, you can then be more specific and use the right antibiotic at the right time, which is a stewardship behaviour.

We do need to monitor our antibiotic consumption rates, especially in hospitals and even in long-term care. The theatre of war, as I said, is really in the hospital. That's where we have to be careful.

However, we're not going to end up at zero. I'll speak to a historic analogy, the Maginot Line. This is how the French thought they would keep the Germans out. They built this very elaborate defence system in the east of France, and the Germans came through the Ardennes and conquered France easily, so a huge investment made in one intervention is probably going to be wasteful.

I'm not saying antibiotic stewardship doesn't do a lot of great things; it does. It may reduce the duration of antibiotics that people get. It may reduce complications from having an intravenous when you could be on an oral antibiotic. It reduces costs. It may even help having infectious disease specialists like me seeing patients. Those are all great things, but does it reduce resistance? We don't know yet. It's one of many interventions.

If we put all our investment into this, we're making a mistake. If we don't do this and do all the other things, we're also making a mistake. Going back to my earlier slide, I think it's very important to have a combined strategy. I haven't spoken to the other veterinary strategies or food safety strategies that are important. Many other things have been spoken of, but I'll now speak to the patient care-related ones that matter the most here.

In terms of patient care, it's the real-time testing in acute care hospitals that matters. Right now, for lab testing in a hospital, the hospital must make a decision on whether to screen people for these World Health Organization priority pathogens. That's what we have to do now as an individual hospital. We have to decide if that's budgetworthy. We need a national strategy whereby money is available for this activity and we're not asking our hospital to choose to screen for one thing at the expense of another, essentially robbing Peter to pay Paul.

The final thing I want to speak to is this. Other than using antibiotics, there are biomarker strategies to reduce antibiotic use. Instead of just saying we should cut back on antibiotics, there are ways other than cultures, such as procalcitonin. We should be making very serious investments in this. It's used a lot in Europe and Asia to distinguish between infection and non-infection, because making this distinction is one of the biggest challenges in infectious diseases.

● (1610)

Then there are the global initiatives that I—

The Chair: I must ask you to wind up.

Dr. Neil Rau: Thank you very much for your time and attention.

The Chair: Now we go to the Canadian Patient Safety Institute and Ms. Kossey.

Ms. Sandi Kossey (Senior Director, Strategic Partnerships and Priorities, Canadian Patient Safety Institute): Thank you, Mr. Chair and committee members.

On behalf of the Canadian Patient Safety Institute, or CPSI, I would like to thank you for the invitation to appear before you and to share our perspectives on antimicrobial resistance in Canada.

My name is Sandi Kossey. With me here today is Ms. Kim Neudorf, a representative of our patient-led volunteer network, Patients for Patient Safety Canada.

First and foremost I wish to express gratitude to Parliament for recognizing the importance of this subject area. We believe that patients should never have to worry about acquiring an infection, and those who do shouldn't have to worry that the treatment that is used to heal them may be ineffective or even harm them. Patients expect that the health care they receive will be timely, appropriate, effective, and perhaps most importantly, safe, and that unnecessary treatments will not be provided and that preventable harms, such as health care-associated infections, will not be considered just routine complications of care.

Health care-associated infections are actually one of the most common adverse events, or patient safety incidents, in health care, and for the most part they are preventable. Antimicrobial-resistant infections are becoming more frequent, as you know, and increasingly difficult to treat. Every infection prevented is an antimicrobial treatment avoided, potentially saving thousands of lives every year.

My colleagues who presented before you in June, and also last week, will have described the complexities of this issue. You are all very aware that antimicrobial resistance is a very serious global public health crisis. We are here to remind you that antimicrobial resistance is also a very significant patient safety issue and thus a public safety issue, and urgent action is required. It is critical to keep this in mind as we develop a coordinated and collaborative approach for Canada to this challenging problem.

Before I address the issue that I was invited here to speak to you about, I would like to take a few minutes to speak about our organization, what we do, and the work we've done to address antimicrobial resistance.

The Canadian Patient Safety Institute was established as the result of a rallying cry led by dedicated individuals working within the health care system who couldn't experience one more incident of a patient being harmed. The Canadian Patient Safety Institute was established by Health Canada as a federally funded pan-Canadian health organization back in 2003. We exist, simply put, because Canadian health care systems simply aren't safe enough.

Patient safety incidents in acute care and home care settings are the third most common cause of death in this country, behind only cancer and heart disease. In 2013, preventable incidents resulted in just under 28,000 deaths across the country. That's the equivalent of one death every 13 minutes—roughly four deaths in an hour, eight deaths during the course of this meeting—that could have been prevented. When it comes to infections as a patient safety issue, the numbers are of grave concern.

Every year it is estimated that 220,000 patients, approximately one in nine, will develop an infection during their stay in a Canadian hospital. An estimated 8,000 of these patients will lose their lives from these health care-associated infections, and as antimicrobial-resistant infections rise, so will this death count.

These are faceless statistics that I'm sharing with you. As we do, I ask this committee to acknowledge the many patients and their loved ones across the country who have felt the tremendous personal impact of a health care-acquired infection—the stress, the confusion, and the anguish that is often devastating and sometimes deadly. That is why I have asked Kim to share her experiences with you. Everything we do at the Canadian Patient Safety Institute is with and for the patients and families that we serve.

Since the creation of CPSI by Health Canada, we have been active in the fight against health care-associated infections and antimicrobial resistance and we have been working to bring tangible solutions. We established infection prevention and control as a national priority, and significant work has been undertaken with several partners to advance an infection prevention and control action plan over the past four years. This was developed through expert stakeholder consensus. The action plan has made considerable progress on three themes: addressing culture and behaviour change, engaging patients in knowledge translation with health care providers, and, most notably, addressing challenges related to measurement and surveillance of health care infections.

