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Committee for Health

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Inquiry into the Impact of COVID-19 on Care Homes: Professor Ben Cowling

24 September 2020

NORTHERN IRELAND ASSEMBLY

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Members present for all or part of the proceedings:
Mr Colm Gildernew (Chairperson)
Mrs Pam Cameron (Deputy Chairperson)
Ms Paula Bradshaw
Mr Gerry Carroll
Mr Alan Chambers
Mr Alex Easton
Ms Órlaithí Flynn
Mr Colin McGrath
Mr Pat Sheehan

Witnesses:
Professor Ben Cowling University of Hong Kong

The Chairperson (Mr Gildernew): I welcome Professor Ben Cowling, the head of epidemiology and biostatistics in the school of public health at the University of Hong Kong. I thank Professor Cowling for giving his time to the Committee this morning.

Professor Ben Cowling (University of Hong Kong): I will say a few words at the start, and I am then happy to have a discussion and answer questions.

We know that, in respiratory virus pandemics through the ages, elderly people are often the most vulnerable group. In recent years, influenza epidemics and, to a lesser extent, pandemics have had an enormous effect on outbreaks in elderly homes. Annually, they have considerable health impacts. For seasonal influenza, one priority has been to deal with outbreaks in elderly homes and to try to reduce morbidity and mortality in those homes.

With COVID-19, we face the same problem. Around the world, a high proportion of all mortality has occurred in elderly homes. I know that that is also the case in Northern Ireland: I think that about one third of your COVID-19 deaths have occurred in elderly homes. In Hong Kong, where I live and work, it is the same: about one third of all our COVID deaths so far have occurred in elderly homes. It is a priority to figure out the best ways to protect those settings from COVID-19.

One of the things that I want to share with you today is the idea of regular testing. I am aware that, in Northern Ireland, you now do regular testing in elderly homes. I looked it up on the internet and found out that you test staff every two weeks and residents once every month. That is great, and it will help to identify outbreaks earlier and enable intervention more quickly so that we can protect elderly homes from outbreaks. We can protect the residents, particularly from being infected and then the risk of a more severe infection.

One of my current research activities is looking at a more efficient approach to regular testing, and you could consider it in Northern Ireland. The idea goes like this. Right now, you test staff every two weeks, but what you could do, for every pair of staff members, is to put their sample together in the lab and do one test on two people: a paired test. If the test is negative, you assume that both staff members are negative. If the test is positive, you go back and test both staff members individually. By doing that, you might be able to get up to weekly testing for staff. You lose a tiny bit of sensitivity by putting samples together, but the gain is that a lot of extra people are tested. Weekly testing or even testing more frequently than that would help a lot.

Right now, the daily number of cases in Northern Ireland is still relatively low, so maybe now is not the right time to start that. As you see, however, the number of infections rise — they may do, maybe not now but later in the winter — there is an opportunity to look at even more regular testing in care homes. To me, that would probably be a top priority in response to COVID. Of course, social distancing is critical in the community to reduce infections there, but it is in elderly homes that we will see the greatest impact in your second wave and in Hong Kong in our future waves of infection.

Is that a good enough introduction, or would you like to hear more about the situation in Hong Kong?

The Chairperson (Mr Gildernew): We would like to hear a little more about the situation in Hong Kong. We are looking across a range of areas, including discharge policy, testing, PPE, staffing issues and things like that. It would be very helpful, Ben, if you could tell us what you see as best practice being implemented in Hong Kong, which may be transferable to our situation.

Professor Cowling: Hong Kong has a population of 7·5 million. It is very densely populated. We have a lot of elderly homes, most of which are small. Some staff are shared across multiple homes. There are networks of elderly homes, where staff work in different homes on different days. Once COVID-19 hit, elderly homes moved to a policy of no visitors being allowed, and there was stricter control over staff. There was also stricter control over admissions to the homes. New admissions were often separated from other residents for two weeks.

In the last nine months, we have had two reasonably sized epidemics of COVID-19. The first was in March and April, with about 1,000 laboratory-confirmed cases. Many of those people were infected outside Hong Kong, travelled in and were confirmed in Hong Kong. We got that under control with social-distancing measures. We then had a period of quiet, and, in July and August, we just got over our second major wave, with about 4,000 confirmed cases, which were mostly local, and about 100 deaths cumulatively, including 30 to 40 deaths as a result of outbreaks in elderly homes.

