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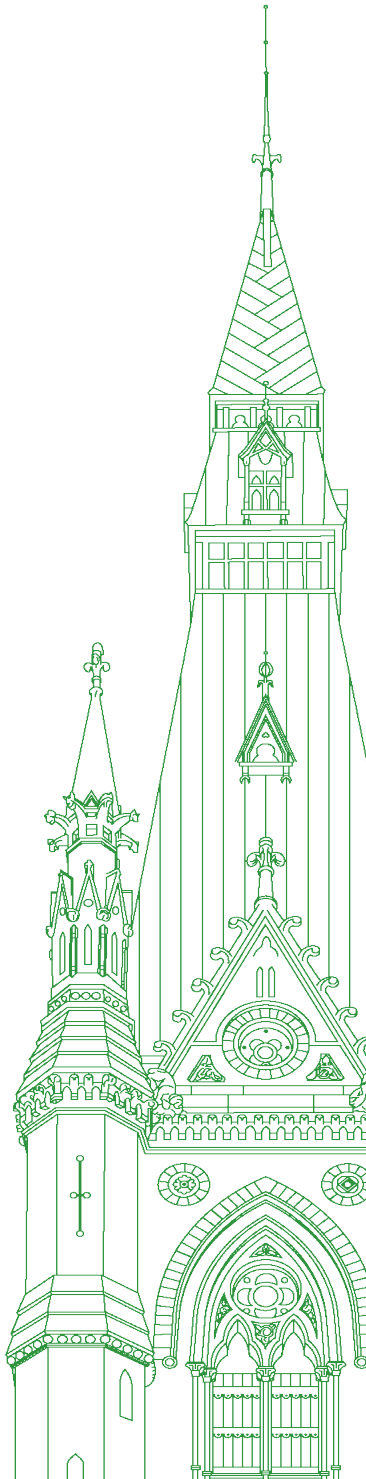

Chair: Mr. Ron McKinnon

Standing Committee on Health

Monday, February 22, 2021

● (1100)

[*English*]

The Chair (Mr. Ron McKinnon (Coquitlam—Port Coquitlam, Lib.)): I call this meeting to order.

Welcome, everyone, to meeting number 20 of the House of Commons Standing Committee on Health.

The committee is meeting today to study the emergency situation facing Canadians in light of the second wave of the COVID-19 pandemic.

Before we get going, I wish to emphasize that everyone has the right to participate fully in these proceedings in the official language of their choice. If, at any time, there is an interruption or problem with the translation services, I urge affected members to advise the chair or the clerk without delay. We will do our best to correct the situation.

At this time, I'd like to welcome our witnesses.

We have, as an individual, Dr. Gary Kobinger, professor, Université Laval. From the National Research Council of Canada, we have Mr. Mitch Davies, president. From the University of Alberta and Entos Pharmaceuticals, we have Dr. John Lewis, professor.

With that, I will invite the witnesses to make a six-minute statement.

Dr. Kobinger, please go ahead for six minutes, please.

Dr. Gary Kobinger (Professor, Université Laval, As an Individual): Good morning, everyone.

I was not expecting to start with a six-minute statement, so I will start by telling you that I'm a professor at Université Laval. Before that, I was in Winnipeg as the chief of the special pathogens program at the National Microbiology Laboratory, NML, which I headed for eight years. My expertise is in vaccine development.

Being from the NML, I led the group that developed the VSV vaccine the year after Heinz Feldmann left. The vaccine has now been licensed by the FDA and the EMA in Europe.

I believe I'm here to talk about vaccine manufacturing. I'm actually not too sure; I'm so sorry. I did agree to this with having little information, but I'm pleased to be with you. I'd be very happy to answer your questions.

Since I'm probably still within my six minutes, I will say that we have been facing many challenges, which I, personally, have seen on the international level. In full disclosure, I'm also a member of the advisory group STAG-IH. It is the main advisory group that advises the WHO at the executive director level in emergency operations. At that level, I have seen that there are challenges for many regions in the world, starting with southeast Asia when the first report of the virus emerged December 31, and then going throughout the world with all the different challenges that were faced and are still being faced at the world level.

In Canada, I was part of the vaccine task force, which I stepped out of voluntarily due to concern over transparency. I think it was, more widely, a public decision at the end. Most recently, following a discussion with journalists, I made a few public statements indicating my position that I strongly believe in Canadian capacity—as much in intellectual capacity as in manufacturing capacity. It's not like everything is available, but everything can be built. We have the knowledge here in Canada to develop those vaccines and bring them all the way to a completed phase three and licensure, and, ultimately, in good time, with improved manufacturing in Canada as well.

Part of my expertise also is in the development of therapeutics mainly based on medical antibodies, which touches a bit on the same technology as that of AbCellera, which you may have heard of, as well, as it received important funding from the Canadian government.

I think that will be it. I'm happy to talk about any of those subjects at the more regional, national or international levels.

Thank you so much.

The Chair: Thank you, Doctor.

We will go now to the National Research Council of Canada and Mr. Mitch Davies, president.

Please go ahead, Mr. Davies, for six minutes.

Mr. Mitch Davies (President, National Research Council of Canada): Thank you, Mr. Chair, for the invitation to speak to you today about the National Research Council's role as part of the Government of Canada's response to the COVID-19 pandemic.

I'd like to begin by acknowledging that NRC facilities are on the traditional unceded territories of many first nations, Inuit and Métis people. Their ancestral footsteps and rights extend beyond the boundaries that exist today, and we respectfully honour these peoples' rights, history and relationships with this land.

On the specific topic that's the subject of the committee's current study, I would like to address the NRC's role in the government's efforts to develop vaccines and therapeutics for Canadians, and to increase our country's domestic biomanufacturing capacity in the near and medium term.

The NRC is working with partners across government to advance research and development for vaccines and therapies to prevent and treat the spread of COVID-19 in line with the best advice provided by the Government of Canada's vaccine and therapeutics task forces. This includes the NRC's collaboration with VBI Vaccines, first announced in March 2020, to develop a vaccine targeting COVID-19 and related respiratory viruses.

The NRC is also supporting VIDO-InterVac at the University of Saskatchewan in the development and production of its COVID-19 vaccine candidate. Canada's support for VIDO-InterVac was among the first decisions made to support made-in-Canada vaccine projects.

Through the National Research Council's industrial research assistance program, we are working closely with made-in-Canada vaccine and therapeutics developers and providing more than $32 million to finance six of the most promising domestic vaccine candidates and four domestic therapeutics candidates to prevent and treat COVID-19.

In support of the government's effort to expand Canada's biomanufacturing capacity, the NRC is preparing to manufacture COVID-19 vaccines through the construction of a new "good manufacturing practices compliant" biologics manufacturing centre at our Royalmount site in Montreal. Once complete, the new biologics manufacturing centre will be capable of large quantity end-to-end production of vaccines, approximately two million doses per month, depending on the vaccine candidate.

I'm pleased to report construction of the new facility is on track for completion by the end of July 2021. The completion of technology transfer for specific vaccine and Health Canada approvals of both the facility and the vaccine and related manufacturing processes will then be the steps remaining to achieve production for use in Canada. To this end on February 2, the Prime Minister announced the signing of an MOU with Novavax to pursue the production of its COVID-19 vaccine at the NRC's biologics manufacturing centre. This is a significant milestone in this project, to be working with a vaccine producer with a product well advanced in the development process.

Finally, in support of Canada's biologics manufacturing capacity for research, the NRC is also building a permanent clinical trial material facility at our Royalmount site in Montreal. Once complete, this facility will be able to produce 500 litres of clinical trial materials per month to support future vaccine research and development in Canada.

Further to the work under way to assist in bringing vaccines and therapeutics to Canadians, I'd like to share specifics about the broader NRC contribution to deliver many other measures as part of the science, innovation and industry response to COVID-19, supported by close to $800 million in new funding.

Significant among these measures was doubling funding available to Canada's innovative companies through NRC's industrial research assistance program. This increased funding supported jobs and preserved value through the business and operational challenges caused by the COVID-19 economic downturn. In addition, the NRC leveraged its experience to build a made-in-Canada system to test lots of new-to-market critical PPE, representing over 120 million products that were made available to the Canadian marketplace to meet the needs of frontline health workers. We provided over 3,000 COVID-related advisory services to innovative firms, created close to 900 youth job placements and post-graduate employment opportunities, and supported over 2,200 firms and more than 26,000 jobs through the innovation assistance program.

In closing, I want to assure Canadians that the NRC has pursued many avenues to secure solutions to the many challenges brought on by COVID-19. We leveraged our long-standing relationships from labs to factory floors. I want to recognize the work of NRC employees across the entire organization who have worked tirelessly to deliver so many critical initiatives to support Canadians during this challenging time.

I thank you for the opportunity to speak with you today and I would be pleased to take your questions.

● (1105)

The Chair: Thank you.

We'll go now to Dr. John Lewis, professor, from the University of Alberta, Entos Pharmaceuticals.

Please go ahead, Doctor, for six minutes.

Dr. John Lewis (Professor and Chief Executive Officer, University of Alberta, Entos Pharmaceuticals): Thank you, Chair. Good morning, ladies and gentlemen. I appreciate the opportunity to share our perspective today.

My name is John Lewis. I'm the founder and CEO of a Canadian company called Entos Pharmaceuticals. It's located in Edmonton, Alberta. I'm also a professor at the faculty of medicine and dentistry at the University of Alberta.

I've worked for many years as both an academic scientist and an entrepreneur, developing novel diagnostics for treatments for cancer, age-related diseases, and now COVID-19.

Entos Pharmaceuticals is an innovative Alberta-based biotechnology company with a track record in the development of state-of-the-art treatments for a wide range of diseases, using a platform we call “fusogenix”. It's a genetic medicines platform. Entos, in the context of the current pandemic, has developed a single-dose, fridge-stable, pan-coronavirus vaccine against COVID-19 that is about to start human clinical trials.

The fusogenix platform that underpins our COVID vaccine candidates was developed as a result of years of Canadian academic research, and our COVID-19 vaccine is manufactured in Canada for the benefit of Canadians and hopefully, potentially, the world.

We are rapidly approaching one year since the coronavirus outbreak was declared a pandemic. It's taken an incredible toll, domestically and worldwide, in terms of mortality and death, as well as having a staggering economic impact. Having access to a safe and effective vaccine remains our best hope for returning to normal, and I'm happy to say that the biopharma industry has risen to the occasion. Companies from around the world have worked faster than we ever thought possible on the development, evaluation, manufacture and deployment of COVID-19 vaccines. Remarkably, today there are two highly effective vaccines rolling out globally, with emergency use authorization in Canada, and there are several more under consideration. I'll repeat. This is astonishing speed, and I think the reason for this astonishing speed is twofold.

First, we've recently seen key innovations in genetic medicines. It's not by luck that the first two approved vaccines are both genetic-based, and genetic vaccines use RNA or DNA to safely teach our immune system to recognize and effectively defend against the novel coronavirus that causes COVID-19.

These new-generation vaccines are much faster to develop, test and manufacture compared to traditional vaccines. They're also more effective. We've also learned that traditional vaccine development and manufacturing has moved at a significantly slower pace. Vaccines developed using traditional technologies haven't performed as well as the genetic-based vaccine against COVID-19, although obviously there's a lot of research and clinical trials yet to complete.

Importantly—and I'll come back to this—genetic vaccines can quickly adapt to a changing virus and its new, more dangerous variants.