This year CPSI was also designated as a World Health Organization collaborating centre on patient safety and patient engagement. We have championed WHO initiatives, spreading global innovations across Canada, the most recognized being infection prevention and control improvement campaigns that target awareness and behaviour change for front-line clinical teams, patients, and the public.

● (1615)

Perhaps most importantly, CPSI was pleased to contribute to the pan-Canadian framework for action prepared by the Public Health Agency of Canada, and we served as a member of the infection prevention and control task group.

In support of the framework for action, and as I have noted, CPSI and our patient partners are coordinating and collaborating on initiatives that address all four essential pillars of the framework: surveillance, infection prevention and control, stewardship, and research and innovation.

We are keenly interested in helping to implement the pan-Canadian framework and its action plan. With that in mind, Mr. Chair, I would like to offer a few recommendations for this committee to consider.

First, CPSI, along with our partners, has identified coordination and good data as one of the top priorities in the battle against infections. Strengthening and coordinating AMR surveillance is critical to developing and implementing resources and improvement efforts at both systems and local levels.

Second, we know that to achieve sustained improvement in public health and patient safety, we need to go beyond the enforcement of standards, beyond education, beyond public awareness. We need strategies to support the implementation of evidence in both policy and practice, and we need interventions that target a change in the attitudes and behaviours of all actors in the system.

Finally, we need to embrace patients as full partners at the table in our collaborative efforts to improve.

With that, I would like to thank the committee for the invitation and the opportunity to speak to you, and I will introduce my dear friend and patient partner, Kim.

Ms. Kim Neudorf (Patient, Patients for Patient Safety Canada, Canadian Patient Safety Institute): Thank you, Sandy.

Thank you, Mr. Chair and committee members.

I'm from Prince Albert, Saskatchewan, and I've been a volunteer with Patients for Patient Safety Canada for the past nine years.

It's been said that antimicrobial resistance is an abstract concept, except for its victims and their physicians. In an effort to make this problem clear, I'd like to introduce you to two retired farm women who valued their health and rarely accessed the health care system for an illness. The following events changed all of that.

The first is a story about my mom. It started as a symptomatic bladder infection, but a culture was not collected in the emergency room. The dose for the prescribed antibiotic was strong, prolonged, and likely wrong. This contributed to a severe adverse reaction. I'll never forget her desperation that morning as her hemoglobin dropped to a level incompatible with life, yet that was just the beginning of what she had to endure. She lost her hearing and her immediate memory, developed atrial fibrillation, had heart failure, had pneumonia, had a heart attack, and spent months regaining her strength.

It was amazing to everyone that she survived, but the deleterious long-term effects remain with her and are pronounced today. Many providers were on the wrong track in the early days of her treatment. A second, remarkable team stepped in and saved her. If she were here today, she would express her heartfelt gratitude for that. She's the reason I do this work.

This past year my mother-in-law, an extraordinary mother of 12, faced similar circumstances. Her ordeal started innocently enough: a pustule showed up on her leg. However, below the surface was a raging infection from a previous surgery. After two rounds of antibiotics, a month later the surgical site was finally cultured during another surgery to remove the hardware and to clean the bone in her leg.

As a result of this test, different antibiotics were prescribed for another six weeks. All was still going amazingly well for her. Her strength and determination were remarkable, but no surprise to us, her family. Then *C. difficile* struck, and I knew it could be the beginning of the end. More antibiotics were used to treat it, and then were repeated. There it was again, the familiar downward spiral: atrial fibrillation, blood clots, cognition changes, and end-stage heart failure. Prior to her surgery, her heart and mind were considered to be her greatest assets. Sadness filled her eyes as she lost her independence, her sharp mind, her home, and in a few months, her life.

I live in a community where sexually transmitted disease, such as gonorrhea, is alarmingly high, and where hepatitis C and HIV are epidemic, especially in first nations communities. More prevention work is needed to keep communities safe.

It's clear that antimicrobial-resistant infections are a patient safety issue and a public safety issue.

Last year, after surveying patients across Canada, my colleagues from CPSI and I published a paper in the *International Journal of Health Governance* that described Canadians' thoughts on the best approaches to reach and engage the public. From that, I offer two simple messages: first, the best defence for us is a good offence; second, we, the public, can help draw local and global attention to this issue.

This is some of that we heard and what we published in our paper.

We, the public, must strive towards good health and strong immune systems through handwashing, hygiene, immunization uptake, and fulfilling our personal responsibility to prevent transmission.

Patients view conversations with their providers as the most effective means of understanding appropriate use of antibiotics. Together with our primary care providers, we can learn how to manage viral illnesses so that antibiotics aren't the automatic first default in our quest to feel better quickly. The public has been blamed for demanding antibiotics, but perhaps more accurately, we go to providers for help with symptom relief and for reassurance that we aren't missing something more serious.

Patients told us that the abstract concept of antimicrobial resistance is more easily understood by them when it is placed within the context of a story. Sharing statistics and the cost to health care was deemed to be the least relatable for them. Canadians stated they are more inclined to change their behaviour when the information provided is succinct and diverse, with multiple complementary messages delivered in their communities.

● (1620)

For example, information can be shared about recent studies that suggest a relationship between antibiotics, our gut, and chronic diseases such as obesity, or the relationship between chronic and serious infections and dementia.

As Canadians, we can be champions for change. This year, volunteers from Patients for Patient Safety Canada have made presentations to our local communities and contributed to the design of mass public awareness campaigns.