In our third wave, once we identified outbreaks in elderly homes, the Government in Hong Kong decided on quite an interesting strategy. We have a field hospital out by Hong Kong airport, which has a lot of capacity for isolating people and, in another part of the facility, a lot of capacity for quarantining exposed persons who may or may not have been infected, in order to be really cautious. Quarantine in special facilities has been a big part of our response to COVID-19 all along, with contact tracing. In elderly homes, once a case is identified, all the residents of that home will be moved to the field hospital. If they are shown to be positive by polymerase chain reaction (PCR), they will be placed in isolation; if they are negative, they will be quarantined as a precaution in this special facility rather than being kept in the elderly homes. We have the capacity to do that. We created that facility especially for COVID-19, because we recognise that, if an outbreak were to be initiated in an elderly home and we did not move the residents out, there would be a real risk that the outbreak would grow. That is especially so in Hong Kong, where everywhere is so densely packed. Elderly homes are no different, where the density of people is really high. Often, it is like an open office, with cubical-style beds. We do not have individual rooms for residents, so being able to decant people from those homes with outbreaks to somewhere else has been an advantage for us here.

Right now, in Hong Kong, we see low numbers of cases every day. Hopefully, we can keep the numbers of cases low for a time. I guess that we will have a fourth wave sooner or later, and then we will go back to the same measures, with elderly homes having no visitors, staff having to be very careful and, hopefully, regular testing of staff. That is not in place here yet, but I hope that it will be soon. If an outbreak is detected, residents will be decanted to special facilities and managed very carefully.

The Chairperson (Mr Gildernew): OK. Thank you very much, professor. A number of members have indicated that they would like to ask you some questions.

On the testing issue, you flagged up a potential way to increase testing capacity. Is that an indication that you are concerned that the capacity at present may not be of maximum benefit and that we should consider testing more regularly?

Professor Cowling: I read on the internet that, in Northern Ireland, staff are being tested every two weeks. There is a definite advantage to testing every week, if not a bit more frequently — every five days — because we know that outbreaks can develop quickly. We know that it is not always easy to pick up initial cases in an outbreak, so, by testing more regularly, you get a head start on an outbreak, as opposed to not testing that regularly and picking up on cases because of the numbers who are ill. I encourage you to look into that because you could save a lot of lives by testing more regularly. We know that, in elderly homes, a lot of staff, particularly younger adults, have a relatively mild infection that may be difficult to recognise or they may be asymptomatic, but they still risk spreading the virus among the residents.

The Chairperson (Mr Gildernew): You said that patients were quarantined when they returned from hospital to the home setting. What is the alternative in care home settings where that is not possible or practical? What are your thoughts on how, learning from what we have learnt in the past, you might manage discharge policy in the future?

Professor Cowling: It is difficult. We encourage testing on arrival at the home; that would help. If newly admitted residents cannot be quarantined, maybe a programme of more regular testing would help, maybe every five days or seven days, so that they have two or three tests during the first 14 days, as well as close monitoring. I am not sure what else can be done. I know that it is difficult; people need to be admitted into care homes. I know that some homes do not have the capacity for quarantine in separate rooms, and, of course, staff have to go around all the different parts of the home, so it is difficult for them to cope with it as well. Testing would help.

The Chairperson (Mr Gildernew): You mentioned other regular monitoring. In a research paper that we have considered as part of this inquiry, a number of measurements or metrics have been suggested as being helpful. From your experience of COVID-19 at this point, what type of monitoring would be helpful in providing an early warning system, if you like?

Professor Cowling: Again, that is a good question. We know that the majority of COVID infections are very mild, even among the elderly. It is a minority who progress to a more severe illness. I know that, in elderly homes, there are often issues with cognitive function, so it is not as simple as asking the elderly person how they are doing, because they cannot always express that.

We are seeing a lot of daily temperature monitoring, and that can play a role. Other than that, I think that the metrics would be based on the testing of positive cases, as well as on illnesses and maybe on outbreaks. I am not sure what else can be done. That is why laboratory testing is so valuable. Clinically, it is not that easy to pick up occurrence of COVID-19 until there is an outbreak, and then you start to see residents with severe illness as part of the outbreak.

The Chairperson (Mr Gildernew): OK. Thank you very much. That is very helpful. I will go first to our deputy Chair, Pam Cameron.

