T R A N S C R I P T

PUBLIC ACCOUNTS AND ESTIMATES COMMITTEE

Inquiry into the Victorian Government's Response to the COVID-19 Pandemic

Melbourne—Tuesday, 11 August 2020

(via videoconference)

MEMBERS

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Mr Gary Maas
Mr Danny O'Brien
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WITNESS

Professor Sharon Lewin, Director, Peter Doherty Institute for Infection and Immunity.

The CHAIR: Good evening, and welcome to the second series of public hearings for the Public Accounts and Estimates Committee Inquiry into the Victorian Government's Response to the COVID-19 Pandemic.

The committee will be reviewing and reporting to the Parliament on the responses taken by the Victorian government, including as part of the national cabinet, to manage the COVID-19 pandemic and any other matter related to the COVID-19 pandemic. Members are attending these hearings remotely from home or from their electorate offices. Please note that members are not required to wear a face covering if they are working by themselves in an office under the stay-at-home directions of 6 August, part 2, section (7)(i).

We advise you that all evidence taken by this committee is protected by parliamentary privilege. Therefore you are protected against any action for what you say here today, but if you repeat the same things outside this forum, including on social media, those comments may not be protected by this privilege. As a witness you will be provided with a proof version of the transcript for you to check. Verified transcripts, presentations and handouts will be placed on the committee's website as soon as possible.

We invite you to make a brief 5-minute opening statement. We ask that you state your name, your position and the organisation you are representing, for broadcasting purposes, and then this will then be followed by questions from our committee. Thank you for being here today.

Prof. LEWIN: Thanks very much. I am going to make an opening statement with a few slides; is that okay? Can I just share my screen?

The CHAIR: That would be great, thank you.

Visual presentation.

Prof. LEWIN: You can see my screen okay?

The CHAIR: We can, thank you.

Prof. LEWIN: Okay. Good evening. My name is Professor Sharon Lewin. I am the Director of the Doherty Institute, and I am here representing that institute. Thanks for the opportunity to provide some information to this inquiry. So just very briefly, a short history of the institute. We are an unincorporated joint venture between the University of Melbourne and the Royal Melbourne Hospital. We are entirely focused on infection and immunity and are host to over 700 scientists, educators, clinicians and public health experts. We have deep expertise in virology, including specialised high containment labs at level 3 and level 4, and the building cost $210 million and was supported by funding from the state—the Victorian government—the commonwealth and the University of Melbourne. The institute opened in September 2014, and very much part of our mission was to be responding to outbreaks such as COVID-19. We are actually quite a unique institute for Australia because we are one of the few institutes that brings together research, education, public health and clinical care, and together this is really what is needed in a pandemic response.

We are host to three major diagnostic laboratories which have played a key role in the COVID-19 response. They include the Victorian infectious diseases reference laboratory, or VIDRL, led by Mike Catton; the microbiology diagnostic unit, or MDU, led by Ben Howden; and the Royal Melbourne Hospital microbiology department, led by Deborah Williamson. Each of these laboratories has had a key role in the COVID-19 response in Victoria.

One of our major roles has been in the establishment and support of COVID-19 testing in the state. This was developed originally by VIDRL back in late January and allowed us to diagnose the first case of COVID-19 in Australia on 24 January. You can see here the number of diagnostic tests performed over the last six months. It will look to you like there are three waves here, but actually this was the first wave of increasing in diagnostic testing, this is the second wave here that we are living through right now and this was really the testing blitz, where there was a large number of tests done on asymptomatic people in May. What you can see from this graph is diagnostic tests in blue and confirmatory tests in orange, which means we confirmed tests for other laboratories. What is striking is (a) the number, 220 000 tests performed—the number of tests we would

normally perform in sort of January–February is around 100 tests—and the ability to rapidly surge up to a peak of 3500 tests in this testing blitz in May. Currently we account for about 10 per cent of the testing being done in Victoria.

The other major role the Doherty Institute has had is on COVID-19 genomics, and genomics is basically fingerprinting the virus by analysing its genetic code. It allows you to have information on whether infections are linked or not. On the right is a summary of the first wave in Victoria. Each dot represents a case and each colour represents a different genomic sequence. When dots are connected that means they are connected by epidemiology—they are actually linked. You can see each of these clusters very clearly, meaning the epidemiology clusters with the genomic information—a very powerful tool that our institute, particularly MDU, is highly expert in.