When we are ill, we are vulnerable. We may not pay attention to who washed their hands prior to a procedure or whether the equipment and the furniture have been cleaned between patients. In these moments, we don't ask if we are on the correct antibiotic. We trust that health professionals, health care organizations, and ministries have done everything to protect us. There's the rub: much of it is up to you. However, we see this as a shared responsibility and we are willing to help.

Thank you very much.

● (1625)

The Chair: Thank you very much.

Now we go by video conference to Dr. Yvonne Shevchuk.

Dr. Yvonne Shevchuk (Associate Dean Academic and Professor, College of Pharmacy and Nutrition, University of Saskatchewan, As an Individual): Okay.

Good afternoon, Mr. Chairman and members of the committee. Thank you very much for inviting me to be a witness and to participate in this very important discussion.

As you know, my name is Yvonne Shevchuk. I'm an educator within the College of Pharmacy and Nutrition, but I'm also a licensed pharmacist. I've been a member of the infectious disease team at a hospital in Saskatoon for over 30 years. I've also been a member of the antimicrobial utilization subcommittee in that region for a long time. I've been involved in many committees and activities over the years, with a focus on optimal antibiotic use, or what's commonly referred to as antimicrobial stewardship, or AMS.

I think others have told you that AMS is one of the four pillars of the federal framework and action plan on antimicrobial resistance in use in Canada, along with surveillance, infection prevention and control, and research and innovation.

I think you and your committee have also heard antimicrobial resistance described as a global health threat, so I'm sure you don't need further reminding of that. The World Health Organization and many countries have recognized this and have started plans. I don't want to focus on that, but I guess I do want to remind people that it's not the only crisis we face in Canada. We hear about the opioid crisis. We hear about mental health and the heart-breaking rates, for example, of suicide in indigenous young people, and other health crises. We have to compete with that, and I hope that I'm able to convince you that antimicrobial resistance needs to be a priority as well. Even though those other things may be seen in the media or focused on, AMR is important as well.

Perhaps picture in your mind a fairly young hemodialysis patient who has a family at home, hasn't been able to work because of frequent hemodialysis, and is looking forward to a kidney transplant. He gets that kidney transplant. However, he ges the complication of infection. If you get a transplant, you have to be on immunosuppressant drugs in order to keep that transplant, and that inhibits your body's ability to fight an infection. He gets an infection and he doesn't survive that infection, because it's resistant and because we don't have good antibiotic choices to help him survive.

I don't think we want to get to a place where that's an everyday reality. It's not perhaps extremely common in Canada right now, but it happens. That's not an unrealistic scenario.

With regard to optimal antimicrobial use, people don't always think of prevention as a key element in that. In that connection, I have another short story to share with you.

My daughter is a third-year university student, and she does a lot of volunteer work with pretty vulnerable populations. She knows that if she were to transmit influenza, it could be very serious for them, so she goes for a flu shot every year, which is pretty responsible. She also has mid-terms and assignments and doesn't have time to get sick. She did that a couple of weeks ago and posted it on social media. I don't know exactly what it was, but I don't think it matters. She just posted to her friends that she went for a flu shot and reminded them that they might want to do the same.

I was so surprised. Complete strangers essentially attacked her, saying that she was poisoning her body, that she was responsible for killing thousands of children. Those are the very dangerous views of a group within the country and the world, “anti-vaxxers”, as they're sometimes referred to. If we want to continue to enjoy the health that we have as Canadians, we must keep up our immunization rates. We need to look for new vaccines and new areas to prevent infection.

● (1630)

I like to remind my students that if you prevent the infection from occurring, you don't even have to think about using an antibiotic. It doesn't even come into the picture. Although my focus is appropriate antibiotic use, I don't think we want to forget how important the prevention pillar is in all of this.

Curbing antimicrobial use is a key strategy in our fight against antimicrobial resistance. It's estimated that at least 30% to 50% of all antibiotic prescriptions written in this country are inappropriate. That's kind of a mind-boggling number. I think we could all work to improve in that area.

The complexity of this issue has been talked about a lot. I do agree that it is complex moving forward. Different agencies—federal, provincial, and territorial groups—have differing responsibilities. It's sometimes difficult to make those things all come together, but I don't think we should use the complexity of the problem as a reason not to move forward. It's even more complex because, as has been mentioned by other speakers, it's not just about human health; it's also about animal health and it's also about the agrifood sector. It's referred to as a “one health” approach, but it needs to be somebody's job. Somebody needs to be put in charge of antimicrobial resistance and stewardship in Canada. It's a big enough job that it shouldn't be added to somebody else's already large portfolio. I think it deserves the attention of “this is the job you have”. There's a lot of work to do in terms of setting clear goals and timelines and getting all sorts of other stakeholders involved—clinicians, professional organizations, and industry. It's a big job.

My view is that a nationally coordinated effort is required. We have pockets of excellent work in this country where great things are happening. What we don't know is whether that will work in a different context, in a different region, in a different part of the country. We need a coordinated mechanism for spreading these good practices and also for learning from each other.

We don't have benchmarks or targets right now for antimicrobial use. What is appropriate and what's not? Measurement is pretty inconsistent and spotty. It depends on where you are in the country and whether you're talking about hospitals or community or long-term care. We don't necessarily know where to target our efforts. Good data is essential. Proper data collection or surveillance is a key element or starting place in our strategy.

We do know certain strategies that work. A good example is that when Accreditation Canada began assessing institutions with an ROP, or required organizational practice, for AMS, institutions responded. They stepped up to the plate. It was maybe not in a perfect way, and there's certainly room for improvement, but we saw change. We saw change in things that happened within institutions. Obviously they would welcome much more support, including funding, but it was a positive move.