Mrs Cameron: Thank you, Chair, and thank you, Professor Cowling, for being at the Committee today; it is greatly appreciated. It is fascinating to hear what you had to say about the pooling of testing, in particular.

First, do you have any statistics from Hong Kong, in particular on elderly residents who have shown to be asymptomatic? Do you have those figures?

Professor Cowling: I do not, sorry. We have not been doing regular testing, as yet. It was a missed opportunity for us in our second wave in July and August. We have identified a lot of asymptomatic cases in Hong Kong and some in the elderly, but I do not have the statistic on, for example, if you were testing in an elderly home, what fraction of the infection that you picked up were asymptomatic. My guess, based on my knowledge of COVID-19 to date, is that there would be quite a substantial fraction of asymptomatic, even among the elderly.

Mrs Cameron: OK. Thank you. Would any additional training be required for the pooling of testing, or is it similar? Is there anything in particular?

Professor Cowling: No, the laboratory technicians can handle that. They know that they get the two swabs — maybe you do it in pairs. For example, they get 10 samples from the staff in an elderly home, they put two samples together in one PCR test, or whatever test they are doing, and then see the result. Of course, they keep the two original samples so that, if there is a positive result on the pool, then they go back to the original and do it. There is an implication for laboratory technicians' time, but, if one of the restriction is on the reagents or the PCR machines with regard to how many tests you can do every day, the technicians have the time to pool samples. Of course, the expense of the laboratory test is also a constraint. Pooling makes sense; it really is worth looking at.

Mrs Cameron: It certainly sounds like it. Do you think this method could be used for households or schools?

Professor Cowling: Yes, I think so. I do not know what your plan is for regular testing in schools. I have heard that Germany is doing some testing in schools. In my opinion, schools are a lower risk for infections — in severity and outbreaks — but we have heard of outbreaks in schools around the world. So, if you have the resources, you could consider doing some kind of regular testing in schools. You could pool more because, in schools, you would not be as disappointed to miss an occasional case as you would in an elderly home, where it is a higher priority to pick up as much as you possibly can. I envisage a scenario where children in schools are tested in pools of five or even 10, and then tested every two weeks or every month to keep an eye on the situation. Partly as a way to monitor what is going on and partly as a way to have early identification of outbreaks. If your resources are constrained, then elderly homes and other institutions, including prisons, would really be a higher priority; more so, in my opinion, than schools.

Mrs Cameron: Thank you very much.

The Chairperson (Mr Gildernew): We will go to Colin on the phone. Colin, are you there? Colin, can you hear us?

Mr McGrath: Sorry, Chair. I was not able to unmute there, but I can now. Thank you very much for the presentation; it has been interesting to hear a perspective from somewhere else. I am interested in what you said about figuring out how to manage the care homes and that outbreaks in the care homes were a priority. Do you feel that, not just in Northern Ireland but around the world as they responded to the pandemic, care homes were not given that priority and that, maybe, that was how a lot of the virus crept in? There was a lot of concern in Northern Ireland that a greater emphasis was placed on the hospital sector, because of the projected numbers, and the care home sector was not, necessarily, thought about. Was that the experience in Hong Kong, or, given that you were able to contain it quite quickly, was full recognition given to both sectors straight away?

Professor Cowling: We were always aware of the danger to care homes. From early in the pandemic, we knew that the elderly were the most vulnerable to COVID-19. Hong Kong had its first major epidemic in March and April. Luckily, we did not have any elderly home outbreaks. Maybe there was a little bit of a false sense of security because, in July and August, we had six or seven outbreaks. The largest was 45 cases. That was a bit of surprise. We had a policy of no visitors and being careful of admissions into the homes, but the virus was still able to find its way into the homes. That was a lesson learned for even Hong Kong.

In July, we saw what was happening in New York. I vividly remember so many outbreaks in elderly homes and so many deaths. There were probably 20,000-plus deaths in their first wave. There was a massive impact in New York from discharging people from hospital and into elderly homes, and then having outbreaks in those homes. That was a big lesson for everywhere in the world.

Mr McGrath: You said that you may have been lucky first time around. There may be something in that because, unfortunately, the virus does not know luck with a population of seven million.

I was interested to hear that as soon as someone was tested and identified, they were taken out of the home and put somewhere else, whereas we isolate them within the home. There may also be an issue with staff or other people going into and out of rooms and having transmitted the virus. Maybe there is value in having a separate place to which positive cases are taken.