We have also made many other COVID-19-related discoveries which have been important in our response. We were the first to isolate and then share the virus outside of China. We shared it with multiple laboratories across the country and internationally. We were responsible for developing mathematical models to inform the Australian and Victorian government response to COVID-19. We have developed new diagnostic tests for COVID-19, including the use of saliva and rapid tests, meaning you can get a result in 30 minutes. We are leading one of the largest national trials of antivirals for hospitalised patients, called ASCOT, and we have a very active program in developing vaccines using both active and passive vaccination strategies.

At the moment we are thinking a lot about the future. Pandemic preparedness needs significant investment in peacetime—that is, in people, infrastructure and partnerships—and I think the investment in the Doherty Institute paid off in this case. We believe that research needs to be embedded in and work in partnership with the public health response, something I think we have achieved in Victoria. Going forward we certainly need improved national coordination in infectious diseases research to support our federated public health system, which brings added complexity. And I do think that Victoria—not just with the Doherty Institute, but with other institutes, such as the Burnet, WEHI, Murdoch Children's Research Institute and the Australian Centre for Disease Preparedness together—can play a very major national leadership role in the pandemic response now and in the future. I will end there, and I am happy to take any questions. Thank you.

The CHAIR: Thank you very much. I will hand to Mr Gary Maas, MP, for the first questions.

Mr MAAS: Thank you, Chair, and thank you, Professor Lewin. That was a really great presentation, and we thank you for the work that the Doherty Institute is doing. As you know, the government is very supportive of that work and there has been some funding rounds since March. There has been a $2 million investment from the government for the Victorian Infectious Diseases Reference Lab at the Doherty Institute, and there has been $4 million of funding for a new Victorian consortium led by the Doherty and Burnet institutes to develop novel diagnostics and point-of-care tests. I was wondering if you would be able to take us through the sort of end result of those investments which have been made?

Prof. LEWIN: Thanks for the question, and yes there has been very significant support from the Victorian government for the day-to-day running of our two public health labs which I described—the Victorian Infectious Diseases Reference Lab, or VIDRL, and the Microbiological Diagnostic Unit, or MDU. Added to that regular, standing year-in-year-out support that we receive there was an additional $6 million, as you said, announced in March I think. Two million dollars of that went to VIDRL to support the testing that I showed you—221 000 tests done over the last six months and the striking ability to surge. Going from 100 tests a day to 3500 tests a day needs incredible workforce preparedness and capability to respond. The other $4 million has gone towards what we have called the COVID-19 Victorian Consortium, or the CVC, led by the Doherty Institute and the Burnet Institute. That is focused on three main areas: better diagnostics, better antivirals and a better public health response.

With respect to the diagnostics, one of those initiatives is point-of-care diagnostics for serology. I have not spoken at all about serology. I spoke to you about the PCR tests—the nose swabs that we all know about and know that Victoria has had to increase dramatically—but the other important test for COVID is a blood test which tells you whether your body has seen COVID before. What we look for is antibodies to COVID-19. It is not very useful for diagnosing someone that is infectious but very useful for diagnosing people that have recovered. So it tells you about your epidemic, and it is also very important when we come towards vaccination. So that is together with David Anderson, who has led that pillar from the Burnet Institute. He is

developing a rapid point-of-care serology test in partnership with some of our scientists at the Doherty. We have also been able to provide David with the right specimens to test, because you need to have access to biological specimens from people who have recovered. One other initiative that I did not speak about is about setting up patient cohorts of people that have been diagnosed with COVID and then taking blood or other samples in their recovery. That has been led from the Doherty, being able to support this diagnostic test development.

The antiviral work is being led from the Doherty Institute by Professor Kanta Subbarao. She heads the influenza laboratory—the WHO flu laboratory. She is a world-renowned expert on coronavirus. She was recruited to the institute three years ago from the US. Kanta has established the ability to grow coronavirus in the laboratory, using the specialised high-containment labs I mentioned earlier and testing a range of drugs that either are being repurposed—meaning they are being used for other indications and have activity against COVID—or are new drugs being developed by our partners in the precinct, particularly Bio21.