I think the second reason that effective vaccines are available within a year was the rapid, decisive and significant upfront investment in vaccine development and manufacturing made by countries such as the U.S. and the U.K. This approach of investing substantially in multiple vaccine platforms and efforts really recognizes the risk in pharmaceutical development that only some efforts will be successful. Most importantly, it allowed these companies to move quickly and boldly without financial risk. This is a key difference between these efforts and Canada's domestic vaccine response. It's one that I'm going to be talking about because it directly impacted Entos.

This brings me to the question on many people's minds. Why has Canada lagged behind other countries such as the United States and how do we get back on track?

From my vantage point as a small but dedicated biopharma company working literally 24 hours a day, seven days a week since last March on a COVID-19 vaccine, the answer is pretty obvious. Canada was slow to make the initial decisions for domestic vaccine development and manufacturing. Despite having internationally recognized expertise in vaccine development and manufacturing in Canada's innovative companies—we have Nobel prizewinners in infectious disease, we have vaccine pharmaceutical manufacturing capacity—we took a careful, risk-averse and committee-based decision approach that led to a relatively modest amount of scattered funding for companies in Canada to develop domestic vaccine. This put the financial risk of vaccine development and our country's national security on them, which I think was a mistake.

When the pandemic hit, we at Entos recognized that our fusogenix DNA technology could address key limitations in genetic RNA vaccines, namely the limitations in storage and stability, and rapidly scalable manufacturing. We completely pivoted our research and development operations, from developing gene therapies for cancers and rare childhood disease to developing COVID-19 vaccines.

● (1110)

Using our own internal funds, and at considerable financial risk, we developed a couple of lead COVID-19 vaccine candidates that, on the science side, induced strong, neutralizing antibody response and durable, cell-based T cell response against the COVID-19 virus in animal models. We've invested heavily over the past year in good, clinical manufacturing, established a clinical production pipeline, and performed all the clinical, regulatory and toxicology assessments that we needed.

Unfortunately, this pandemic is not ending anytime soon. Vaccine manufacturing and deployment is going slower than expected, and not just in Canada. I think Canada missed the opportunity to get on top of the first wave, but there is still time to act and catch the second wave. I think with bold leadership and a swift commitment on the vaccine manufacturing industry to bring it up to world-leading standards right now, we can still make a difference to Canadians in this pandemic and we can prepare for the next pandemic. I think the time to do this is now. It's not too late for Canada to invest in the development and manufacture of Canadian-based genetic vaccine technologies.

I have three recommendations I'd like to put forward to the committee.

First, provide substantially increased funding for private Canadian biotechnology companies to remove the financial risk to rapidly develop and manufacture made-in-Canada COVID-19 vaccines. Second, financially support the expansion of genetic vaccine manufacturing capacity across Canada. Third, support an innovative procurement agreement for Canadian pharmaceutical companies that will make these innovations available to Canadians.

I hope these recommendations will provide an opportunity for the Canadian biopharma industry to raise more capital and take their successful Canadian products through the clinical trials, positioning Canada as a world leader in biological and genetic-based medicines.

Thank you so much for your attention, and I'm happy to answer questions over the hour.

● (1115)

The Chair: Thank you, Doctor.

We will start our round of questions. We'll start with Mr. Maguire, I believe.

Mr. Maguire, please go ahead for six minutes.

Mr. Larry Maguire (Brandon—Souris, CPC): Thank you, Mr. Chair.

Thank you to the witnesses.

Mr. Kobinger, you quit the vaccine task force for lack of transparency. Did you ever raise these concerns with anyone in Mr. Bains' office, or with anyone within the government, and if you did, what did they say?

Dr. Gary Kobinger: I did have many discussions with Roger, who was acting as the secretary, the coordinator, of that committee. That was mainly over the phone. I did communicate my concern also in several emails.

I'll go back to my concerns. The task force was formed in June 2020, but was not known publicly until weeks had passed. After that, the members of the committee did not want it to be made public. After that—and this is from internal discussion—they refused to make their conflicts of interest public. This was going against every community advisory group I had been on, and I did communicate those concerns to Roger—and that's it.

Mr. Larry Maguire: Thank you.

There are a lot of billions of dollars being lost in Canada, and a lot of people still losing their lives. We're way behind almost any comparable country, and every day we keep losing dollars, but more particularly, the lives of individuals.

The Liberals kept touting a robust vaccine portfolio, but to date there hasn't been a large number of needles being put in arms. We're getting another 400,000 or 500,000 today for this week, which gives us about 1.6 million to two million vaccines in the next month. The Americans are doing 1.6 million arms per day.

I'm just wondering if you can talk to that part about the portfolio being big, but there is nothing being developed, nothing going into arms.

Dr. Gary Kobinger: Yes, I will add that actually I did appreciate everything that Dr. Lewis said. I think he's spot on.

What you can see after just a few minutes in this discussion is that there is a disconnect between, for example, what was stated by NRC, that everything is done and that the best six vaccines are advancing, and the reality that the vaccines are not being made available to Canadians.

Just to add to this, we are the first and only team as of now that has brought the vaccine from the lab all the way to licensure. Of course, Merck did help, of course Merck did a lot of projects, but this vaccine was born here in Canada. We have the experience in how to do this. We have prepared for this. We had a Zika vaccine in six months in the clinic, using a DNA platform. This was published. This was public.

Before that we did others, and we got to COVID and we had a vaccine against COVID, which is the same platform that we knew worked against SARS. In early 2001, I was at NML. It was ready in mid-February 2020, and we couldn't find funding.

It was my fault also because I did participate in the task force, and that was excluding me from the only real funding track that could have brought this vaccine to the clinic. I did it knowing that it would hamper my team, and it would be an end to that, but I was really hoping that, above all, these people would find a solution that—

Mr. Larry Maguire: Therefore, it has never been developed by Health Canada.

Dr. Gary Kobinger: It has never been funded at all. We received $1 million to do the pre-clinical study. The only track we had then to go and get money was the Canadian Institutes of Health Research, CIHR. We applied first and they said there was not enough preliminary data. We got back with all the preliminary data.

By the way, our vaccine has the same potency as one of the commercial mRNA vaccines, which I don't want to name, in pre-clinical data in animal models.

We went back to CIHR and we were told two things. We were told we were too late, because the mRNA vaccines are working and no other vaccines are needed. The second thing we were told was that we didn't have experience in phase three clinical trials, which by the way, nobody has in Canada but Medicago, so if that was the requirement, then nobody should be funded now.

Therefore, here we are.

● (1120)

Mr. Larry Maguire: Thanks for your time.

Mr. Lewis, do you ever get a chance with anyone in either the minister's office or the Prime Minister's Office to stress the importance of getting the funding out the door to Canadian pharmaceutical companies?

Dr. John Lewis: Obviously we've been busy developing a vaccine and getting our manufacturing up to speed, but absolutely, we've exhausted pretty much every connection that we had to try to reach members of the government, including a letter directly to the Prime Minister's Office.

Mr. Larry Maguire: If that funding was made available to Canadian pharmaceutical companies right at the very beginning of the pandemic, how much further ahead would we be in getting the Health Canada approvals now?

Dr. John Lewis: I'd love to put that in perspective. It's estimated at between $350 million to $600 million to bring a vaccine all the way from discovery to the end of phase three and licensure. A small smattering of this funding was offered to companies throughout Canada—through the NRC, for instance, a maximum of $5 million to get to the end of phase one. That really put the major part of the burden of development on the companies themselves.

To finish your question, yes, I think if we had received upfront funding at the beginning—and Gary sounds as though he has a fantastic solution as well—we'd be well into phase three toward licensure by now.

Mr. Larry Maguire: Thanks.

Last Friday, the committee passed a motion to review the various vaccine contracts that the Liberals have signed. There has been a huge lack of transparency in those contracts right to this date, and that's why we're pleased that the committee passed the motion.

As someone developing a vaccine and just as a Canadian yourself, what do you think we as parliamentarians should be looking for in those contracts to determine if the government's vaccine strategy was a success or a failure?

Dr. John Lewis: I can't answer, as I'm not a vaccine procurement specialist, but I would say it's more a question of logistics. Expecting other countries to develop and manufacture vaccines and not prioritize their own population over other countries was a little misguided.

The Chair: Thank you, Mr. Maguire.

We will go now to Mr. Kelloway.

Mr. Kelloway, you have six minutes, please.

Mr. Mike Kelloway (Cape Breton—Canso, Lib.): Thank you, Mr. Chair; and thank you to the witnesses for being here today.

Folks, access to vaccines is top of mind for all Canadians. I believe in our strategy when it comes to domestic vaccines and therapies and our decision-making process and the supports that have been put in place to help Canadian companies working to find solutions to COVID-19.

Our government's objectives from the early days of the pandemic were actually threefold: to secure access to the leading international vaccine candidates; to invest in the most promising Canadian vaccine and therapies; and to make strategic investments to rebuild Canada's domestic biomanufacturing capacity.

Mr. Mitch Davies, my questions will be directed to you.

Our government invested over $23 million through the NRC industrial research assistance program to support Canadian companies responding to COVID-19. The NRC indicated that it was using this funding to provide advisory services and research and development funding to six companies for their COVID-19 vaccine candidates.

I have three questions, and please feel free to do a deep dive on the three of them. Number one, can you comment on the development status of any of these vaccine candidates? Number two, can you describe Canada's past and present pharmaceutical and bioproduction landscape? Number three, in your opinion, what does Canada need to do to rebuild, or build up, its pharmaceutical sector and bioproduction capacity to manage future variants and pathogens?

Mr. Mitch Davies: I'll start with the question of the long-term biomanufacturing capacity in Canada. It's a matter of great importance, and in fact, the government recognized in the fall economic statement that a full plan and full engagement with Canadians, which is now under way under the leadership of Innovation, Science and Economic Development to build that capability out in terms of productive capacities, was necessary. In fact, it's necessary because we have all of the intellectual leadership, the scientific leadership and the capability in terms of research and breakthroughs, which is demonstrated by the candidates that we're supporting through NRC IRAP and other vaccine projects that are under way in Canada, that we can deliver the end-to-end solution to Canadians.

Certainly it's something that this COVID-19 pandemic has illustrated for us, the need to catch up and make significant investments, which, of course, the government has indicated it's prepared to follow through on and is doing. For example, the biologics manufacturing centre the NRC is currently constructing will be a long-term facility that will be available for pandemic use and be a reserve capacity for the country.

I would say that, concerning the vaccine candidates that we're working with through the NRC IRAP, we're in close contact with each of them, following their clinical progress and following their pursuit of their study, and again, we'll be prepared to follow up and work with them on an ongoing basis to support their needs going forward as they have success in their development programs. Obviously, this will establish a strong group of made-in-Canada candidates with Canadian IP with the ability to pursue those projects for Canadians.

● (1125)

Mr. Mike Kelloway: Thank you so much.

Mr. Chair, I can yield the floor. I had three questions and I appreciate the answers to those questions.

The Chair: Thank you, Mr. Kelloway.

We go, then, to Monsieur Thériault.

[*Translation*]

Mr. Thériault, you have the floor for six minutes.

Mr. Luc Thériault (Montcalm, BQ): Thank you very much, Mr. Chair.

I thank the witnesses for coming to enlighten us today.