Mr McGrath: Yes, I think so. In Hong Kong, we are not only taking the positive cases out of the home to isolation, we are taking everyone else out of the home — where there could be virus in the

environment or other infections we have not identified — to another facility for quarantine, where infection control is maybe at a higher level, and everything is managed carefully for 14 days. When everything settles and if all the residents are OK, they can go back to the elderly home, which has been cleaned. We know that the virus can, in theory, survive in the environment, and that gives us a chance to test the staff as well.

They call it decanting. It is moving the staff and the residents. Taking the residents, in particular, out of the home to somewhere where they can be managed carefully for a period of time. I do not know if that is feasible in other parts of the world or in Northern Ireland, but it has been really valuable here.

Mr McGrath: You spoke of having reduced the high volume of staff moving between homes. How was that done? If staff were working part of the time in one home and part in another, was there a management of human resources to stop that movement back and forth?

Professor Cowling: To be honest, that is still an issue. It is difficult because staff may have different specific roles that they need to go to different homes to fulfil. It is not that simple, but it is something that we are looking at. I do not know if it is easy to solve.

There will be reasons why that is happening, and it is just an issue to be aware of. Maybe if we are prioritising testing, those kinds of staff — if we can figure out their characteristics — would be a priority, because transferring infections from one home to another has been an issue in Hong Kong. A number of our outbreaks are linked by staff going from one place to another on different days.

Mr Carroll: Thanks, Ben, for that. It is very useful. Initially, we were told, there were no deaths in care homes in the first wave in Hong Kong, if I heard you correctly, and 30 or 40 in the second wave. I would like to tease that out. I also have a specific question about care homes. Are they publicly run or state-run? How do they operate?

This is according to Google, so correct me if I am wrong. The population of Hong Kong is 7·45 million, and there have been 103 deaths from COVID; in Ireland, North and South combined, there is a population of around six million, and there have been around 3,000 deaths. That is the reading online, but, if that is correct, there are significantly more deaths here.

I am looking for a couple of comments from you. It seems that Hong Kong did well — if you can say "well" in the middle of a pandemic — in the first and second waves, but there is, as you said, a third wave on the way. My cursory reading of that is that it is as a result of some people being exempt from quarantining, including seafarers, aircrews and others. Perhaps you can comment on that, after which I have another question.

Professor Cowling: I will try to remember all that you asked me. At the beginning, you asked about the setting here in Hong Kong. We have 7·5 million people. We have a lot of elderly people, as we have an ageing population. I do not remember the number of care homes that we have, but I do know that a minority are publicly run and that the majority are NGOs, so they are charity-run, being run by various organisations. Some are linked to Churches or to other faiths and their corresponding charities. Many of our homes are relatively small, with 100 people or even fewer being typical.

The second question was about the waves in Hong Kong, so let me answer that, because I can remember that one. If you Google "Hong Kong's waves", you will find something funny, because the local terminology is that our first wave was in January and February when we had infections coming in from mainland China, without any local transmission. The local terminology is that, in March and April, we had a second wave, with about 1,000 infections. In my opinion, that was really our first wave. We then got that under control through social distancing on top of the testing and tracing that we have been doing throughout. We then had a period of quiet, and then, in July and August, we had what the local media called our third wave, but, in my opinion, it is our second wave, because what people called the first wave was not, in my opinion, really a wave. We have had two major epidemics: the first with 1,000 cases and the second with 4,000 cases. I am sure that we have missed some infections but not a large number. One hundred deaths cumulatively in Hong Kong is a reasonable representation of the impact of COVID in Hong Kong. We have done a really good job.

In Hong Kong, because of SARS in 2003, there was an enormous investment in a lot of different aspects in preparation for something like SARS happening again. Since 2003, hospitals have really stepped up their infection control, while laboratories have built up capacity so that they can do a lot more testing for a lot more things, and we have been able to do a lot of testing for COVID. The

equivalent of the Public Health Agency (PHA) is the Centre for Health Protection in Hong Kong, and it has built a lot of capacity in infectious disease epidemic control, through contact tracing, quarantining people who are contacts of cases and so on. We have done a good job here in Hong Kong of controlling COVID.