The final pillar is looking at public health. This is just starting. It is being led by both the Doherty and Burnet. It is absolutely critically important in the response we are in right now, because it is going to address the experience of people in quarantine and in isolation, the barriers to efficient quarantine and isolation, the impact on marginalised communities and the whole social disruption of our response to COVID-19. That work is by a large consortium involving about eight other institutions across Victoria and is just beginning.

Mr MAAS: Thank you, Professor. Earlier this month as well the government announced some additional funding. It was $5.5 million for innovative COVID research programs. Would you be able to inform the committee what programs this money will help fund at the Doherty and how it will help in the fight against coronavirus?

Prof. LEWIN: Yes. We are involved in three of those programs. One of those is led from the Doherty Institute by Professor Stephen Kent. Stephen's group have done some groundbreaking work on understanding the immune response to the virus. Any vaccine we develop or any immunological therapeutic—which is a little different to drugs—will come from that deep understanding of how the immune response responds to the virus or clears the virus. Stephen's team have identified the different parts of the immune response, recently published in a very prestigious international journal, and he will continue that work to define the immune response, which will inform vaccine design.

The other major grant went to Melissa Little at the MCRI—the Murdoch Children's Research Institute. Melissa is a world-leading expert on stem cells, and these are basically ways to study human tissue in a test tube using the originating cells of that human tissue. Melissa has set up a large consortium that has the expertise in stem cells to develop kidney tissue, to develop heart tissue, to develop lung tissue and for her and the consortium to give that tissue to the Doherty Institute to then study the effects of the virus on that tissue. Why is that important? It is important because COVID-19 is not just a lung disease, unfortunately; it can affect the brain and many other organs and can lead to long-term dysfunction. We now know about 10 to 15 per cent of people, particularly if they have had severe disease, have long-term complications that affect the heart, the brain and other organs. So in partnership with these experts in stem cells that we have across Victoria—an incredible community of researchers—we are able to test all those different tissues and how they respond to the virus. It is a partnership between multiple organisations, but with Melissa's leadership for her stem cell network and our leadership for virus infection.

And the final project was—I was just thinking about that—actually an outcome of the original investment in those point-of-care diagnostics. I mentioned earlier that in addition to the nose swab we need to also test blood, which can tell us whether someone has been exposed to coronavirus in the past. What we really want to know is if the person makes good antibodies to the virus or antibodies that essentially can kill the virus, something we call 'neutralising antibodies'. This will be very, very useful to know. We do not still know actually whether someone who has had the virus is truly protected from reinfection, but based on animal studies we think if you have these neutralising antibodies, you are more likely to be protected. That still needs to be proven. David Anderson at the Burnet Institute, together with Damian Purcell and Dale Godfrey from the Doherty are developing a point-of-care test for neutralising antibodies. So actually it builds on that initial investment—on the earlier investment of $4 million. They are the three main programs that we are involved with.

Mr MAAS: Excellent. Thank you very much. Moving to epidemiology now, researchers from the Burnet Institute predicted about 37 000 people would have been diagnosed with coronavirus in July had the government not moved to stage 3 lockdown for metro Melbourne and the Mitchell shire. I understand that the Doherty helped with that modelling, and I was hoping you would be able to explain perhaps some of the assumptions that went into that modelling.

Prof. LEWIN: I might need to take that on notice if you need an official modelling interpretation. I am not bad at understanding models, but I am not a modeller. I will just tell it to you from a non-modeller's perspective, and if you want more technical details of the assumptions, I can get that information for you. Basically what the model was looking at is every day we hear about the numbers of infections per day. They go up and they go down, and every Victorian hangs off it every morning at 11.00 am. But actually what you need to be looking at is what is happening over time—meaning the rate of increase or the rate of decrease of these new infections. In other words, if they are doubling every three days, that is very different to if they are doubling every seven days and very different to if they are doubling every 14 days. A simple way to calculate that is to either calculate the slope at which they are increasing, which is an indirect measure of the R0, or the numbers of people that each case is infecting.

Basically the Burnet model showed that prior to the interventions that were instituted, which included restricting numbers of visitors, locking down the 10 suburbs, locking down Melbourne and then masks, there was a progressive decrease in that slope of increasing numbers. The numbers have still been increasing—because all of us watch that every day—perhaps not over the last two days, but the rate of increase has been slowing. That meant that each infected person was infecting fewer people over that period. Effectively, if I have got the dates right, over the last five weeks that slope has been flattening. What they predicted was if there had not been a change in that slope to slow down and to prolong the doubling time, there would have been far more numbers of people infected than what we are seeing right now.