The important thing in the crisis we are going through is not to make the same mistakes again. It's not a question of pointing out mistakes complacently, but rather of pointing them out so that we can improve and ensure that we can get through this crisis and never find ourselves in such a situation again—which I anticipate, by the way.

Dr. Kobinger and Dr. Lewis, in connection with what you said, I deduced that this situation could have been very different in terms of research and life sciences. We were talking about a $23-million investment. Is that enough to deal with a pandemic like the one we're experiencing? In my opinion, to ask the question is to answer it.

Dr. Lewis, you were talking about substantial investments. In order to really have a strike force to deal with such a pandemic and to work with the dynamic forces in the field, how large should these investments be?

[*English*]

Dr. John Lewis: Absolutely, hindsight is 20/20, but I think it's extremely clear that, if you look at success around the globe, decisive and upfront funding of multiple vaccine candidates all the way through to the end was key to both their success and their speed.

We talked a lot about being able to speed up clinical development. Previously, the average time for a vaccine to get from discovery to approval was over 10 years, and without compromising safety, we've been able to dramatically compress that time by spending money that's called “at risk” on multiple stages in parallel. I think this was absolutely required to get to the goal much more quickly, and I think in the future, not only can we....

I think we're missing commercial manufacturing capacity in Canada. We have the great seeds of that, and obviously investments have been made to improve that, but I think we can make much more substantial investments. This will then put the burden in the future really on discovery and clinical development, which I think requires upfront investment in multiple shots on goal to ensure that one of those shots gets in.

[*Translation*]

Mr. Luc Thériault: Dr. Kobinger, on February 16, the Quebec government stated that it intends to inject $2 million into the production of the vaccine developed by your team.

It is amazing that you received $1 million at the outset and still came up with some interesting results, and then were stonewalled by the federal government for further clinical research. What do you think this attitude of the federal government reflects?

Dr. Gary Kobinger: You point out opportunities where we could have done better, and this will be helpful in the future.

I think this indicates that a connection between the funded projects under development has been missing from the beginning. I am referring here to the models in Great Britain and the United States. It's no secret that in the case of projects that received a modest $1 million grant, for example, no one imagined that it would be possible to reach phase 3 of the study.

At present, there is no structure in place to provide more scientific support to particularly promising funded projects during their development and, if necessary, to put projects with more difficulties on hold. We know that funding is always limited, in the end. That's why Britain has decided to target the three most promising projects and to provide significant funding for each, in excess of $300 million if necessary. One of these projects produced a vaccine that is now licensed in more than 50 countries.

In Canada, the approach has been different. The money was kind of sprinkled around and there was no follow-up. I should point out that in our case, we are trying to develop a vaccine in a non-profit organization and 90% of the costs are cut. This vaccine is meant to be owned by Canadians, but there has been no follow-up. We also didn't have the same competitive opportunities because I was on the selection committee for the largest federal competition.

● (1130)

Mr. Luc Thériault: I have just a few seconds left. I will be able to address you in the second round since my questions are a little more elaborate.

From what I understand, there has been no comprehensive, proactive strategy to rally our strengths and increase the bioproduction strike force to make Canada independent in vaccine production. Right from the start, we dragged our feet, as in many other areas. I'll come back to that.

The Chair: Thank you, Mr. Thériault.

[*English*]

We go now to MP Davies.

MP Davies, please go ahead for six minutes.

Mr. Don Davies (Vancouver Kingsway, NDP): Thank you, Mr. Chair.

Mr. Davies, last Thursday the co-chair of the federal vaccine task force, Mark Lievonen, told the industry committee that domestically producing and supplying a COVID-19 vaccine was never possible in Canada before the end of 2021. However, from March to August of 2020, both Prime Minister Trudeau and Minister Navdeep Bains repeatedly set the expectation that Canada would be producing 250,000 doses per month by November 2020 at the NRC's Royalmount facility, and up to two million doses by the end of 2020. In fact, the Prime Minister sent out a press release on August 31 committing to that.

My question to you is this simple: In 2020 did or did not the NRC have the capacity to produce vaccines in Canada?

Mr. Mitch Davies: The human health therapeutics research centre in Royalmount has a pilot plant facility and has had that facility for many years. We can produce a vaccine product, but it requires a good manufacturing practices approval, Health Canada approval, for the facility. In the case of a specific vaccine candidate, it would have required an emergency authorization for the production of that candidate for human use.

In the case of the commitments and the statements made—the pilot-production level of production, which is the 200,000 doses—it was certainly the goal of the NRC to put in place the necessary procedures, processes and changes in our facility in order to accomplish that. Of course, we were targeting an international vaccine candidate. It's well known. It did not come into the facility. Therefore, without the product, you can't produce.

The facility is capable of a level of production that is in line with what's been said, but of course, by the time we reached the fall, we were dealing with a scenario where we had approved vaccines coming online. We had them starting to be distributed in December in Canada from approved vaccines that had, of course, advanced very rapidly internationally and that Canada, of course, had acquired—

Mr. Don Davies: Sorry, Mr. Davies, I have limited time. I don't need a long explanation of what happened. I asked you a very straightforward question. I'm taking from your answer that we did have the capacity in 2020.

● (1135)

Mr. Mitch Davies: Mr. Chair, the question of capacity and the question of authorization and being able to produce it for human use, those are two different questions.

Mr. Don Davies: Okay.

Mr. Mitch Davies: I just want to be very clear for Canadians that I'm not indicating that we had Health Canada approval. We did not have an emergency product approval in train at the time of the fall of 2020, and we were working in collaboration with other vaccine candidates in the country, but again, not producing for human use, working with VIDO-Intervac, for example, or VBI Vaccines [*Inaudible-Editor*] Canadians.

Mr. Don Davies: Mr. Davies, what would your explanation to Canadians be then for why the Prime Minister of Canada said on August 31 that we would be producing 250,000 doses of vaccine in November, which at the time he said it was about 60 days later.

Mr. Mitch Davies: Mr. Chair, the explanation is that, of course, the plan of the National Research Council was to position that facility for emergency use, and that's exactly what was occurring right through the fall period of 2020.

Mr. Don Davies: Okay.

Mr. Mitch Davies: As far as Health Canada approvals are concerned, as far as the circumstances of what products would come in to the facility are concerned, there would be no way to know precisely at the end of August exactly how it would turn out over the course of the fall. I would say that would explain the question of what ultimately took place at the NRC facility.

Mr. Don Davies: Perhaps the Prime Minister should have been a little less unequivocal, I would think, on August 31, based on your testimony.

Mr. Davies, Minister Anand also told the industry committee and this committee that she asked all seven vaccine manufacturers if they would produce vaccine in Canada. Were you part of any of those discussions?

Mr. Mitch Davies: Mr. Chair, at the time that discussions were taking place for vaccine acquisitions, I was not in the role of president of the National Research Council, although I can say that in the circumstances that the minister described, there was certainly discussion of whether the NRC could produce...a technology transfer could take place at the NRC, for example, for the AstraZeneca candidate, and also, of course, also with Novavax, which now of course has borne fruit into an MOU that we have now signed with Novavax. Those were definitely ongoing conversations.

Mr. Don Davies: You've anticipated where I'm going, Mr. Davies. Minister Anand also said that AstraZeneca turned Canada down because Canada did not have the capacity to produce. Was that because the NRC facility had already been committed to the CanSino project? Is that why AstraZeneca identified a lack of capacity?

Mr. Mitch Davies: Mr. Chair, I think the direct answer is the one that the minister provided herself, which was that for a company such as AstraZeneca to undertake vaccine technology transfer to the NRC, to a pilot facility, was not considered to be viable or a project of interest for AstraZeneca because, of course, they were producing at large scale in other locations around the world. For example, they were working with the Serum Institute, which produces a billion vaccines every year. I think it's more of a question of whether it made sense for them commercially. Although we technically can obviously handle that kind of vaccine at the NRC facility, it's a question of whether that was going to be an opportunity that that company would offer to Canada.

Mr. Don Davies: I wanted to ask you about cell culture. In 2019, I understand the NRC had at least 500 litres of cell culture. That's more than twice as much as the U.K. had and they, of course, have developed domestic vaccine production. Does the NRC still have that 500 litres of cell culture and if so, is it being used?

Mr. Mitch Davies: Mr. Chair, as I indicated in my previous answer, the facility has a pilot capability, but again, it's not approved for human use. That facility, for example, has been used to provide vaccines for animal use before that have been commercialized. We obviously can use the facility to support production models and to help advance vaccine development, but whether or not Health Canada would allow that facility to be approved is a question for Health Canada to have to come to a conclusion on the facility itself and whether we meet all the standards.

Mr. Don Davies: I asked about the litres of cell culture.

The Chair: Thank you, Mr. Davies.

That brings round one to a close.

It looks like we would have time for a quick round two. I'm going to propose round two with four-minute slots for the main parties and two-minute slots for the NDP and the Bloc.

With that understanding, we will go ahead now. We'll go back to, I believe it is Ms. Rempel Garner.

Hon. Michelle Rempel Garner (Calgary Nose Hill, CPC): Thank you, Chair.

Dr. Kobinger, when you were on the vaccine task force, did you recommend that Canada pursue the CanSino agreement?

● (1140)

Dr. Gary Kobinger: Absolutely not. I actually voiced very strong concerns despite the fact that, to my surprise, this was officially the first recommendation of the committee. We've never really discussed it, so I don't know how it made it as a first recommendation.

Hon. Michelle Rempel Garner: That's interesting. I'd like to see the minutes of that meeting. Do you think the minutes should be made public?

Dr. Gary Kobinger: It's not up to me. You would have to ask, but I think it would be normal, yes.

Hon. Michelle Rempel Garner: The person who would be in charge of that is here today.

Mr. Davies, since the NRC is in charge of the vaccine task force, can you please table all the minutes of the vaccine task force with the committee by the end of this week?

Mr. Mitch Davies: I believe the vaccine task force is coming before this committee later in the week—

Hon. Michelle Rempel Garner: That's not what I asked.

Mr. Mitch Davies: —along with the secretariat. That would be a question you best address to them. As president of the NRC, I don't have any role or direct involvement in supporting the task force. It's operated at arm's length from me, with the secretary, and of course, supporting the task force members, who are all volunteers.

Hon. Michelle Rempel Garner: What role do you have with the vaccine task force then?

Mr. Mitch Davies: From the perspective of the president of the NRC, obviously, our role is to provide administrative support for the committee, but it operates in accordance with its co-chairs and its members. That's how they proceed.

Hon. Michelle Rempel Garner: With regard to administrative support, would you take minutes of the meetings?

Mr. Mitch Davies: The secretary of the vaccine task force would take minutes of the meetings, record all the deliberations, the outcomes, the advice letters to ministers, all the indications of conflict of interest and declaration of interest, and provide administrative support.

Hon. Michelle Rempel Garner: Mr. Davies, will you commit to tabling the minutes of the vaccine task force with this committee by the end of this week?

Mr. Mitch Davies: I'm not in a position to make that commitment, obviously. That would be a question that's best addressed to the vaccine task force in terms of what it would be prepared to share. Of course, given that it has a lot of confidential information that's been provided to it by vaccine makers, that's an important matter it has to take at its discretion.

Hon. Michelle Rempel Garner: Dr. Kobinger, you can imagine my frustration in this situation.

Do you think that it's reasonable that the head of the NRC would perhaps provide parliamentarians with minutes of the committee that was making decisions on the vaccine for COVID?