Our most recent wave in July and August was, we think, triggered by the exemptions for maritime workers and aircrew, because, like New Zealand, we had managed to eliminate COVID. In Hong Kong, we had zero domestic infections for a period, probably from the end of May and into June, and then we had a rising number of cases at the end of June and into July. We think that that was triggered by exemptions rather than by infections in people who were following 14-day home quarantine policies. Right now, we are getting close to zero again. If we are lucky, we will get back down to zero, and then we will face a period of quiet before, perhaps, a fourth wave. We know that we could achieve elimination, but it would be only temporary.

I do not know whether elimination is on the cards in Northern Ireland. I have looked at your epidemic curve, and you are still having quite a number of cases every day. The effort required to eliminate is enormous. In Hong Kong, it was a phenomenal effort to get on top of infections in April to end that epidemic, and it was again a phenomenal effort in August. We have just attempted to do a mass testing programme in Hong Kong. The idea was to test everybody in Hong Kong, if they wanted to be tested, so that would have been up to seven million tests. In practice, only 1·7 million people were tested. We found quite a number of asymptomatic cases that way; that was reassuring, as it showed that our recent epidemic is on its way out. The social-distancing measures in Hong Kong have been relaxed, and I am a little concerned that we may face a fourth wave sooner or later. It is difficult to say whether that will come because of the exemptions for the maritime crews and aircrews and their not needing to quarantine for 14 days or because we still have infections from our recent epidemic; we have not gone down to zero. It is a continuous battle against COVID-19. We are better prepared now than ever before, but we will see the need for social-distancing measures periodically in the next six months in Hong Kong, just as you will in Northern Ireland.

Mr Carroll: Can I follow up on that quickly, Chair?

The Chairperson (Mr Gildernew): I will come back to you if time allows, Gerry. I want to be fair to everyone, and you had a fair wee crack there.

Ms Bradshaw: Thank you very much for being with us this morning. I want to declare an interest. My daughter cleans in a care home at the weekends, and she says that many of the residents are quite upset when the care assistants take them to the communal or living room area to allow their rooms to be cleaned. I suppose that I am looking at the emotional impact of moving patients into quarantining facilities and isolation and, probably more so, the medical issues and how their care plans can be managed. Many of their comorbidities will require occupational therapists or others to come in, and I wonder how their healthcare support is provided. How is that monitored or managed?

My second point is that the sad reality of care homes is that many residents may not leave again. How can advance care planning be facilitated when they are in such lockdown facilities and their GPs and families cannot come in and work with people on that? I am looking at the emotional side of it.

Professor Cowling: That is really important. I cannot answer on the specifics for Hong Kong. Moving residents out of special facilities will, of course, be very disruptive, but the objective is to protect their health and it is a short-term measure. I understand completely that there will other impacts, including continuity of care and the emotional impact, and I would not like to underplay that. However, quarantining residents really helps to protect their health against COVID-19, and it is not intended to be a long-term thing. It is a kind of emergency measure. Of course, we need to balance the various considerations, but, in Hong King, we have decided that that is the way to go. There may be different considerations in Northern Ireland, but continuity of care is extremely important.

Ms Bradshaw: My second point was about advance care planning, end-of-life care and residents' wishes.

Professor Cowling: The same issues apply. Of course, for the 14 days when residents are moved to another facility, different people would be looking after them and, I guess, there would be different approaches to looking after them. It would not be a hospital exactly, but it would be more managed in the quarantine facility, with healthcare workers in full PPE and quite an impersonal approach, as opposed to the staff in the elderly homes that they are used to. It will be difficult for that two or three

weeks that the residents are moved somewhere else, but the objective is to protect them against COVID-19, and we saw very large outbreaks initially when we did not do that.

Mr Easton: Thank you for your presentation. I have a couple of questions about moving people out of care homes. To clarify, do you close entire care homes and move everybody out to a centre, including staff? Secondly, it was touched on earlier, but do you find that moving residents has a major detrimental effect on their mental health? Thirdly, what is your position on face masks in Hong Kong? How far are you going on them? My very last question —

The Chairperson (Mr Gildernew): You are pushing it, Alex.

Mr Easton: — is this: where are you on a vaccine for Hong Kong?

Professor Cowling: That is a lot of questions; I will try to answer them quickly. The first was about decanting. If an outbreak is identified in an elderly home, all the residents will be moved to a special quarantine facility for people who may have been exposed and will be managed very carefully by the staff there. The elderly home staff who may have been exposed to infection because of working in the elderly home will, most likely, be taken to a separate quarantine facility and handled as quarantined persons, so they will not continue to work. They will be monitored for 14 days to see whether they have been infected.