Those actions don't translate to the community, though. We need different solutions in the community, because Accreditation Canada isn't responsible there.

We talk a lot about education. It is very critical to educate the many prescribers—physicians, nurse practitioners, dentists, pharmacists, veterinarians—and the patients about AMR and AMS, but we also have good data to show that education alone is not effective. You need to combine it with other strategies or methods to make things happen, to make change happen. We need processes in place so that it's extremely easy to do the right thing and very difficult to do the wrong thing.

● (1635)

I was part of a group of individuals invited by HealthCareCAN and the national collaborating centre for infectious diseases to help organize and coordinate a round table discussion on this topic. I think this has been discussed with the committee. There is a report putting the pieces together. It includes 10 recommendations. I have talked about some of these recommendations, but I can't really discuss them all in the time period I have. I would just like to say there are documents available with recommendations that are a wonderful starting place.

I have a very good friend who had two knees replaced. I saw her recently, and she's overjoyed with the results. She can walk with her husband. She entered a five-kilometre charity walk just because she could. I have thought about, though, what it would have been like for her if the conversation with that surgeon had been different. If the conversation had gone, “We know you need knee replacements. We know that would solve your pain, but there's a small chance of infection. If that infection happens, we don't have an antibiotic to cure it. Rather than take that risk, rather than replace your knees, you can have a life of chronic pain and basically live like a couch potato.” I think that would be a future that we don't want in this country.

If we don't manage antimicrobial stewardship and the other pillars we've talked about, that's not necessarily an unrealistic view of the future. I'm hoping that this committee can advocate for that change so that we don't have to think about that future.

The Chair: Thanks very much.

Just before we go to questions, I have a little notice. We had invited the minister to come on November 23, 2017, to talk about supplementary estimates. She's not able to come on the 23rd. She will come during the first week of December. I just wanted to let you know that.

We'll go to questions. It's a seven-minute round, starting with Ms. Sidhu.

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

Thank you to all the presenters for sharing valuable information about globally tracked AMR.

My question is to Dr. Rau and Dr. Shevchuk. They can both answer. We heard in our last meeting that physicians may need more training to reduce prescriptions. We heard that research done in Ontario in 2012 showed that seniors were over-prescribed antibiotics.

What action do you think we need to take to reduce AMR? Is it education or training for the physicians, and vice versa, for the patients as well?

Dr. Neil Rau: I'll answer that first, but I'm sure Dr. Shevchuk will have other comments.

I sat on the committee to evaluate drugs for Ontario. It oversees the Ontario drug benefit formulary, so I'm quite aware of this problem.

I'll speak a bit to procalcitonin testing, which is not something that's readily available in Canada. In Nordic countries, there are many family physicians who have access to CRP testing and procalcitonin testing, which are important adjuncts in answering, “Is this a virus or a bacteria? Is this an infection or not?”

There is a problem in patient care with the limited resources a family doctor would have, for example. It is through family doctors that most of the over-prescribing is happening, perhaps when they lower their antibiotic use unless they have more technology available. Some of it is inappropriate use, for sure. Some of it is being used for viral infections, which is completely wrong. Some of it is also happening because of a limitation of technology and access to ancillary tests.

The other thing is that I still think punitive strategies don't work. That was cited as a recommendation by somebody. Education may help and guidelines help. Limited-use strategies of the kind we have in Ontario, which require people to fill out a code to use certain antibiotics, may help. I don't think we're ever going to get to zero.

I'd be interested in what Dr. Shevchuk has to say about this, too.

● (1640)

Dr. Yvonne Shevchuk: I believe that education is a very important strategy. It's going to be our foundation, but tools to help support clinicians—and I don't think it's just physicians, but all prescribers—are important as well. Some of those tools are diagnostic, but other tools include strategies to make patients feel better when they're sick with viral infections, for example.

Patients have to be included. We need them to help us, to tell us what works best for them and which education strategies are going to be most effective.

Ms. Sonia Sidhu: Thank you.

Dr. Rau, you said that Kuwait is using more antibiotics than we are and that they have better lab surveillance. Can you also talk about the biomarker strategy?

Dr. Neil Rau: First of all, Kuwait has a big drug resistance problem, in part because drugs have been overused, and it's the same thing on the Indian subcontinent. You even have antibiotics ending up in fresh water that people are consuming. This is one of the big risks when antibiotics-laden effluent from manufacturers ends up in the sewage. However, because of these rates, Kuwait has diagnostic strategies and tests in a lab located close to patient care that we don't have. Just to clarify, I don't think we need them today, but we need to be ready to employ them if we have to.

The biomarkers I was speaking about were on the last slide I had, the procalcitonin tests. There is a point-of-care version, which is used in Nordic countries, and also another test, called CRP or C-reactive protein. The other one, which is used in hospitals a lot—especially in Europe and the Middle East, but, increasingly, some places in North America are also looking at this—is the procalcitonin test, especially in intensive care units, as a way of helping antimicrobial stewardship teams decide when to stop antibiotics.

Antimicrobial stewardship, as Dr. Shevchuk said, is very important, but sometimes you are transitioning somebody from an intravenous to an oral antibiotic. You are still exposing the patient to an antibiotic, so that alone may not reverse resistance. It's better if you can actually get them off the antibiotics. It's still not proven that this will work, but it's important. As someone else said, if you can actually prevent infections with good infection control, then you don't need antibiotics in the first place, so that's another important strategy, be it through vaccination or better infection control strategies.

Ms. Sonia Sidhu: Thank you.

I want to ask Ms. Kossey a question.