Dr. Gary Kobinger: I would answer this way. I advised the committee to not only be very transparent with everything that touches the vaccine, which is the vaccine task force, but even to include a person from the media to record the meetings from the beginning.

This did not happen, of course. I was not necessarily expecting it, although it was—

Hon. Michelle Rempel Garner: So you did advise the government to release the minutes of the vaccine task force and/or have a journalist....Did the government tell you why it wouldn't do that?

Dr. Gary Kobinger: No.

Hon. Michelle Rempel Garner: Do you think that perhaps Mr. Davies is in a position to provide these minutes to the committee?

Dr. Gary Kobinger: I'm sorry, I don't know the exact structure past the chair and co-chair, unfortunately. I don't exactly know how it works.

Hon. Michelle Rempel Garner: Dr. Kobinger, do you think there's anything else that needs to be made public that came out of your time at the vaccine task force that parliamentarians on this committee should be reviewing?

Dr. Gary Kobinger: Initially, the first priority was to have access to vaccines from big pharma, which was done. The Canadian federal government did very well there by signing seven contracts.

The second priority was to build up from day one, not to wait to build up capacity in Canada. This meant that, from the beginning, there was a need to increase the volume of vaccine and manufacturing, knowing very well that PPEs had been an issue and would continue to be an issue.

The Chair: Dr. Powlowski, please go ahead, for four minutes.

Mr. Marcus Powlowski (Thunder Bay—Rainy River, Lib.): My questions are to Mr. Davies, at least to begin with. I'm interested in your existing capacity to manufacture vaccines.

The other Mr. Davies stated that the Prime Minister or you have said that we have the capacity to make 200,000 doses per month, and it could be ramped up by the end of 2020, the last year, to two million doses per month.

In your reply to Mr. Davies, you seemed to suggest that you could make an AstraZeneca kind of vaccine. I would assume, similarly, you could do the same thing for Johnson & Johnson, because again, its an adenovirus-based vaccine. However, you said AstraZeneca didn't seem interested in contracting with you.

If you were to have either a voluntary license to produce one of these adenovirus-based vaccines, or contract with one of those companies, or if you were to receive a compulsory license, say via the government, could your facility start producing vaccines? How fast could you start, and how many could you make?

● (1145)

Mr. Mitch Davies: I just want to clarify that the two million doses per month that has been referenced by the honourable member and in the previous question relates to the Biologics Manufacturing Centre, which is now under way. Construction is going well. It will be completed by the end of July. Then we will begin a technology transfer process to position us to have engineering runs in production by the end of this calendar year. That is the facility on which we're working with Novavax under an MOU to pursue production at that facility.

Again, I think the distinction to be made here is that with that scale of production with the capability of our scientists at the Human Health Therapeutics Research Centre, Novavax was willing to embark because that was going to serve its commercial purposes, and, obviously, support making Canadian vaccine and its product in this country.

The question of the pilot plant is very different, and I think that's where there's a limitation in terms of what any large global manufacturer would do at that level of production with Canada. I think that opportunity has not presented itself, and I think there's good reason to explain why not, but, again, we're pleased that the large-scale Biologics Manufacturing Centre has made some progress with the recent MOU.

Mr. Marcus Powlowski: So if you had a contract with someone like AstraZeneca, with the pilot plant, how many doses could you make per month at the pilot plant?

Mr. Mitch Davies: Mr. Chair, the goal with the pilot plant would have been to be able to produce, for emergency use under emergency use authorization, something in the range of 100,000 to 200,000 doses per month if that could have been pursued. Obviously, that wasn't the position we were in last November, so obviously we will have that capacity and capability on an ongoing basis, but I can't reverse how the course of events occurred over the summer and into the fall. Again, there are certainly some very clear reasons as to why that was not necessarily the kind of opportunity that was going to attract one of the larger global-scale vaccine producers.

Mr. Marcus Powlowski: We have been much criticized for the fact that we don't have the capacity, that we don't have anyone here in Canada manufacturing one of the vaccines.

In your opinion, is there any facility in Canada that, if it had the secret formula and the co-operation of one of the manufacturers that have come out with a vaccine that has been successful through phase three trials, and we were to give it that secret formula through voluntary licensing, contracting or compulsory licensing, would have the capacity to start producing vaccines faster than we can get them in from other countries through contracting as we're doing now?

The Chair: I'm sorry, Doctor. Your time is up. We're really short of time.

Mr. Marcus Powlowski: You had the yellow card up. I wouldn't mind an answer to it.

The Chair: We could have a very quick answer. I was using my cards for a five-minute slot, but we're on a four-minute slot, so I apologize.

Could we have a quick answer, if you please?

Mr. Mitch Davies: Thank you, Mr. Chair.

I think I would refer to the vaccine task force and the position it took in terms of what was the fastest path to getting large-scale numbers of doses into Canada, and that was to acquire them. Those are the doses now coming into Canada. They have been coming in since December, and, of course, will be ramping up. Obviously, they can't come fast enough. There's not a Canadian who wouldn't want those doses to be here more quickly, but that was the strategy it recommended the government adopt, and the government pursued that strategy through the APAs it signed.

The Chair: Thank you.

We now go back to Mr. d'Entremont for four minutes.

Go ahead, please.

Mr. Chris d'Entremont (West Nova, CPC): Thank you very much, Mr. Chair.

Mr. Davies, when it comes to the construction, you're saying the construction's going to be ready by July 2021. When did construction begin, and when could the Royalmount facility conceivably be constructing or getting vaccines out the door?

Mr. Mitch Davies: The construction at the Royalmount site started last summer. I assure you that it has been proceeding at a very rapid pace under circumstances that are very unique. We're building a building under COVID-19 health protocols. We have to have due regard for the health and safety of the workers, and I think they have made astonishing progress to date. Again, we're very hopeful to be on track and to have construction complete by the end of July.

There will be 250-odd pieces of unique equipment purchased, which will have to be installed in that building. It's quite a massive undertaking in terms of scope.

● (1150)

Mr. Chris d'Entremont: Pfizer was able to upgrade their facility in just a few months.

I know you're saying they're going at a fast pace, but quite honestly, why can Pfizer do it so quickly whereas NRC/Canada cannot?

Mr. Mitch Davies: Mr. Chair, in our case our facility started with a green field of grass, and that explains the scale and scope of what we're undertaking. The fact that it is now a completely enclosed building with HVAC systems and walls, and equipment being procured, stored in facilities and ready to be installed is actually quite a solid accomplishment under the circumstances. Again, we don't take any of this for granted. It's a very complex undertaking.

Biomanufacturing is a very exacting business. Ultimately, we're going to need Health Canada's approval and certification of that facility, and then certification subsequently of the production process of any given vaccine in Canada. We don't take any of those things for granted. There's no pass with Health Canada. The bar doesn't change.

Mr. Chris d'Entremont: Very quickly, on that issue, if your construction is done in July, how long would it take—I'm sure you have a ballpark figure—for Health Canada to approve that?

Mr. Mitch Davies: Of course, Mr. Chair, I can't speak for Health Canada and I'll be very careful not to do anything to suggest that I do.

Obviously, we'll be working towards having engineering runs at the facility by the end of the year that then would be available for evaluation. This facility will be very important as we work towards the scenarios that we face with COVID-19, potentially having to provide an annual vaccination to deal with the variants that are emerging, and obviously to provide a long-term biomanufacturing capability for Canada that's available in the circumstances that we've faced over the last year.

Mr. Chris d'Entremont: My next question is to Dr. Lewis.

I know I'm running out of time.

You talked about more resources, and you have three particular recommendations on how to do this better.

Is NRC involved in the work that you might want to see happen? Do they play a part in that, or is there a bigger player that we need to engage in this?

Dr. John Lewis: Absolutely. We've been engaged, as has been mentioned, over the timeline. The vaccine task force did select six companies to be supported by NRC IRAP. Entos Pharmaceuticals was one of those companies. We have been working closely with some fantastic people at NRC to help us with our clinical program for bringing our vaccines to phase one clinical trials. We've received commitments of support up to $5 million to do that. Obviously, all the people working on this task are extremely dedicated, and we have gratitude for that support.

Again, and we're going to get there, we're going to get through phase one. We're talking with NRC about funding the phase two part of it. However, in the interest of speed, this needed to happen at the outset, from the very beginning, to fund the full process from beginning to end so that we could take that risk and move quicker.

The Chair: Thank you, Mr. d'Entremont.

[*Translation*]

Mr. Thériault, you have the floor for two minutes.

Mr. Luc Thériault: Doctor Kobinger, you recently said: "Canada's approach is we're going to let others develop and we're going to buy cheap. It's a developing country approach."

I guess the fact that Canada is the only G7 country to take doses from COVAX is an illustration of this.

This approach is not new. As in many other areas, especially basic research, the pandemic has shown us that chronic underfunding over the past several decades and under several governments has caused the current situation.

Can you tell us more about the effects of this underfunding of basic research on the ability to deal with COVID-19 and to produce vaccines that match the expertise of our researchers?

● (1155)

Dr. Gary Kobinger: Thank you for your question.

There have, however, been some major investments, notably in AbCellera. The National Research Council of Canada, NRC, received $56 million for the vaccine from CanSino Biologics, which went nowhere. There have been other major investments.

One of the main challenges is not the investment itself, but rather how investments are sent to the right places and how they are monitored.

There's a lot of talk about NRC having to build capacity. This model does not exist in any other country. One federal department waits for approval from another federal department to produce vaccines that, in very few cases, cause serious side effects. There needs to be compensation for people who have these side effects. To my knowledge, the federal government cannot be sued.

I don't know how this model will work. However, it didn't work for ZMapp, by the way.

I hope it will work this time, but we seem, once again, to have put all our eggs in one basket to solve the current crisis.

The Chair: Thank you, Mr. Thériault.

[*English*]

I apologize to Mr. Fisher. I jumped right over him.

We'll go back to Mr. Fisher now for four minutes, please.

Mr. Darren Fisher (Dartmouth—Cole Harbour, Lib.): Thank you very much, Mr. Chair. It's always great to hear Mr. Thériault.

I want to thank the witnesses for being here.

Dr. Lewis, I want to thank you as well for all the work you've done on cancer research. I've read up a bit on you, and it's quite astounding what you've accomplished. Thank you for that.

Mr. Davies, I know there have been significant investments in domestic vaccine production, whether we're talking about the National Research Centre's $170 million, the Novavax partnership project at the University of Saskatchewan, Precision, Medicago, AbCellera or Entos, all the different groups that we've invested in. Maybe you can expand on that, but also talk about the importance of those investments and what they might yield down the road.

Mr. Mitch Davies: I can highlight three of those investments because they're each very interesting in terms of capability that's possible for Canada in the future.

For example, Medicago is working on a unique virus-like platform based in plants. Obviously it has been supported to build out its productive capacity, which, when it comes online—and obviously presuming there's a successful process to approve the vaccine—would provide a very considerable amount of future biomanufacturing capability for Canada, based on the novel vaccine platform technology that Medicago has been developing for many years.

PNI was mentioned as well as a leader in terms of the lipid nanoparticles, the new type of mRNA vaccine, in an area where there's significant Canadian leadership, in fact, and a long-standing leadership of companies in Canada in this space. It is new and it obviously has been the news of COVID-19 in terms of technological development that these new types of vaccines are very important in terms of responsiveness. That capability will be there in the future for Canada.