I do not have any information on the mental health impact. I am sure that there is one, but, at the same time, the objective of this approach is protect people's physical health against COVID-19. You asked about masks. In Hong Kong, since the very beginning of COVID-19, there has been an almost universal use of face masks in the community. In elderly homes, as much as possible, residents and staff will wear face masks all the time. They were doing that before COVID-19 anyway; I think that, since SARS, there has been widespread acceptance of surgical face masks as something useful.

In Hong Kong, there has been a widespread use of face masks in the community from the beginning, but that was not enough to prevent us having an epidemic in March and April and another large epidemic in July and August. Face masks are useful. My personal scientific research on face masks is part of that story; it shows that face masks work and that they have a value. At the same time, however, we cannot rely on face masks alone; we need other measures. In Hong Kong, we are doing a lot of testing and tracing, and we have needed social distancing to successfully contain both of our large epidemics so far.

The last question was about vaccines. Right now, the Government are exploring all possible avenues to get hold of a vaccine as soon as possible. They are looking at the WHO COVAX programme. They are also, as far as I know, talking to individual manufacturers to try to get advance purchase agreements with whichever vaccine producers we can. We understand that making advance purchase agreements will cost Hong Kong money because it is trying to get a vaccine sooner rather than waiting until later to get vaccines. However, the economic impact of COVID-19 on Hong Kong has been phenomenal. Every month that we wait for a vaccine has an enormous economic and social cost, so, we would really like to get vaccines as soon as we possibly can. We anticipate that we will, at least, get vaccines for the elderly in April or May next year — I am not sure whether we can get them sooner than that — and for the whole population by, maybe, next summer or later in 2021. Once we have vaccines available for everybody in Hong Kong — all 7·5 million people — that is when we will start to see things getting back to normal, relatively speaking. That will be late in 2021.

Ms Flynn: Thanks very much, Ben. Your presentation has been interesting and insightful. You spoke in the briefing paper about the variability in transmission, with some people being highly contagious and others less so, and also about how the incubation period can vary from one day to 14 days. You might not have an answer to this question, but, in Hong Kong, have you begun to identify any local trends or profiling on the variability of transmission or the incubation period?

Professor Cowling: That is a really good question. The average incubation period is about five or six days, and we have not seen a lot of factors related to variability. We know that some people have shorter periods than others, but there is no particular reason why that is the case; it is not to do with age, sex or those kinds of factors.

In terms of transmission potential, we have seen quite a number of superspreading events in Hong Kong in bars, nightclubs, restaurants, in some cases, and other places where lots of people gather together. The originator — maybe the index — of those superspreading events has tended to be a

young adult, more often than not. We do not know what makes one person special: what makes one person a superspreader and another person not? We recognise that stopping superspreading can be a very important aspect of controlling COVID-19. In Hong Kong, we closed bars, nightclubs and other leisure facilities, and we stopped large numbers of people gathering. We have a group size limit of four; if more than four people who know one another gather together, that is not supposed to happen. That has made a big difference; it is probably one of the most effective measures that we have used in Hong Kong. Effectively, it targets superspreading. If you stop superspreading, you can have a big effect on COVID-19 transmission.

Ms Flynn: Thank you, Ben. It has been mentioned that some countries have infection control officers, although I am not sure whether that applies to Hong Kong. Do you have such officers in your care homes in Hong Kong?

Are the kits that you use in the testing procedure in care homes the same testing kits that you use in the wider health system? I know that, here, testing kits in care homes are different from those used in hospitals and there have been discrepancies in some of the results. Do you use the same testing kit right across the board or are there differences?

Professor Cowling: Ever since SARS in 2003, enormous attention has been paid in Hong Kong to infection control in hospitals, care homes and other parts of the community. In elderly homes, we have designated staff for infection control, which has been important. In hospitals as well, we have a lot of infection control staff. We have link nurses on every ward for infection control.

Sorry, what was your second question?

Ms Flynn: Are the testing kits the same?

Professor Cowling: Sorry; testing kits. All testing in Hong Kong is done centrally in designated laboratories. The same test is used for diagnosis for hospital patients as it is for people with mild symptoms who go to their GP and the testing being done in elderly care homes. It is the same throughout. It is done in the public health laboratories in Hong Kong.