Right now we know that more than 18,000 hospitalized Canadians become infected with a strain of illness that is resistant to antibiotic medicines. Why are Canadians at more risk for these infections while being hospitalized?

Ms. Sandi Kossey: As my colleague mentioned, the complexity of care within health care facilities is increasing every day, with new technologies, new illnesses, and new drugs and devices that are introduced into our very complicated and complex health care facilities. Unfortunately, during care, there are many challenges or pressures that health care providers are faced with. There are urgent issues and a lot of information coming in on a daily basis. As our colleague Dr. Shevchuk also said, we need to make the care environment easier for our health care providers so that they can do their job easily.

Health care providers don't go to work every day to give bad care. They go to work every day not intending to harm people or to do something wrong. They are there to give the best possible care to the patients they serve, but they work in incredibly challenging and complicated environments. Sometimes, in these circumstances, the routine aspects of care—the things that should be done—aren't routinely or consistently done. It's not just around care. It may be around environmental concerns, communication, or transfer of information between care providers, facilities, or even departments, and this can contribute to patients acquiring infections in facilities.

Ms. Sonia Sidhu: Thank you.

Dr. Shevchuk, you said that there is no good antibiotic.... What kind of framework do we need to prevent infection?

Dr. Yvonne Shevchuk: Sorry, I'm not sure that—

Ms. Sonia Sidhu: What kind of framework can we use to prevent infections so that the hospitalized patient will not be infected?

● (1645)

Dr. Yvonne Shevchuk: I'll qualify this by saying that my area is really about appropriate antibiotic use. My area of expertise isn't really in prevention, but the one big thing we can all do is wash our hands. Handwashing is critical.

In some scenarios, we have to isolate patients to prevent the spread of infection from one patient to another. For example, for *C. difficile* infection, that would be very important. Depending on the infection, things like alcohol gels may not work to kill spores. Again, for certain infections such as *C. difficile*, you physically have to wash your hands with soap and water.

These are really important physical prevention strategies. Vaccination is another key prevention strategy that we always have to keep in mind.

The Chair: Your time is up.

Dr. Yvonne Shevchuk: Does that answer your question?

Ms. Sonia Sidhu: Yes. Thank you.

The Chair: Ms. Gladu is next.

Ms. Marilyn Gladu (Sarnia—Lambton, CPC): Thank you, Chair, and I'd like to thank our witnesses as well for taking the time to be with us today.

I'm going to start with a question for Dr. Rau.

I was very interested when you detailed where we are seeing this kind of resistance in Canada: in ICU burn units, in cystic fibrosis, in oncology. It's mainly in hospital environments.

You also outlined a concern about foreign travel and new Canadians and that maybe there's a risk there. The reason that's interesting to me is that I've heard a lot of criticism that says that the reason we're having antimicrobial resistance has to do with agriculture and farming in Canada. Some farms are organic and aren't giving antibiotics. Other farmers give antibiotics when the animals are sick, and sometimes they give them preventatively.

Can you comment? Is there any truth to the link between farms and agriculture and the AMR that we see now?

Dr. Neil Rau: There is truth to the link between farm use of antibiotics for animal husbandry purposes and drug resistance, but I don't think it applies so much to Canada. In Europe it was definitely observed, especially with the emergence of vancomycin-resistant enterococci, which, as it turns out, is not as important a bug right now in terms of having a drug discovery void, where we don't have anything left to treat people with. Although I think it's very important for us to clean up those practices where they are occurring here and I wouldn't ignore them, I don't think that's where the biggest problem is in this environment.

Again, it goes to that triangle I spoke to. Our environment is not the same as the environment in a developing country, where you have antibiotics ending up in sewage water and contaminating tap water, such as in India, for example.

Ms. Marilyn Gladu: To focus on foreign travel, I used to travel around the world myself. I was in charge of over 254 plants, and eventually I became germ resilient. However, every time I came home, everyone in my family got sick.

With that in mind, and thinking about people who are coming from Europe and the Middle East and Asia, there is no testing for people visiting. You can fly in on a plane, and there's no testing in place. Do you think the screening for new Canadians is adequate, and would you suggest, for countries of concern, that those screening tests be applied to travellers?

Dr. Neil Rau: I don't want this to turn into airport screening. That's for sure, and I will say that at the outset, but there is a form of screening we are doing for hospital-admitted patients who fit certain risk factors. It is not simply visitors. It's true that visitors who come into the hospital, who walk in, might have a drug-resistant bug on them, but they're not necessarily transmitting infections. Many people are carrying these infections. If they become ill and then have an intravenous put in or end up on dialysis or on a breathing machine, that very bug that's living on them as a commensal now becomes a pathogen.

Finding those people who are carriers of those bugs, if they fit certain criteria, is becoming a subject of great interest. That's actually a lab resource issue. For example, we, in my hospital, have implemented a selective screening protocol, as per our province's guidelines, to look for carriage. Again, it can be very resource-intensive to chase something that's not common. It's sort of like chasing, at airport security, the killer maple syrup that's out there that someone's bringing onto the airplane. It is the same idea. We have to be careful that we don't turn this into airport screening. It has to be selective and targeted. The technology has to be there, and the support and resources for a hospital to add that to its budget have to be there, which speaks to a point I made earlier.

Ms. Marilyn Gladu: This question is for the Canadian Patient Safety Institute.

I was astounded to hear that in terms of patient safety, these infections are actually the third-leading cause of death. It's that severe. I had no idea. What do you think the government could do to address that problem?