VBI Vaccines is working on a platform that they're intending to address a broader spectrum of coronavirus as well, including SARS and MERS. Again, it's another very important Canadian technology developed in Ottawa at their research centre and will be able to be advanced for the future.

These do obviously give a sense of the capability in Canada and, of course, the funding that has been provided will allow those capabilities to be advanced considerably in this time.

Mr. Darren Fisher: Thank you for that.

A lot of people will ask why we will need this in the future and why we need this first of all. We want to return to a time where we have domestic capacity to develop and manufacture vaccines for future viruses, but also for COVID in the future.

In my remaining time, could you touch on the value of that and the understanding that it's not just that we're going to have Canadians vaccinated by September so we won't need anything else? Could you also talk a bit about the potential future need for Canadians for vaccines and the ability to manufacture them domestically being of the utmost importance?

Mr. Mitch Davies: Mr. Chair, I'm not sure if that question is directed to me, but I would say that the biologics market and global outlook are very strong. I think the RNA/DNA medicine area, which has been mentioned by Dr. Lewis, is obviously an area of high potential, not only for treating viruses of the kind like COVID-19, but for a range of diseases.

I think this platform is very powerful for the future, and obviously these investments now in supporting Canadian companies to realize their objectives will set us up well across a whole broad spectrum of products that the world will need and that Canadians will need. It's actually quite encouraging that we have such strong capabilities in our country, and obviously we're pleased to support those companies.

● (1200)

Mr. Darren Fisher: Thank you.

The Chair: We'll go now to Mr. Davies.

Mr. Davies, please go ahead for two minutes.

Mr. Don Davies: Thank you.

Dr. Kobinger, drawing on the advice of the vaccine task force last September, the federal government pre-ordered 72 million doses of the vaccine candidate developed jointly by GlaxoSmithKline and Sanofi. That represents Canada's second-largest vaccine supply agreement. Of course, that vaccine development has suffered from significant delays after failing to produce a strong immune response in trials.

Dr. Joanne Langley, one of the task force's co-chairs, holds a $700,000 research chair at Dalhousie partly funded by GlaxoSmithKline, and she has worked with Sanofi on research and as a consultant. According to the task force's website, there were no “direct, material linkages”, no conflict of interest and no need for her to recuse herself from discussing the company's product.

At the same time, in February we received evidence that the federal vaccine task force determined that co-chair Mark Lievonen, who was the CEO of Sanofi Canada for 17 years until 2016, who still owns shares in Sanofi, who is consulting with drug companies and who remains the director of two other drug companies, also had no direct, material conflict of interest in assessing the Sanofi vaccine.

Is it possible to say with certainty that conflicted members did not provide biased advice with respect to vaccine procurement in these circumstances?

Dr. Gary Kobinger: This is just a matter of opinion. There was evidence of conflicts of interest, at least from my perspective, including that one member sold the equipment for $20 million, while being on the task force to the federal government for doing fill and finish.

I think this was information that was, unfortunately, not reviewed, in my view, by an independent ethics committee to assess conflict of interest.

Mr. Don Davies: Should they be reviewed?

Dr. Gary Kobinger: Absolutely, they should have been reviewed before starting the work with this task force, like for every other....

I do conflict of interest statements monthly for the WHO. They are due before we open the line. If they are not done, we cannot participate.

Mr. Don Davies: Thank you.

I know the WHO has a video link allowing anybody to tune in. The U.S., as well, webcasts its meeting on YouTube.

Should Canada do the same?

The Chair: I'm sorry, Mr. Davies, that will be your last question.

Mr. Don Davies: Could the witness just answer, please?

Dr. Gary Kobinger: The answer is yes, we should. Media was also present for the meeting at the WHO, which could also be done here.

The Chair: Thank you all.

We're a little over time on this panel. I thank all the witnesses for your time and your very helpful testimony today.

With that, we will suspend and bring in the next panel.

● (1200)

_____(Pause)_____

● (1205)

The Chair: This meeting is now resumed.

Welcome back to meeting number 20 of the House of Commons Standing Committee on Health, where we are meeting to study the emergency situation facing Canadians in light of the second wave of the COVID-19 pandemic.

On the panel today, as an individual, we have Dr. Kashif Pirzada, emergency physician and assistant clinical professor at McMaster University. For the Canadian Institute for Advanced Research, we have Dr. Alan Bernstein, president and chief executive officer. From the Department of Health we have Dr. Supriya Sharma, chief medical officer.

We will start with statements from our witnesses.

We will start with Dr. Pirzada. You have six minutes, please.

Dr. Kashif Pirzada (Emergency Physician and Assistant Clinical Professor, McMaster University, As an Individual): Thank you, Mr. Chair and members of the committee, for taking the time to listen to our comments today.

I am pleased to present on behalf of the Critical Drugs Coalition, a grassroots group of frontline physicians, pharmacists and academics. We do not seek nor receive any kind of funding from any entity—public or private. We want to provide recommendations for how the federal government can further the goals of mass vaccination and improve the overall security of Canadian drug and vaccine supplies.

As an emergency physician in Toronto, I've seen many people unfortunately pass away from COVID. I was also a key member of Conquer COVID-19, a community group that helped source PPE at the start of the crisis, and Masks4Canada, which successfully advocated for mask-wearing bylaws across the country.

My attitude, and that of many of my colleagues, is that we have a mess here, but let's see what we can do to fix it and save lives. That's how we approach our patients and that's how we should approach this crisis.

Drug and vaccine shortages are not a new issue. They've only been made worse now in this pandemic. It has been an ongoing health security issue for over a decade now in Canada.

In August 2020, we sent an open letter to the Prime Minister's Office detailing our concerns and highlighting some realistic and cost-effective solutions to include domestic manufacturing. The letter is co-signed by the Canadian Medical Association, the Ontario Medical Association and many other national bodies.

Our current vaccine shortage shares a common route with drug shortages: the lack of dependable and scalable domestic manufacturing. We have the following three recommendations.

One, Canada needs local production of drugs and vaccines. mRNA is a new technology that has incredible potency in fighting COVID-19, cancers and possibly other viruses. When I was a lab student 20 years ago, this stuff was science fiction, and the advances made are just incredible. With virus variants, we all need periodic boosters, possibly for years, as we do with the flu. We have the expertise, from the testimony we heard earlier, from companies such as Acuitas and Providence Therapeutics that can make it here. It is also the promise of second-generation genetic vaccines that can induce longer immunity, and these companies are working on it, the ones that we spoke to.

It's great that federal funding is flowing to these companies now, but this support needs to continue. This is a nascent industry, and the technology underlying it is going to revolutionize pharmaceuticals, cancer care and agriculture. It's crucial that we get on board now. It's great that it's also in the provinces that are losing other traditional industries. These are thousands of high-quality jobs. Therefore, it's a win-win for the country.

Our second point is that science coordination and communication needs to improve in this country. We are losing a head-to-head comparison with the U.K., the U.S., Israel and many other countries. The U.K. was able to mobilize a unified effort across industry, academia and government and had a cabinet-level post of vaccine minister.

I'll give you an example just from my personal history. I, along with half of my U of T class in 2003, was quarantined during SARS after inadvertent exposures. Many of us survivors from that time have been trying to get attention on issues such as PPE, drugs and vaccines, but there's no one to talk to, no network to access and no way to warn the government about what we knew was coming back in 2020. We need to involve grassroots frontline providers, scientists and industry leaders in a regular network of advisory groups like the U.K. does. Get the meetings online, make them public, get the deliberations public and that's how you share information freely.

Our third point is that we have some grave concerns from the front lines on the vaccine scale-up and rollout. The rollout so far to health care workers has been fairly chaotic. Many rural providers have not gotten their doses. If the government can't get this right with a smaller population like that, what are the chances it's going to work for 37 million Canadians?

We should keep things simple, as the U.K. has done. Avoid overly complex criteria and tell the public about plans. Be transparent. Who is getting it, when and where? Focus on the most important thing of all, which is getting vaccines into people's arms as quickly as possible.

Another point we've discovered is that community providers have not been engaged in the vaccine rollout so far. Family physicians and pharmacists can deliver millions of doses a week, but they're not involved. They have access to and good insight into vulnerable patients and communities, unlike others.

Another frontline insight is that some have been able to squeeze extra half doses out the Moderna vials and combine them into a single dose, but they are being discarded right now because there's no approval for unorthodox procedures like that. However, in a crisis such this, we should look at any option.

Our final point on the vaccine rollout is that we should seriously consider giving a single dose of the vaccine to as many Canadians as possible. Just today, we have seen seven schools in B.C. closed because of outbreaks and likely airborne spread of the South African variant, which is widespread in the city of Toronto now, in Mississauga. Variants are spreading quickly: in my own hospital log, a dozen last week and five more today. They're more contagious and likely airborne.

We should take pride that we've vaccinated many long-term care patients. However, we are discounting the long-term consequences of even mild COVID-19 infections on younger populations. We should not assume that if they only get mild or moderate illness they're fine. In fact, 15% of them will get what's called “long COVID syndrome”. They'll have memory issues, chronic pain and chronic fatigue, and this will last possibly for years. They won't be able to go to school or work in their jobs. Normally healthy, able-bodied people will have their quality of life ruined and forced onto long-term disability at extreme cost to themselves and their families, and this might even affect children. Imagine if 15% of our children couldn't taste anything or had chronic pain and were unable to go to school.

● (1210)

In summary, as frontline workers battling this pandemic, we recommend that we build vaccine and drug capacity in Canada, we improve communication with frontline workers, decision-makers, and finally we ensure we have an effective vaccine rollout and protect as many as Canadians as quickly as possible with the first dose of the vaccine.

Thank you very much.

The Chair: Thank you, Doctor.

We go now to the Canadian Institute for Advanced Research, Dr. Alan Bernstein, president and chief executive officer.

Please go ahead, Dr. Bernstein, for six minutes.

Dr. Alan Bernstein (President and Chief Executive Officer, CIFAR): Thank you, Mr. Chair.

Thank you to all members of the committee for your time and interest in clearly what's a very important matter.

My name is Alan Bernstein. I am president and CEO of CIFAR. We are a Canadian-based global research organization. I believe I have been called as a witness here today because I also serve with honour as a volunteer member of the federal vaccine task force.

As you know, the vaccine task force was formed in June of last year to advise the government on the very best strategy to secure a safe and effective COVID-19 vaccine for Canadians as quickly as possible. In doing so, we were also tasked to look at both domestic and international candidates and to look at the state of biomanufacturing capacity in the country.

The vaccine task force is made up of a distinguished group of immunologists, vaccinologists, vaccine developers, biomanufacturers, ethicists and lawyers. We serve as volunteers, providing our very best possible advice in a timely manner in a very changing and uncertain environment. You will recall there was no vaccine last summer, nor was it clear whether there would ever be a vaccine. I want to stress that. Most vaccine journeys end in failure. We were trying to cover our bases with the vaccines we recommended to government.

Our very first meeting was on June 16. We've now met at least 40 times as a task force, for a total of over 125 hours, plus roughly an equal amount of time devoted to studying the proposals that were put in front of us. Let me stress one thing: our primary objective and the charge we were given by ministers was to recommend those vaccine candidates that were most likely to lead to safe and effective vaccines for Canadians as soon as possible. At our first meeting we quickly decided not to put all our eggs in one basket, to put many shots on goal, which you have to take if you want to win a game. We also decided that, given the uncertainties and the seriousness of the situation, we would hedge our bets by recommending at least two vaccine candidates for each one of the three main scientific platforms that are available: RNA vaccines, a new platform; viral vectors; and protein subunits. Such a diverse portfolio of candidates might also reflect the needs of different target groups in any immunization strategy that government might decide to implement.