Mr MAAS: Thank you very much for that explanation. I would like to just go to self-isolation for the moment. In Victoria the DHHS does not require another PCR test to clear positive cases at the end of self-isolation. I was just wondering if you could tell us if that is consistent with other jurisdictions.

Prof. LEWIN: That is indeed consistent with other jurisdictions, including recent guidance from the US Centers for Disease Control, that an exit from isolation is related to duration of time post symptoms. That is generally 10 days post the onset of symptoms and at least 72 hours of being completely asymptomatic. The reason a negative test is not required here and in other jurisdictions is because of a lot of work that has been done looking at the clearance of virus from people and that generally by seven days most people have cleared the virus.

Mr MAAS: Thank you. In terms of asymptomatic testing, do you think there are benefits in doing widespread asymptomatic testing?

Prof. LEWIN: I think there is limited benefit in doing widespread asymptomatic testing. We have been able to scale up testing incredibly across Australia and within Victoria, and as I showed you, within the Doherty Institute. At the moment on average it is about 25 000 tests a day. We do about 10 per cent of those, and we have been able to do that many tests because of the contributions of the public hospital laboratories and the private pathology laboratories. But the resource is not unlimited, and when you stretch these resources on testing, it pushes out probably one of the most important outcomes of a test, which is that the result is reported very quickly to someone, particularly if they are positive—or actually even if you are negative, because you cannot do anything while you are waiting to get that test result.

So testing does need to be strategic at the moment while we have a fairly complicated test. A test needs to go to a laboratory. It takes a large number of ingredients, it is relatively expensive, it takes time. If we had very simple testing, and maybe that might be the future—a bit like a pregnancy test, where you can just test on the spot—then widespread testing may well have a role in public health measures. But while we do not have a test like that, any stress on the system means that the turnaround time for a test that matters will slow down. The capability to test, to go from 2000 to 10 000 to 25 000 is huge, and to go even beyond that you will start getting weaknesses in the system. I do not think widespread asymptomatic testing has been shown to be beneficial. The focus should be on people with symptoms or mild symptoms, asymptomatic people who are contacts of positive people or asymptomatic people in certain professional settings, such as in aged care.

The CHAIR: Thank you very much. The member's time has expired. I will pass the call to Ms Bridget Vallence, MP.

Ms VALLENCE: Thank you very much, and thank you very much, Professor Lewin, for appearing today. We really appreciate your time. In your presentation you mentioned that research needs to be embedded in public health. I just wondered if the department of health has implemented a clear research and evaluation process in response to this pandemic?

Prof. LEWIN: The department has certainly implemented and supported and funded research and seen that as highly valued. I do not know of a formal evaluation of the research that has been done by the department.

Ms VALLENCE: In terms of your advocacy that the research is very important right at this time, are there any opportunities that you think may have been missed in terms of our response, particularly with the second wave?

Prof. LEWIN: I think in the second wave all of us were facing new challenges. So even that question earlier about the role of asymptomatic testing—to me, it is a research question to evaluate what our testing is doing. Yes, it is a public health response, but how do we know whether it is working, whether it is of value, understanding where those asymptomatic people are or what the test results are. Real-time research evaluation of some of the public health strategies is what I mean by embedding research in the response. Now, when you are in the middle of a very serious pandemic, as we are, juggling that becomes a challenge, but I think it needs to be part of the response. I think we have done that in some areas, but perhaps not in every area.

Ms VALLENCE: Okay. So would you advocate that for during a particular outbreak or a particular cluster, for example? In our last hearing the Chief Health Officer mentioned to the committee that we did not need to be testing well individuals. Is that something that is supported by the research, particularly when there is a known cluster in, say, a workplace or a school?

Prof. LEWIN: There are two ways that you can use research to inform a response. The first is to use the research of other people. There have been enormous amounts of research and findings from all over the world that are flying out at rapid speed—something like 25 000 publications on COVID-19 in the last six months—so there is lots of experience in this setting. First of all, I would always look to the published literature and see what is relevant to us here in Victoria because there is experience shared from every country around the world on this and we have to use the best available evidence to inform a public health response.