Ms. Sandi Kossey: Certainly even having these discussions is important. That again is why we are here: to provide that lens to raise awareness around patient safety, even with our political leaders across the country. Antimicrobial resistance is a patient safety concern. There are many different types of patient safety incidents, and these conversations around how patient safety is a public health crisis are really important conversations.

Within that same study I cited and that we recently released, we know that if nothing changes over about the next 30 years, 12.1 million Canadians will be harmed by the health care they receive, and 1.2 million of them will die because of health care safety issues. While the human cost of this is certainly significant—and that's just the human toll—it's estimated the financial cost of our poor performance as a country, in both patient safety and acute care and home care, which is where the data was drawn from, over that same 30-year period will be $82 billion.

I would challenge us that as a country, as political leaders, we're not doing enough around patient safety to really draw the attention to the things that aren't going well. There are many different competing demands and priorities within health care. Harm reduction around the opioid crisis is certainly a patient safety concern. We are doing many different activities in support of the joint statement of action, and certainly at local levels as well, and working with the health systems and patients to address some of these issues.

As a precedent as well, antimicrobial resistance is also a medication safety issue. We've been talking about appropriate use of antimicrobials and appropriate antimicrobial stewardship, and our colleagues have certainly spoken to the significant need. Political leaders around the world, through the World Health Organization, as well as health ministers around the world, are starting to talk about how patient safety should be an issue for political leaders. The World Health Organization has also announced a third global patient safety challenge on medication safety, called Medications without Harm. It has a really ambitious aim of reducing severe, avoidable harm related to medication by 50% in five years. Canada can achieve this goal, and our efforts and our support around antimicrobial resistance can go a long way toward Canada's achieving that aim.

● (1650)

Ms. Marilyn Gladu: Excellent.

I have a final question, then, for Dr. Shevchuk.

As a pharmacist, are there things that can be done at that end? Once people have been given a prescription and you're filling it, is there something that can be done there that would address this issue?

Dr. Yvonne Shevchuk: With respect to resistance, certainly we want pharmacists to know what the indication for the antibiotic is so that they can also make a decision about whether it is the best choice for that particular patient in that situation. There's always the option of having a conversation with the prescriber about that.

One thing that can potentially reduce resistance is making sure that antibiotic courses don't go too long. The other thing to look at is the length of the course of therapy. There's data out there that tells us that for very simple, uncomplicated urinary tract infections, three days are enough. You don't need a week. Just by shortening the course....

There are a number of strategies that people can use. People with viruses feel unwell. They feel sick. They need treatment too. It's simply that an antibiotic is not the treatment. There are other things. There are fever reducers and analgesics and things that can help a cough and a sore throat that could go a long way to making patients feel better. There are lots of strategies that pharmacists can use.

Ms. Marilyn Gladu: Excellent. Thank you.

The Chair: Thank you very much. Time's up.

Mr. Davies is next.

Mr. Don Davies (Vancouver Kingsway, NDP): Thank you, Chair. Thank you to all the witnesses for being here.

Dr. Rau, I have a few questions for you. In a 2007 article published in the *Toronto Star*, you're quoted as saying that the implementation of a provincial tracking system would help family physicians diagnose drug resistance and identify strains of bacteria early so that they could be treated properly. Can you update us on the status of those kinds of tracking systems in Canada?

Dr. Neil Rau: In that case I was referring to community-associated MRSA. It really hasn't changed much, now that you raise it. People know it's out there. They'll have their own experience as physicians in obtaining a culture and seeing there's a bit of drug resistance out there. What they don't know is, a priori, if I have a patient in front of me, what's the probability that they have a drug-resistant infection? If they think it's very high, they're going to use the big-gun antibiotic and blow it away with that antibiotic. Over a period of time, if everybody keeps doing that.... If they know the rate is only 5%, they might take a chance and stay with the more conservative antibiotic, knowing the probability is low.

They might obtain a culture, but not everyone has that luxury when they're in an ambulatory community setting. It's easy sometimes for us who are hospital-based to criticize how people are behaving out in the community as prescribers, but they also have limited resources, so they have to go based on symptoms. They don't have diagnostic tests to tell them if it is a virus or not, which we might have in a hospital.

Still, the tracking thing, giving that pre-test chance of it being resistant, is missing, and that's what we need. It's the same thing even for these ominous, critical priority pathogens: if we think in hospital that someone has one of these real superbugs and we don't know yet, and we don't have the rates, we have a problem. We're going to start using the big-gun new antibiotic that comes out and blow it away.

● (1655)

Mr. Don Davies: It's 10 years since you wrote that article. It sounds as though we haven't made a lot of progress in the provincial tracking system you recommended.

Dr. Neil Rau: We haven't progressed much in the federal system either. We have good labs that collect good data. We have some community labs, private labs, that publish resistance rates, like LifeLabs in Ontario, but we don't have a national clearing house, which should also have local data, because we can't use just national data. You need local data, because there are differences. Brampton, for example, has way more drug-resistant pathogens in hospital patients than Brandon does.

Mr. Don Davies: Conventional advice to patients was that if you stopped your antibiotics course too soon, you would help breed resistance. Others say that resistance primarily emerges when bacteria are exposed to antibiotics, so the longer bacteria are exposed to antibiotics, the greater the risk of resistance developing. What is your view?

Dr. Neil Rau: This old wives' tale, if I can call it that, has been somewhat demystified in the last year—the idea that when you get an antibiotic course, you have to finish it. You have to take the whole course. We now know there is no evidence for that, and people are encouraging shorter-course regimens, as Dr. Shevchuk was saying. If it is not an infection due to bacteria, we are encouraging patients to stop the antibiotic, because so many antibiotics are given for viral infections. Patients get the antibiotic when they have a virus; then they get better and they think the antibiotic made them better. In fact, there is no causal link between the antibiotic and the fact that they got better, in the case of a virus. Aborting a course of antibiotics is appropriate. There is no need to finish it off.