We were also very cognizant of two factors. First, the majority of vaccine development journeys end in failure. Second, the successful development of a vaccine, through trials to regulatory approval to scaled-up capacity to rollout, is best characterized as a voyage in very rough seas. We therefore felt that Canada needed an appropriately diverse mix of science platforms and firms within the portfolio of candidates that we would ultimately recommend to ministers, even if that meant recommending that Canada purchase more vaccine doses than we might need.

Although ministers made clear that the first priority was to recommend the very best vaccine candidates, some special attention should be paid to domestic proposals. Twenty-four Canadian proposals were carefully examined and three were recommended: Medicago, Variation Biotechnologies and Precision Nanosystems. These three companies are receiving significant government support for vaccine development through the strategic innovation fund.

Some other domestic candidates showed promise, but for a variety of reasons the vaccine task force felt they were at too early a stage for significant investment at the time we looked at them. Therefore, we recommended that six of these projects be referred to the National Research Council for funding through IRAP, the industrial research assistance program. The six projects that received funding in that way were Biodextris, Entos, Glycovax, Inovio, Providence Therapeutics and IMV. In addition, several companies, such as Entos and Providence, received significant additional funding through grants from the Canadian Institutes of Health Research and the NGen fund respectively.

Thank you, Mr. Chair.

● (1215)

The Chair: Thank you, Doctor.

We go now to the Department of Health and Dr. Supriya Sharma, chief medical adviser.

Please go ahead for six minutes.

Dr. Supriya Sharma (Chief Medical Advisor, Department of Health): Good afternoon, Mr. Chair, and thank you for the opportunity to appear before the committee today.

I appreciate this opportunity to highlight how Health Canada has been using agile regulatory processes to expedite the access to COVID-19 vaccines while maintaining high standards for safety, efficacy and quality.

My name is Dr. Supriya Sharma, and I am the chief medical adviser at Health Canada and also the senior medical adviser at Health Canada's health products and food branch.

I want to begin by saying that, since the beginning of the pandemic, our fundamental priority has been to ensure that nimble and timely processes are in place to review applications for clinical trials as well as submissions for authorizing COVID-19 treatments and vaccines.

[*Translation*]

In particular, we recognize the vital importance of vaccines in Canada's pandemic response and our fight against COVID-19. Since the start of the pandemic, Health Canada has worked closely with other departments and the Vaccine Task Force on vaccines against COVID-19—

[*English*]

The Chair: Pardon me, Dr. Sharma, we seem to be having a problem with the English translation. The French is coming through very well on the English channel, but the English translation is very, very weak. I wonder if we could have a look at that.

Please continue.

● (1220)

[*Translation*]

Dr. Supriya Sharma: Since the start of the pandemic, Health Canada has worked closely with other departments and the Vaccine Task Force to develop and implement Canada's vaccine strategy. Early on, we recognized the need to facilitate clinical trials of drugs for COVID-19, given that no treatments or vaccines were available for this new virus.

In May 2020, Canada's Minister of Health approved an interim order to facilitate clinical trials for COVID-19 products. Among its benefits, the Interim Order reduces the administrative burden for sponsors without compromising the safety of participants, and makes it easier to set up trials across Canada.

In September 2020, the Minister of Health introduced another interim order to expedite the review of treatments and vaccines for COVID-19, while maintaining a high level of scientific scrutiny.

[*English*]

This interim order allows Health Canada to approve a new vaccine based on available evidence with more agile administrative and application requirements and to apply terms and conditions to require the manufacturer to continue providing information on the safety, efficacy and quality of the vaccine once marketed; and permits the Public Health Agency of Canada to arrange for the importation of promising COVID-19 drugs into Canadian facilities prior to approval in Canada.

The interim order also allows for rolling reviews, which lets a vaccine manufacturer submit its request for authorization before it has completed all the clinical trials. This means that it can submit required data as they become available.

Additionally, we have a strong post-market safety surveillance system to monitor the safety of COVID-19 vaccines. Once a vaccine is on the market, Health Canada and the Public Health Agency of Canada monitor for any adverse events after immunization in collaboration with the provinces and territories and the manufacturer. The interim order provides the authority to impose terms and conditions on any authorization at any time, such as conducting additional assessments of safety information.

All of Health Canada's regulatory decisions are independent and based solely on science and evidence.

[*Translation*]

So far, 10 submissions have been received under the interim order—including four treatments and six vaccines. Two vaccines and one treatment have been authorized, while the others remain under review.

Another key step that we have taken to ensure timely and thorough approvals is hiring additional scientists and establishing dedicated review teams for COVID-19 vaccines, in order to ensure consistency in reviews. These review teams, comprised of experienced regulatory and scientific experts, focus solely on COVID-19 work, and have been working around the clock on the scientific reviews of submissions.

Health Canada reviewers are scientists and physicians with many years of experience reviewing vaccines, and with expertise in different domains including, but not limited to, clinical medicine, toxicology and pharmacology, biochemistry, virology, immunology, microbiology, and other scientific disciplines relevant to the development, testing, manufacture and quality control of vaccines.

[*English*]

Furthermore, as soon as there was information that vaccines were going to be developed, our department worked closely with other international regulators and the World Health Organization to collaborate on the regulatory requirements for COVID-19 vaccines and to make the regulatory processes as efficient as possible.

These partnerships allow us to share information, support scientific collaboration and align regulatory approaches and requirements for vaccines, while still making independent decisions for Canadians.

Together, these measures have allowed Health Canada to authorize several clinical trials in Canada for COVID-19 vaccines, as well as the two vaccines, Pfizer-BioNTech and Moderna, that are already being administered to Canadians.

● (1225)

[*Translation*]

Our response to the pandemic is being guided by the latest science and research. We also continue to monitor the emerging viral variants closely, and work with manufacturers and international regulators to assess the impact of the new variants on vaccine efficacy and provide guidance to manufacturers.

[*English*]

As part of our commitment to openness and transparency, Health Canada has published detailed information about the authorized COVID-19 vaccines on the department's new COVID-19 vaccines and treatments portal. Health Canada and the Public Health Agency of Canada also provide weekly updates on reported adverse events following immunization.

Canadians can feel confident that the review process for vaccines is rigorous and that we have a strong monitoring system in place.

Once again, thank you for this opportunity to speak with the committee today. I'd be happy to answer any follow-up questions you may have regarding Health Canada's vaccine approvals process.

Thank you.

The Chair: Thank you, Doctor.

We'll start our rounds of questions now with Ms. Rempel Garner, please, for six minutes.

Go ahead.

Hon. Michelle Rempel Garner: Dr. Pirzada, thank you so much for taking time to be here today and for your service in our community.

You might not realize this, but you've had an impact on me and my role as a vice-chair of this committee since I was appointed last fall. Since the pandemic started, I've always been of the opinion that in order to reduce the larger societal impacts of lockdown, we should be looking at ways to undertake more targeted isolation measures supported by rapid testing, so we can prevent the spread of COVID but also reduce the harm of domestic violence, suicide rates, mental health, surgeries being cancelled and all the stuff I'm sure you're seeing.

You wrote an article in the fall, talking about the need to have rapid test deployment, and here we are, six months later, on track to have well under 10% vaccinated by the end of March. Do you think it's time we had a federal strategy on rapid testing deployment?

Dr. Kashif Pirzada: Definitely. This is an underused technology. Slovakia and other countries have used it to lower their burden. Baby steps have started to be taken in Ontario on rapid testing: I think we bought 20 million of these tests, but we need 10 million to 20 million of them every week. If we can get everyone testing quickly two or three times a week, we can really bring down the numbers and make things like opening schools a lot safer, so I think this should definitely be a priority for the government.

Hon. Michelle Rempel Garner: I'm half Slovak, and I met with their ambassador on it. I know it's been going very well there.

I've heard everything from the federal government, from "Rapid testing isn't a panacea; it won't work," to "It's not our responsibility. We bought the things for the provincial government. They're not deployed."

Canadians are starting to get tired of the finger pointing across jurisdictions. Given our jurisdictional boundaries, how could the federal government take a more active role or provide more value-add in deploying a test like this, especially knowing that vaccinating everyone is probably another six months away at very best?

Dr. Kashif Pirzada: I would say to license manufacturing here. There's a great company in Halifax, Sona Nanotech, that makes them. We can make them here. We can license them from Abbott as well. We need tens of millions of these tests every month. We need lots of them. Get them into schools. Get them into the workplaces that keep having outbreaks. We know that they will work with the variants as well. It's a great strategy, if we can get them out there.

Approve more of them. There are some tests that have been approved in Europe that haven't been approved here yet. Just get them out there and get them to work.

Hon. Michelle Rempel Garner: I listened to the chief public health officer on Friday. She made a statement that it was unlikely that Canadians were all going to be vaccinated this year. She also presented some projections on the spread of the variant. On Friday, we had officials from PHAC here talking about what the modelling included and didn't include. I was really surprised that they weren't able to speak to assumptions around rapid testing and vaccinations in future models.

Do you think if we had a national strategy for rapid testing it could help us prevent the spread of the variant?

Dr. Kashif Pirzada: I think it's something to be considered. The variant is way more contagious; there is airborne spread. Just look at the building outbreak in Mississauga. It did not happen from people in close contact with each other. They were in vestibules, maybe in elevators. Everything needs to be done to stop the spread of that.

It's something that would really help, I think, along with other things like fixing ventilation and getting people to wear improved masks as well. Those are all important things.

● (1230)

Hon. Michelle Rempel Garner: That's great.

If you want to table some further recommendations on that to this committee, we would love to have them.

From some of your writings and your testimony here today, and frankly as a policy-maker with people calling my office and asking when this is going to end, I think the general theme of the last year and half has been that there is a lot of inertia within our bureaucracy and not a lot of direct input either from people who are dealing with this on a daily basis through lived experience or from frontline medical workers.

If there were three things or more that the federal government could do today to have more input from folks like you to overcome this inertia, what would those be?

Dr. Kashif Pirzada: I think one would be to get us here more often. There are lots of people like me out there who have a lot of good observations. The medical community really wants to talk to you guys and give you our viewpoints.

The second thing right now is just to tell the public to really look out for airborne spread of this virus. N-95s are easy to find now. A lot of Canadian companies are making them. We have a great list online; you can search for it.

The third thing I would say is to really listen to the science and try to get ahead of this. Europe has given us a great head start. Just follow whatever they're doing that is working. Really think about single-dose vaccinations as the U.K. is doing. I think they are going to be the first ones out of this.

Hon. Michelle Rempel Garner: Thanks very much.

With the time I have remaining, I will go to Dr. Bernstein.

When you were on the vaccination task force—I know you sit on there now—did you recommend that the government enter into the CanSino agreement?

Dr. Alan Bernstein: The CanSino collaboration between the NRC and CanSino actually started before the vaccine task force was formed. When they came in front us it was partly an FYI but partly for us to comment on the science behind—

Hon. Michelle Rempel Garner: What was your comment?

Dr. Alan Bernstein: There were two things. There was good news and bad news.

The good news was that at that point, CanSino was actually way out in front of any vaccine developer in terms of having a vaccine for human use for COVID-19.