Then I think we have to use our own research and constantly evaluate what we are doing. We do not necessarily have to do what every other country is doing. We should certainly not be making the mistakes that other countries are doing. But I think we can be innovating and doing something different and novel in Victoria and in Australia, and we have the capability and expertise to do that. But it means that you need to be evaluating what you are doing to see whether it is working. Many of us are in uncharted territory now, but I do think constant evaluation and asking whether something is working is a critical part, even in an emergency.

Ms VALLENCE: Professor Lewin, for individuals through the course of the pandemic, how would you say that behaviour change affects transmission of this virus?

Prof. LEWIN: I think behaviour of community is absolutely core to tackling the pandemic because that is all we have at the moment. We all know there is no vaccine and we have only got partially effective treatments, and the only tools we have are efficient testing, tracing, isolation and behaviour change. So that is an absolutely critical part of the response.

Ms VALLENCE: For example, in early June there was a significant protest of the Black Lives Matter. Do you see that that led to a loosening of behaviour at all of individuals and caused any issues in terms of this pandemic?

Prof. LEWIN: My understanding of the Black Lives Matter march was that people were safe and responsible and there was a high uptake of mask wearing and access to hand disinfectant, and there was no clear evidence that there was spread at that march. I think that when Australia did relax restrictions in June, there is evidence to say that Victoria was doing just as well as any other state, if not better, on attention to physical distancing and other objective markers. I think behavioural change in public health, especially in a

country like Australia where we had few infections in that first wave, is really a great challenge. It is not that we cannot implement it; I think Victorians have done extremely well right now in the second lockdown. But the actual assessment is that Victoria was doing much the same as any other state, and perhaps even better.

Ms VALLENCE: The Doherty genomic report, in terms of the current or the second wave, as indicated by the chief health officer, is a result of breaches of hotel quarantine. Is that report showing that it is linked back to hotel quarantine? Can you say that the genomic sequencing links specifically back to specific hotels?

Prof. LEWIN: Well, I think it is important to understand the role that the Doherty has played here. We have been doing genomic sequencing, which means fingerprinting the virus, pretty much since the beginning of the outbreak and sharing that information with the department of health. Genomics is really valuable because it can tell you whether two infections are linked in some way. But to interpret them you need the epidemiological data, so we have been working in partnership with the department of health providing the genomic data. I showed the results of the first wave, which was where we have been able to integrate genomic and epidemiological data, but for the current outbreak that information is with the department, the epidemiological data. The genomic data we make widely available. It is available to other scientists through open access servers.

Ms VALLENCE: Okay. So there are no specific links there. Would you say as well, through your research, that there have been any mutations of the virus at all—in your research?

Prof. LEWIN: There is definitely evidence of mutations of the virus. They were first described in the US, where a new mutation became the dominant virus circulating in the US. That is a specific mutation at a specific position which we can pick up with genomics, and in Australia we also have that same mutation. That basically became the dominant circulating strain in the US. Now, the debate is: why did that become the dominating strain? Is there any advantage to that virus? It appears that this new virus—that is, the dominant strain in the US and also the dominant strain in Australia now—does not make people sicker, it is not more dangerous, but it is potentially more infectious. So it is a very hard thing to prove—that when you look at how that mutated virus grows in a laboratory compared to how the original virus grows, the mutated virus grows quicker. So that is one theory that this is a more infectious virus. It is actually quite a difficult thing to prove in populations.

Ms VALLENCE: And how many—

The CHAIR: I am sorry, Ms Vallence. The member's time has expired. I will hand the call to Mr David Limbrick, MLC.

Mr LIMBRICK: Thank you, Chair, and thank you, Professor Lewin, for appearing here today. I would like to follow on from some of these questions about behavioural change and education. If the government wants behaviours to change, then they have got a few options. They can use rational persuasion and voluntary compliance, they can use a big stick, or another method that they can use is fear, and probably the most famous public health example of fear-based advertising was the Grim Reaper campaign. And I could not help but be reminded of the grim reaper campaign when I saw the new advertisements yesterday. They are not as shocking or anything like that, but they certainly seem to be capitalising on fear. I would be interested in your views. Do you have any ethical concerns with this type of trying to influence public behaviour by using fear?