Ms Flynn: Thank you, Ben.

Mr Chambers: Thank you, Professor. Professor, at the start of this pandemic, our health service in Northern Ireland was in a pretty bad place: staff morale was low; we were suffering from lack of investment over recent years; and there were long waiting lists for consultation and procedures. You talked about how your hospital system learned from the SARS infection and that there had been considerable investment in hospitals. No doubt, a lot of PPE was stored in your hospitals. Would you say that that preparation gave you a good starting point to deal with the outbreak of COVID-19 in Hong Kong?

I find the pool sampling quite interesting, Professor; it could be extremely useful. Just help me to understand it. You talked about 10 staff members being sampled and you take two as a pair. I assume that you mix the cocktail of those two samples and test that as one sample and, if it comes back negative, you make an assumption that the other eight people in that group of 10 are clear or negative. Is there a guarantee that that is the case? Is there a possible margin of error? Is that methodology and approach backed up by scientific evidence that it is the right way to go? It is a very interesting scheme.

Just remind me as I may have missed it: how often are residents of homes tested?

Professor Cowling: Good, OK. Let me talk about the first thing first. Ever since SARS in 2003, we have made investment in Hong Kong in infection control. We have recognised that that is really important. In SARS in 2003, we had 1,700 cases — probably, per capita, the highest in the world. We had hundreds of infections in healthcare workers and quite a number of deaths of healthcare workers. We recognised that it was really important to be better at infection control and protecting staff. In Hong Kong, we have 40,000 hospital beds for our 7.5 million population. We have 1,400 negative pressure isolation rooms, which is an incredible number per capita: 1400 negative pressure isolation rooms ready for something like COVID-19, something like a pandemic. Those rooms were ready, and we were able to use them for COVID-19. We have stockpiles of PPE and staff who are very well trained in using it and, of course, universal masking in hospitals and so on.

Your second question was about pooling. I will explain it like this. Say that you have individual vials of swabs from your staff in elderly homes and one member of staff out of the 10 has the virus and the other nine do not. If you test individually, you should pick up the one who has it, and the test will be positive. If you mix that vial with another vial, you dilute what was in the first one; you dilute the sample of the member of staff who had the virus with that of another staff member who did not have it. Most of the time, however, there is such a lot of virus in the tube from the staff member who has an infection that it does not make a lot of difference. There is a sensitivity loss of, maybe, 10% in testing a pooled sample if you pair the samples.

One thing that you could do is to test everybody individually every two weeks, or you could test everybody weekly, with a 10% drop in sensitivity. The latter is better because you get more frequent results. You have a small chance of missing an infection, particularly with a low viral load. However, on average, in the long run, you pick up more, and you pick it up more quickly. If you are to seriously consider that, you can approach a health expert in Northern Ireland to do the calculations for you. We are doing them here for Hong Kong, and there really is a very substantial advantage to testing more frequently, even with that trade-off of a slight loss in sensitivity.

Of course, if you have the resources, you could test everybody individually every week, but if you are facing a situation where you do not have the resources to do that — the PCR kits or whatever — bear in mind that our research in Hong Kong indicates that pooling the samples is a more efficient approach to using the resources that you have. We are very confident that it will save lives.

I am sorry. What was your last question?

Mr Chambers: How often are you testing residents?

Professor Cowling: Unfortunately, we are not doing routine testing in Hong Kong yet. I hope that we will start very soon. We just did a mass testing programme in the community, testing 1·7 million of the 7·5 million people in Hong Kong. For some reason, residents of care homes were not included in that programme. I hope that the Government will start a programme of regular testing, particularly of staff. Staff would be the top priority and, then, residents as well. I looked up what was happening in Northern Ireland, and it is really good to test the staff every two weeks and the residents every month. The staff are the priority.

Mr Chambers: Currently, in Hong Kong, there is no testing of staff or residents in nursing homes.

Professor Cowling: There is no routine testing of staff or residents in Hong Kong right now. I really hope that it will start soon. There are discussions about it. It is really important, and we should be doing it.

The Chairperson (Mr Gildernew): Thank you, Professor. Is that lack of testing linked to the strategy of moving people en masse to a quarantine facility?