Hon. Michelle Rempel Garner: What was the bad?

Dr. Alan Bernstein: The bad news was with the science in it. I can go as deep into it as you would like. Because it was an adenoviral vector, and we all have antibodies to the adenovirus type-5 vector that was used in the CanSino vaccine, there was a worry that there would be antibodies to the vector itself, the vaccine itself, that we would naturally have already been making. There was a question of how effective that vaccine would be. We provided that information back to them.

When we saw the data later on in the summer, we then recommended that the collaboration end.

The Chair: Thank you, Ms. Rempel Garner.

We go now to Ms. Sidhu.

Ms. Sidhu, please go ahead for six minutes.

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

Thank you to all the doctors for your insight.

Dr. Sharma, very briefly, can you take us through the process that goes into giving a new vaccine full authorization in Canada so it is safe for all Canadians? Please give us a very short answer.

Dr. Supriya Sharma: Mr. Chair, there's a review process that involves review teams with a lot of experience. Each review team has about seven to 10 people on it, in a variety of different scientific domains. They look at the preclinical, or the lab and animal data, they look at the clinical trial information, and they have detailed examination of the manufacturing data in separate groups and in areas of expertise, and then all of that comes back together to see if that vaccine will meet the appropriate standards for safety, efficacy and quality, as well as whether the benefits of that vaccine outweigh the potential risk.

In addition to that, there's a group that looks at what we call the "risk management plan", that's the plan for post-market monitoring of the vaccine. We have teams in Health Canada that also look at all of the assessments of the facilities the vaccines will be manufactured in to make sure that they adhere to good manufacturing practices and standards.

Once all of that comes together, there are [*Technical difficulty—Editor*] that look at the labelling, the post-market commitments, the terms and conditions on the vaccine and the plans for monitoring, and all of that goes into the authorization. All of that [*Technical difficulty—Editor*] in the Canadian product monograph, a summary of our review, and all the information that we based the review on then goes up on the website so that it is accessible to all Canadians.

Ms. Sonia Sidhu: Thank you.

Dr. Sharma, the federal government provided almost 23 million rapid tests to support provincial and territorial partners. There are millions currently collecting dust at provincial facilities. What do you think should be improved to make sure these procured tests are used by our provinces and territories?

● (1235)

Dr. Supriya Sharma: Certainly, from the regulatory standpoint, we've done expedited reviews to make sure that, whether it's a point-of-care test, an immunology test or a lab-based test, those are reviewed and authorized if they meet the Health Canada standards.

The Government of Canada, as you noted, has gone through a lot of procurement of rapid tests and has deployed those on the basis of need in the provinces and territories. In terms of the deployment, it is really up to the provincial and territorial level to see where those rapid tests and, indeed, other rapid tests that they may have procured, fit into their overall testing and contact tracing programs. Certainly, it's an essential part of the track and trace for cases of COVID-19 and helps a lot in terms of the response to the pandemic.

Ms. Sonia Sidhu: Thank you.

A few days ago, Dr. Tam said we can be very optimistic about the performance of the vaccines so far based on the data collected. There's growing evidence that one dose provides a fairly high level of protection. Can you tell us about how the first phase of our vaccination provides effectiveness?

Very briefly, please.

Dr. Supriya Sharma: The two vaccines that are authorized so far in Canada, the Pfizer-BioNTech and Moderna vaccines, are both two-dose vaccines. The reason that they're two-dose vaccines is really based on all of the developmental tests that have gone into the development of those vaccines, from animal studies and through lab studies to the clinical trials. The concern with only using one dose is that potentially that immunity could wane after a period of time. That's why one of the terms and conditions on both of those vaccine manufacturers is to continue to monitor the people in the clinical trial for up to two years.

The research that was done both in British Columbia and in Quebec is very important; we absolutely need research in the real-world application of the vaccination program. It was reassuring on two points, one is that we didn't have clinical trial information for people in the older age groups who were in long-term care facilities, so were potentially more frail. The concern in those groups is that potentially you could see less efficacy. One reassuring thing that this data has shown is that we are seeing a good response in those groups.

The vaccine effectiveness of the one dose was calculated using something called “crude vaccine effectiveness”; it's not comparing people who got the vaccine and who didn't get the vaccine, it's really looking at time frames within the groups who got the vaccine. It is useful, but it is limited. Right now, it's good information. I think the authors themselves noted that before they would recommend that we only have one dose more research needs to be done, but it is reassuring that if there is a delay for that second dose, it likely does not have a significant effect. The companies would have to come in if they wanted to change their vaccine to a one-dose vaccine with evidence to Health Canada. We would review that, and if it was suitable, we would change the labels.

Ms. Sonia Sidhu: Thank you.

Mr. Chair, do I have more time?

The Chair: You have 30 seconds.

Ms. Sonia Sidhu: Dr. Bernstein, there are few groups that were not part of vaccine trials, such as teens or pregnant women. Can you provide insight on any research that has been done to make sure these vulnerable groups are protected?

Dr. Alan Bernstein: Typically in vaccine trials, teens and pregnant women are not included in the first instance because they represent a high-risk group. There's a concern that they not be exposed to a vaccine until it's been tested to be safe and effective by the regulator. However, as we speak, there are now trials going on with younger-aged volunteers in those trials to see whether the vaccines are safe, as well as being effective in younger children.

I think the same will be true for pregnant women shortly. Both the WHO and that U.S. FDA have issued guidelines around that, which are somewhat contradictory. On balance, I think the view is that it's probably safe and effective for pregnant women to take the vaccine, especially because there is good evidence that being affected with the virus when you're pregnant makes you particularly susceptible to a serious disease outcome.

Again, the trial has not yet been done.

● (1240)

The Chair: Thank you.

[*Translation*]

Mr. Thériault, you have six minutes.

Mr. Luc Thériault: Thank you, Mr. Chair.

Dr. Sharma, because AstraZeneca cannot deliver its vaccine before April, some believe that approval is lagging behind, while the vaccine is being administered elsewhere. Is approval dragging on for scientific or political reasons? If so, what is missing?

[*English*]

Dr. Supriya Sharma: The review of the AstraZeneca submission is ongoing. We have gone through the bulk of the scientific information. This submission was a bit more complicated than the ones we've seen with Pfizer and BioNTech because of the way the data was collected.

We also note that different regulators are taking different approaches to how the AstraZeneca vaccine should be used. Currently, we're still going back and forth with the company with respect to some data. We just had some conversations with them today. It is in the final stages. That end process around the product monograph, the labelling, the indications, the risk management plan and the potential terms and conditions on the vaccine are still under discussion.

We know the European Medicines Agency has authorized the vaccine. The other largest regulatory authority, the U.S. FDA, is still waiting.

[*Translation*]

Mr. Luc Thériault: As I understand it, even if this was the only vaccine candidate available, it would still be a long way off and you would not have given your approval yet.

Some believe that the mRNA technology is more appropriate to react quickly to variants. What do you think?

[*English*]

Dr. Supriya Sharma: So far, the data we've seen for both Pfizer and Moderna have shown that their vaccines are quite effective against the 1.1.7 variant, which is the U.K. variant. In laboratory studies, both of those mRNA vaccines have shown some decreased activity against the 501 variant, which is the South Africa variant.

Because it was starting with such a high level of efficacy, it was still at levels that were protected. Both those mRNA vaccines, at this point in time, are deemed to still be protective against the variants we know of so far.

[*Translation*]

Mr. Luc Thériault: The issue is not whether vaccines are good, although it is relevant to know that. Rather, the question is about technology. The mRNA technology is more appropriate because it would allow modifications to be added to the vaccines to respond to variants later. Indeed, there are going to be mutations.

What do you think? If you don't wish to share an opinion, that's okay.

[*English*]

Dr. Supriya Sharma: Absolutely. Of all of the vaccine platforms, the thought is the mRNA technology would be the quickest to redesign in terms of changing the vaccine to respond to variants.

The viral vector vaccines can also be changed quite rapidly, but you're right that the mRNA vaccines would likely be the ones that would be the quickest to change.

[*Translation*]

Mr. Luc Thériault: Dr. Bernstein, you stated that the idea of a mixed vaccine regimen, that is, a first dose of an mRNA vaccine followed by a second dose of an adenovirus vaccine, was scientifically sound and worth further study.

What do you think are the advantages, disadvantages and risks of such a combination? Do we have any evidence on this—

[*English*]

Dr. Alan Bernstein: Yes, I've been quoted in an interview in the newspapers that I think mixing and matching has several advantages. One is for the viral vector vaccines like the AstraZeneca Oxford vaccine. The second time you come in with the second shot, the host will have already, perhaps, mounted an immuno-response against the vector itself, and so you'll have diminished effectiveness of the vector or the vaccine the second time around, whereas, if you only give it once and then come in, for example, with the RNA vaccine, you're combining the best of both worlds. That's one reason.

The other reason is that there's evidence that the RNA vaccines are particularly good at mounting one arm of our immune system, making antibodies, whereas the viral vector vaccines are particularly good at activating another arm of our immune system, which is the so-called cellular arm of our immune system. By combining the two, you get, again, the best of both worlds.

The third reason, of course, is that, in terms of vaccine availability, if we find that we have a lot of one and not the other, that's another argument for doing both.

I think the bottom line is that we won't know until we do a trial to really measure the effectiveness of that mix-and-match strategy. That trial's begun in the U.K. Here in Canada, my recommendation is that we should also consider doing such a trial as well, perhaps in partnership with the British.

● (1245)

[*Translation*]

Mr. Luc Thériault: Do you think pharmaceutical companies would be very keen on this idea, given their responsibility for the efficacy and adverse effects of vaccines?

How can this responsibility be determined if two vaccines are mixed together?

They may need to be convinced of the scientific advantage of this.

[*English*]

Dr. Alan Bernstein: Absolutely. The end point for these trials would not be whether they're protective, which would take a long time and a lot of people in the trials. The end point could simply be how well the mix-and-match strategy elicits a very robust immuno-response relative to not using a mix-and-match strategy; that is, going in with two doses of the RNA vaccines or two doses of the viral vector vaccines. Those are quick trials that could be done over a period of about a month or so to assess this. I think there are some—

[*Translation*]

Mr. Luc Thériault: Agreed, but to whom should the adverse effect that would occur in the case of a combination be attributed?

The Chair: Thank you, Mr. Thériault.

Mr. Luc Thériault: The problem remains unsolved, even if it is not necessarily a scientific one.

Thank you.

The Chair: Thank you, Mr. Thériault.

[*English*]

Thank you.

We will go now to Mr. Davies.

Mr. Davies, go ahead for six minutes.

Mr. Don Davies: Thank you.

First of all, Dr. Bernstein, thank you for your service on the vaccine task force.

Dr. Bernstein, I know that the analogous organization or committee at the World Health Organization offers open access to its meetings. In the U.S., the vaccines and related biological products advisory committee publishes its agenda. It publishes its conclusions, and the entire meetings that they conduct are webcast on YouTube for anyone to see.

Is there anything different about the manner in which Canada's vaccine task force conducts its meetings that would prevent that kind of transparency?

Dr. Alan Bernstein: Mr. Chair, I'd have to look at exactly what those other two committees do to give you a complete answer.