Prof. LEWIN: I do not have any ethical concerns about fear. Another example perhaps is smoking. So when we try and discourage people from smoking a very effective campaign has been to show people the very graphic images on cigarette packets of diseased lungs. I think it is a bit more similar to that. The Grim Reaper campaign to me is a little different because it was stigmatising people with HIV. This is a bit more analogous to the smoking campaign. My background actually is in HIV, so I worked for 20 years, 25 years, in all aspects of HIV medicine, and I think the most important public health messages have the biggest impact when they are community-led. So I would like to see more community leadership in our public health messaging in this challenge, because how we connect or influence behaviour in young people in culturally and linguistically diverse communities in certain settings and in Indigenous populations will all be different, and so the best way to get the message across, as we learned with HIV, is to have community leadership, because communities understand their own communities. So I think we have to combine what we are doing with what is a fear campaign, but I think people need to understand that COVID-19 is a serious illness. There are a lot of mixed messages out there about it just being a bad flu and if you are young it does not really matter, it only kills older people. These sorts of messages are very dangerous, and so knowing that it is a serious illness, as I said earlier,

it reminds me a little bit more of the smoking message, which was actually a very effective public health campaign. But we need enduring, sustained behavioural change, and so I think greater community engagement and leadership really would be very beneficial.

Mr LIMBRICK: Thanks for that. I am quite interested in the idea of, you know, sustainable change, right? And I have concerns, and I would be interested in your views on this, that some of the heavy-handed policing of these mandatory rules that we have seen and some of the fear-based campaigning might actually undermine community leadership in some way because effectively the community leaders are not showing leadership in that case; they are sort of trying to get their community to comply with the law rather than any sort of rational persuasion. Would you have any comments on that, like this idea that these heavy-handed laws and fear-based campaigning might undermine community leadership on these issues?

Prof. LEWIN: I am not sure I can comment on whether it undermines it. I think it needs to be in partnership. We are in a state of disaster at the moment, so there is an urgent need for compliance. A much-preferred model for enduring public health behavioural change is community-led behavioural change. I think we need to be working at both at the same time.

Mr LIMBRICK: Thank you. In the time I have got left, there has been a lot of talk around vaccines and what might happen if we do not get a vaccine. It seems to be that there are lots of people that are optimistic that we will get a safe and effective vaccine in a reasonable time frame, but how do things look in Australia if a vaccine does not come about in a reasonable time frame or we cannot get access to it or something like that? What does the future look like and the endgame look like if there is not a vaccine?

Prof. LEWIN: Well, if there is not a vaccine, we are reliant on behavioural change, a very efficient testing, tracing and isolating system and most likely long-term quarantine for any visitors. I have great faith that we can do the behavioural change. I think that a country like Australia and a state like Victoria can do the test, trace and isolate, but we need to have a really, really slick, smooth system to do that. That is what we will be reliant on. Other innovations that could potentially change the landscape for COVID-19 are also related to testing technology. So if we had quicker, point-of-care, cheaper testing technologies, this would be a great boost to the test, trace and isolate response.

And treatments—treatments are also very important. We now have treatments that reduce the mortality of people that are very sick with COVID by about 20 to 30 per cent using something called dexamethasone, but if we had treatments that stopped people getting sick enough to go to hospital or stopped them going to intensive care and, most importantly, stopped them from dying, that is also another innovation that will continue to progress over the next few months. So I think even without a vaccine we most likely will see advances in testing technologies and we will see better treatment and, I hope, improved outcomes from clinical disease and a very robust test, trace and isolate system. That is what we would live with. The real challenge, I think, though, still remains on travellers because, even with the situation we are in in Victoria, very few countries have got similar numbers to what Australia has, and so we will always be at risk of introduction of new infections, so I think the quarantining of visitors may well be with us for a while.

The CHAIR: Thank you very much, Professor Lewin. Unfortunately we are out of time for further questions. We do thank you for appearing before the committee today. The committee will follow up on any questions which have been taken on notice in writing, and responses will be required within five working days of the committee's requests. We also today thank those other witnesses who have given evidence to the committee. We also thank Hansard and of course our committee secretariat. We declare this hearing adjourned until 9.00 am tomorrow. Thank you very much, everyone. Thank you.

Committee adjourned.