I still think the whole issue of prescribing antibiotics at the outset is the big question. How do we cut that down? I think we need new diagnostic strategies or clinical scores. We can't get this to zero. This is not the opioid crisis, where we're aiming for zero. We're trying to get it lower and lower, but it's not like a marketing exercise in which next year we're going to drop it by another 10% and ultimately get to zero. The floor is the ceiling at some point.

Mr. Don Davies: Thank you.

Dr. Shevchuk, I was quite taken by your shocking statistic that 30% to 50% of prescriptions are inappropriate. I take it that's not just for antibiotics, so first, are you referring to 30% to 50% of prescriptions for antibiotics or 30% to 50% of prescriptions generally? Second, to the extent that these are inappropriate prescriptions for antibiotics, I think I'm getting a bit of an idea of why that's the case. It sounds as though it's the difficulty of determining a virus infection versus a bacterial inflection. Are there any other reasons we're prescribing so inappropriately?

Dr. Yvonne Shevchuk: I will clarify that those numbers are for antibiotic prescriptions.

A lot of that comes, as you say, as a result of using antibiotics for viral infections. They are not going to respond. Those statistics come from different studies, and studies study slightly different things. The definition of "inappropriate" might be that it's just not the right kind of antibiotic for that particular infection. That would be one case. In some of the studies, it was that the duration of therapy was not right for that particular infection.

There are other definitions of "inappropriate", but mostly it's about the mismatch between bacterial and viral, and using antibiotics for viral infections.

Mr. Don Davies: Do you have any suggestions as to how we might reduce those numbers? As a pharmacist, can you tell us whether pharmacists can play a role in helping to catch some of those inappropriately prescribed antibiotics? Could pharmacists act as a buffer for doctors writing these prescriptions?

Dr. Yvonne Shevchuk: Pharmacists certainly have a role. We tell pharmacists when they are students that it's part of their job to look at whether this is the best drug for this particular patient. If they feel it's not, then it's their responsibility to have a conversation with the prescriber. One of the pieces of information that pharmacists are often missing is the indication, the actual reason. When patients come to me with a prescription for amoxicillin, I don't know if they have a wound on their leg or a urine infection or a lung infection, and it's very difficult for me to figure out whether it's the right choice, so one of the things we ask for, as pharmacists, is to make the diagnosis a requirement on the prescription. That's a reasonable starting place for us.

● (1700)

Mr. Don Davies: That's not the case now?

Dr. Yvonne Shevchuk: No, it's not, and that's one of the challenges. When we say "monitoring antibiotic use" in this country, we might know how many prescriptions are prescribed or how many units are bought by a pharmacy, but we don't know what those antibiotics are used for, to be honest. It's a bit of a black hole.

The Chair: Time is up.

Dr. Yvonne Shevchuk: Sorry; I might have gotten a bit off track.

I think pharmacists can certainly help in that way to make sure that use is appropriate.

I think your other question was around general approaches to improving prescribing. I think the electronic medical records with cues embedded in there could go a great way to assisting in prescribing. They could put up red flags when things don't match up, when things don't look right. I'm not a technical person, but I've seen examples of some amazing things that can happen.

There are examples of good tools out there to put in the hands of prescribers, which might help them to do a better job.

The Chair: Thanks very much.

Mr. Ayoub, you have seven minutes.

[*Translation*]

Mr. Ramez Ayoub (Thérèse-De Blainville, Lib.): Thank you, Mr. Chair.

I would like to thank the witnesses for their interesting testimonies.

We have been listening to the witnesses and colleagues talk about prescriptions, accuracy and education. For newbies like me, it is surprising, even alarming, to learn that doctors prescribe drugs that are not appropriate. I'll put it that way, quite simply. Having to educate patients is one thing. But I'm hearing some people say that individuals who go to the doctor want to receive professional care and prescriptions without too many questions.

In the world we live in, people are becoming more informed. So, they ask more questions. For instance, parents ask many more questions when it comes to their children.

What I have realized from the beginning of our study on antimicrobial resistance is that there are no clear statistics. There is difficulty in establishing the point of contact and determining whether or not there is a crisis. At the global level, there are action plans, but it is not as striking. Ms. Kossey has given us some completely shocking numbers today.

As for the opioid crisis that we are experiencing, we are at the heart of this crisis, we are responding to it now, and we are taking action. However, the problem of antimicrobial resistance is like a silent killer that sneaks up quietly, but may end up striking with a hockey stick.

Dr. Rau, what is the equilibrium curve? What plan of action will allow us to tackle this problem head-on?

Dr. Neil Rau: First of all, we need a good monitoring system. It all starts with that. Right now, we don't have the numbers that would indicate where we're at.

The second challenge is the fact that we are a litigious society. Many of those who consult a doctor don't want to argue with the doctor about what to do. They want treatment. That's why they waited for half an hour or an hour before seeing the doctor: they want to receive something. So, one of the doctor's reflexes is to prescribe something, instead of starting an argument or a discussion. We would like doctors to give more explanation to patients. However, some people will be dissatisfied if the doctor doesn't prescribe something after they have waited for several hours in the emergency room, for example. This is another aspect of the problem.

As for when to press the panic button, having a very good monitoring system will allow us to say when, given the resistance rate, we will need to use a new available antibiotic. We don't currently have the numbers that would justify this reaction. I don't think we're there yet. In my experience, I know for sure that situations where this could happen are still rare. However, we need a good monitoring system to react accordingly.