I would say that, when the Canadian vaccine task force got started, we were just swamped with the need to identify, as quickly as possible, those vaccine candidates that would yield the very best vaccines for Canadians. Indeed, here we are now, seven months later. I think all of us feel very proud of the fact that the six candidates we identified, the international ones, are exactly the six that everyone in the world now wants. We did our due diligence, I think, absolutely correctly. That was our number one priority.

I think the second priority was, as you said, transparency or making things more open. I certainly think there would be room for us to do that. Part of the issue, of course, was that we were providing advice to ministers, which, as you know, is confidential in the parliamentary system. Second, there are some industry issues. Every company that came in front of us, both Canadian and international, required that we all sign confidentiality agreements with them. Indeed, there were confidential issues from the companies' points of view that we could not release, so there are some issues.

Mr. Don Davies: I'm going to ask you a question I asked a previous panel member. Last Thursday, the co-chair of the federal vaccine task force, Mark Lievonen, told the industry committee that domestically producing and supplying a COVID-19 vaccine was never possible before the end of 2021. Those were his exact words.

We all know that the Prime Minister issued a press release on August 31 saying that the National Research Council would be producing 250,000 doses per month in November and millions by the end of 2020. I'm just trying to get a straight answer from someone. Did Canada have the capacity to produce vaccines in 2020 or didn't we?

● (1250)

Dr. Alan Bernstein: Thank you for the question. I'm a fundamental scientist, not a vaccine manufacturer, so you'll understand when I say that it's really outside my own area of expertise.

When we discussed that issue on the vaccine task force, I think the issues that came up pretty quickly were around how complicated it is to make vaccines. These are not like the N95 masks that we just heard about, for example. These are biologics that are being injected into healthy people.

It's very sophisticated science and these are very sophisticated public health issues, so the production and the manufacture of all these vaccines is very complicated. Indeed, if you look at the holdup with Pfizer—which is a very experienced vaccine manufacturer—in scaling up their manufacturing, I think you get a sense of how complicated it is to actually make vaccines.

Mr. Don Davies: With respect, Dr. Bernstein, I have limited time. The question is about capacity, not about complexity.

On November 26, you noted in an article in the National Post that the federal government should consider working with AstraZeneca to produce the vaccine at the NRC's Royalmount facility in Montreal. You were quoted as saying, “250,000 doses a month would make a big difference for us. You know, that's probably the number of frontline health care workers.” Why did that not happen in Canada?

Dr. Alan Bernstein: You'd have to ask the NRC about that.

I think the issue is that at that point, the NRC had ended its partnership with CanSino, which is a viral vector vaccine along the same lines as the AstraZeneca vaccine. I think they were in discussions with AstraZeneca. I think you heard that from the president of the NRC. At that point, we were also simultaneously in discussion with Novavax, which ultimately has led to a successful completion. I think they were looking around for a partner that would come in and work with them on that.

What I meant in saying that is that if we had domestic capacity, of course we could scale up and rapidly produce vaccines here.

Mr. Don Davies: Can you confirm whether the vaccine task force recommended ordering vaccines based on weekly, monthly or quarterly delivery targets?

Dr. Alan Bernstein: We did not. Our primary concern was the quality of the science, whether the company and its partners were capable of doing the trials, and whether they were capable of scaling up. The procurement issues were all handled by the department of procurement,Minister Anand's group.

Mr. Don Davies: Okay.

Do I have time, Mr. Chair?

The Chair: You have 20 seconds.

Mr. Don Davies: I'll try to get this out.

A senior government official recently told the press that the federal government's plans to commence a mass vaccination campaign in April were thrown off when Health Canada approved the Pfizer and Moderna vaccines earlier than expected. According to that official, Canada's contracts with the two companies, which have not been made public, focused on large-scale shipments after April 1 because the federal government believed no large supplies would be available before then.

Can you confirm that the vaccine task force advised the government to structure supply agreements based on that assumption?

Dr. Alan Bernstein: We did not get into any of the details of the procurement arrangements. We simply recommended to ministers which vaccines should be purchased and which ones should go to the NRC for IRAP, as I indicated earlier.

I think all of us—not just in Canada, but in the world—were surprised at how quickly we were able to develop vaccines. It was less than a year. It is a remarkable result, but I don't know what was in those procurement agreements.

Mr. Don Davies: Thank you.

The Chair: Committee, that wraps up round one. We don't have very much time left, but I'm going to propose that we sneak in a one-minute round with everybody. In that case, I would suggest you keep your questions to 30 seconds and allow 30 seconds to respond.

On that understanding, for the Conservatives, I think we have Mr. d'Entremont next. Please go ahead, sir.

Mr. Chris d'Entremont: Thank you.

We had some pretty disappointing testimony last Friday about data and exactly how many Canadians need to be vaccinated before we have herd immunity, so maybe this is a question for Dr. Sharma.

Do you have any modelling that would actually tell Canadians how many people need to be vaccinated to get out of this pandemic?

● (1255)

Dr. Supriya Sharma: In general, herd immunity is the number of people who need to have immunity to protect people who are within the herd who do not have immunity. Whether you get it through having had the disease or being vaccinated, it's that protective sort of effect.

Herd immunity for a virus can be anywhere from 50% to 90% of people who need to be vaccinated. Certainly with respect to COVID-19 and the SARS-CoV-2 virus, when we were first looking at it, I think we were looking at estimates of around 60% to 70% that we would require being vaccinated. Now with the emergence of variants and because they are more transmissible, I think a lot of people are adjusting those numbers up towards more like 85%, or even potentially 90%, coverage to achieve herd immunity. Certainly it's a moving target, because as we know, the virus and its transmissibility, and how contagious it is, is changing.

The Chair: Thank you.

We'll go now to Dr. Powlowski, please, for one minute.

Mr. Marcus Powlowski: There's some very interesting news coming out of Israel from the Israeli health ministry and Pfizer, which seems to have very thorough reporting of data. They're saying the Pfizer vaccine reduces asymptomatic cases by 90%. If I got that right, that's really significant, and they seem to have the same interpretation. This means a lot, because previously we thought you could get the vaccine but maybe you still could get an asymptomatic infection and could transmit it on.

If true, and I don't know whether you think the data is adequate enough, it would seem to have immense implications for a lot of different policy areas, from whether people who worked in chronic care homes could continue to do so without being vaccinated to opening our borders to people who have been vaccinated.

How good do you think that data is, and should we make policy decisions based on it?

The question is to Dr. Sharma or Dr. Bernstein, whoever wants it.

Dr. Supriya Sharma: I'll start.

You're absolutely right. There's research coming out of Israel that has been interpreted as potentially being information that would talk to transmissibility. The research in Israel was really around viral shedding. What they found was that there was a decrease in viral load in those people, so they would shed less virus, and then the conclusion was that potentially they would be less transmissible. I think that's an interesting hypothesis. We still don't know exactly how that correlates, the amount of the virus you shed or what type of virus it is, or what phase, and how that directly translates to transmissibility.

Whether it's for the Pfizer-BioNTech vaccine, whether it's for Moderna, that has some data around potential decreasing of asymptomatic spread, as well as AstraZeneca that shows in some studies that potentially it's about a 66% decrease in asymptomatic transmission. I think we'll have some data on the vaccines, but for all of them, it's not yet conclusive. Really, the studies have been designed to look at decreasing and preventing serious illness, moderate illness and death. We know that for the vaccines that we have under review and have authorized, they all have very good outcomes there, but again, the transmission and the effect on the transmission is still an ongoing area of research.

The Chair: Thank you.

[*Translation*]

Mr. Thériault, you have the floor for one minute.

Mr. Luc Thériault: Thank you.

Dr. Bernstein, the way out of this pandemic is through global vaccination. Ninety-two percent of vaccines are currently administered in rich countries. You said that these rich countries have to accept that 5% to 10% of their vaccine supply should go to less developed countries, those that cannot afford to enter into bilateral agreements with vaccine suppliers.

What do you think about Canada's draw on the COVAX vaccine bank?

[*English*]

Dr. Alan Bernstein: Mr. Chair, it's complicated with COVAX. There are two pots of money or two bank accounts within COVAX. One is a donation that countries make, including Canada, to buy a vaccine for the developing world, and the other is for vaccines that they're entitled to withdraw for themselves. I think the important point is—

● (1300)

[*Translation*]

Mr. Luc Thériault: I'm sorry, but there is no interpretation.

[*English*]

The Chair: Sorry, Doctor—

[*Translation*]

Mr. Luc Thériault: Could you start over?

[*English*]

The Chair: Do we have translation now, monsieur Thériault?

[*Translation*]

Mr. Luc Thériault: I can hear the interpretation now. Please go ahead.

[*English*]

The Chair: Doctor, please start your question over. I don't think Mr. Thériault got any part of your answer.

Dr. Alan Bernstein: Sure.

I think it is important that Canada be a major contributor to both COVAX and other mechanisms for vaccines for the developing world. Until the U.S. came in I think we were the largest contributor per capita to the COVAX facility. But it's in our interest to make sure that everyone in the world is vaccinated as quickly as possible. Dr. Sharma alluded to the variants that inevitably have appeared, and those variants will appear anywhere. The number of variants that appear will be directly proportional to the size of the virus pool in the world. So it's in our interests here in Canada to shrink that virus pool as quickly as possible, and the best way to do that is to vaccinate the whole world as quickly as possible.

I think Canada has a moral as well as a practical reason for donating vaccines to the rest of the world, either through COVAX or through other mechanisms: directly to Gavi, the Vaccine Alliance, or through the WHO. I think that is very important.

At least on paper, Canada has purchased more vaccines per capita than any other country. If all those vaccines are eventually approved by Health Canada, we will have the opportunity to donate a lot of doses to COVAX or to the developing world directly. I think the important point is that we step up and donate those vaccines to the developing world. Thank you.

[*Translation*]

The Chair: Thank you, Mr. Thériault.

[*English*]

Mr. Davies, please go ahead for one minute—maybe a little more, because everyone else took a little more.

Mr. Don Davies: Thank you, Mr. Chair.

Dr. Bernstein, just following up on that, there's a question of timing, as well, isn't there? Do you think that rich countries should be vaccinating their young and healthy before frontline health care workers and vulnerable people are vaccinated in developing countries?

Dr. Alan Bernstein: Right now, the vaccines have not yet been approved for young people here in Canada. Again, I think there is a good argument, both a moral argument and a practical one, that the G7 countries, including Canada, donate vaccines to the developing world initially for frontline health care workers, as you have suggested, Mr. Davies.

Mr. Don Davies: Thank you.

Dr. Sharma, at a technical briefing on February 9, you noted that Health Canada's review of the AstraZeneca vaccine was in the final stages and was just awaiting some final “back-and-forth” with the company to finalize the rules for how the vaccine is to be used and on whom.

Considering that the vaccine is already approved in other countries, can you confirm when you expect a decision will be made with respect to the AstraZeneca vaccine in Canada?

Dr. Supriya Sharma: As I noted before, that review is ongoing. Certainly we have completed the review of the science and now it is in the final stages. The length of time that takes is dependent on a number of factors: the questions we pose to the company; how long they take to get back to the evaluators with those responses. And so, that dialogue with the company in the finalization of the review is ongoing, and I wanted to highlight again that it's complicated. We know we've got different regulators looking at the same data for AstraZeneca and making different decisions based on the science. That's why this is taking a little longer than the ones we have done before.

The Chair: Thank you, all.

Thank you to the witnesses for sharing your time with us today and for your excellent testimony.

With that, we are now adjourned.