● (1705)

Mr. Ramez Ayoub: I'm still concerned when I hear you talk about this reflex doctors have.

How can we help them to resist the pressure from patients who want an easy solution, such as a prescription for antibiotics? It's an endless cycle. Under this pressure, doctors agree to prescribe antibiotics, and the problem gets worse. It may not be a short-term problem, but it gets worse in the long term.

Dr. Neil Rau: I'll give you the example of children with an ear infection in the Netherlands and the Nordic countries.

Mr. Ramez Ayoub: An ear infection, quite simply.

Dr. Neil Rau: They are observed for 48 hours before giving them antibiotics. In Canada, however, the reflex is to give them antibiotics because an ear infection can sometimes cause meningitis, and the infection, if undiagnosed, can lead to many long-term complications. To avoid a single possible case of harmful complications, a hundred people are treated with antibiotics. Given the possibility of litigation, this is how the medical practice is done. I don't want to excuse everyone's behaviour, but what I'm saying is that some doctors may be encouraged to do so for fear of possible prosecution. Having said that, I have a little compassion for the people on the front line who have to respond to this problem.

Mr. Ramez Ayoub: There is another aspect that we haven't touched much. We're talking about vaccines and prescription antibiotics, but what about agriculture, particularly with respect to meat? Agricultural methods must be efficient, economical and profitable. These methods aim to ensure that there is as little disease as possible in farm animals. We now have the choice to move towards organic farming, but there are other breeders who give antibiotics to their animals. Does this have an effect on health?

Dr. Neil Rau: It could have an effect.

I read the record of the testimonies of people from the veterinarian society who appeared before the committee. They said that it wasn't common here and that veterinarians avoided using antibiotics without a good reason. According to these testimonies, they aren't used for growth, but only to prevent or treat infections. So this practice is preferable to using them solely for growth purposes.

Mr. Ramez Ayoub: It's always a question of balance. It's the same for vaccinations. We can vaccinate excessively all the time, but we must find a balance at a given point.

You said that it was the state of health of the patients that determined whether they needed a vaccine or not. In a long-term perspective, a frail person will need a vaccine more than a healthy person.

Dr. Neil Rau: Sometimes there is no vaccination against a given infection. I'm thinking of bacterial infections in hospitalized patients. We don't yet have a vaccination against the harmful pathogens I've described.

Mr. Ramez Ayoub: Okay. Thank you.

[*English*]

The Chair: Thanks very much.

That completes our seven-minute round.

At this time I'm going to turn the chair over to our vice-chair, Ms. Gladu, who is going to take over.

Do you have any questions? No.

Thanks.

● (1710)

The Vice-Chair (Ms. Marilyn Gladu): Very good. Thank you.

I want to thank the witnesses who spoke today. Your testimony is valuable to us. This is obviously an even more serious issue than I had previously thought. Thank you very much.

There was a witness who said there were 10 recommendations. I think it was Dr. Shevchuk. If you could send those to the clerk, that would really help our committee as we consider what to do.

Thanks so much.

At this time we're going to turn to committee business. No?

Mr. John Oliver (Oakville, Lib.): We still have a five-minute round and a three-minute round of questions.

The Vice-Chair (Ms. Marilyn Gladu): You would prefer to do that? We can't stay past 5:30 today.

Mr. John Oliver: Okay.

I have one quick question. Is the committee okay if I ask it?

The Vice-Chair (Ms. Marilyn Gladu): I'm fine to have you ask a question.

Mr. John Oliver: It's for Dr. Rau.

Thank you very much to all the witnesses for coming.

There was a fourth recommendation that you didn't get to address in your opening remarks. It was that there be global initiatives for new antibiotic development. Do you want to say a few words about that? I'm looking for anything we can get on recommendations to bring forward.

Also, you talked about the need for surveillance. We've heard a lot about CARSS, the Canadian antimicrobial resistance surveillance system. They just put out a report. Is that not adequate? I'm curious as to why surveillance continues to be viewed as a problem.

Dr. Neil Rau: I think the challenge with CARSS, although it's a very good initial step, is that it's not comprehensive and does not feel the pulse of all the places where health care is being delivered.

Not only do we need to know about teaching hospitals where there's a problem, but we also need to know where there's no problem so that we're not wasting resources where there is no problem. It's the Brandon versus Brampton argument that I made.

Speaking of antibiotic development, I cited a reference in my PowerPoint slides on the WHO pipeline. Without getting overly burdensome, there are a few promising drugs, but there is a discovery void, and one of the big problems for big pharma is that it is not cost-effective to develop a new antibiotic. What's really needed now are government-funded initiatives paired with pharma to make it financially viable to pursue a short course of therapy.

If you're a drug company, you want a drug that can hook people, like opioids. If you want a drug that really gets people hooked, you want them on it forever. You don't want them on it for just 10 days in a hospital. It's really hard to make it cost-effective unless you make it $10,000 for a course.

You need government funding from multiple countries' governments through global initiatives to bring new drug classes to market. TB is an ignored disease affecting people in developing countries who aren't going to pay the list price. It will be like what happened with hepatitis C drugs, so you need global funding initiatives. Just as we help with other UN agencies, we need to do our part in funding these drug development strategies in partnerships with pharma, rather than relying on pharma, because pharma is not going to do it.

Mr. John Oliver: Thank you for letting me ask that last question.

The Vice-Chair (Ms. Marilyn Gladu): No problem. That was actually one of my questions too, so I was glad to get the answer.

Thanks again to the witnesses. We're going to briefly suspend while you exit the room, and then we'll go to our committee business.

[*Proceedings continue in camera*]