Professor Cowling: That occurred once outbreaks had been recognised. The briefing paper that I circulated shows outbreaks of between five and 45 cases. If we had been doing regular testing, we would have found the outbreaks at an earlier stage, and instead of having outbreaks of between five and 45 cases, we might have been having outbreaks of between, say, two and five cases: being able to pick it up so quickly means being able to intervene much more quickly . My hope for future waves in Hong Kong is that we will no longer see large outbreaks in care homes. Of course, the virus may still have a chance to get in, but we will be able to pick it up more quickly and prevent those large outbreaks.

Mr Sheehan: Thank you, Ben, for your contribution this morning. It has been very interesting. Most of the questions that I had have been answered. However, I wanted to talk to you about the process of decanting residents into a quarantine situation. A lot of steps could be taken to prevent the virus from getting into care homes, such as stopping visits, ensuring that staff are not moving from one home to another, regular testing and so on. It has been highlighted that decanting could disturb care plans, result in mental health issues and so on. I do not know what the situation is in Hong Kong, but it is reckoned that, here, 70% of care home residents suffer from varying degrees of dementia.

Are there different levels of compliance in different cultures? Here in the West — in Ireland, anyway — a lot of relatives of care home residents have been saying that the lack of human contact during lockdown led to physical and mental deterioration in their loved ones. Is there a balance to be struck?

In Hong Kong, there may be different levels of compliance, trust in the Government and public health messaging. Does that become an issue?

I want to ask a second, quick question. It may not be your field, so do not feel that it is necessary to answer. I read some research that says that deficiencies in vitamin D and zinc can lead to higher mortality rates. I am not sure whether that research has been validated, but if you want to comment on it, feel free.

Professor Cowling: On the first question, undoubtedly, there are other impacts on the elderly when they are decanted. In Hong Kong, because elderly homes are so crowded and there is such a risk of a large outbreak, I can envisage almost all residents being exposed to infection if an outbreak was not controlled. We do not have individual rooms in many of the elderly homes, so it is not possible to just isolate residents who are COVID cases in their room. Space is shared, and people live on top of each other, even in the elderly homes. Decanting is a very obvious good choice for preventing COVID-19 outbreaks in the homes and preventing them from getting larger. I understand that, as you said, there can be trade-offs as well. In Hong Kong, the elderly are suffering because they do not have visits from their relatives and loved ones. It is just a really difficult time all round. I am not sure whether there is any best answer. We have different bad choices to choose between, and we have to choose which bad choice we prefer.

I am not sure about your second question, about zinc and vitamin D. It is not exactly my area. For other infectious diseases, there is talk, from time to time, of these kinds of patterns, but there is no real established pattern of transmission or severity. For COVID-19, I would wait and see. Right now, there is certainly nothing conclusive. On the basis of what we have seen with other infectious diseases, I would say that there is a relatively low chance of there being something in that. Of course, I do not rule it out.

The Chairperson (Mr Gildernew): Again, this may not be your field, and I do not want to put you on the spot, but I ask because we have the benefit of your experience. There has been some talk recently about the potential for what has been called a "circuit breaker": using the fact that schools close for a week at midterm to made a short intervention with enhanced restrictions of, say, two weeks. It might not be a full lockdown; rather, a more enhanced set of restrictions. What is your view on the impact that that might have? What issues might need to be considered before you would undertake such action?

Professor Cowling: I remember distinctly, early in COVID-19 — I think that it was in March — looking at results from Imperial College London about the possible strategies for responding to COVID-19. I looked particularly at measures, not exactly lockdowns, but the varying intensity and duration of social-distancing measures. There was a trade-off. You could choose longer periods with moderate social distancing or shorter periods, as you mentioned, like circuit breakers, with more intense social distancing, to get things under control. Probably the most important things to consider in the choice between a longer period with moderate social distancing versus a shorter one with more intense measures would be the economic and social consequences of those different approaches. If schools are closed anyway, maybe it is a good opportunity to have stronger social distancing during that week, because the children will be at home anyway. You could think about encouraging people to work from home even more during that week than in other weeks.

I guess that it would be different in Northern Ireland and in other parts of the world. Hong Kong has never gone to that extreme. We had, I would say, moderate social distancing in March/April and August to get our transmission under control and bring numbers down to a low level. However, we are facing the need to do that periodically. The way in which we have done social distancing is by closing bars, nightclubs, cinemas, other leisure facilities, gyms, swimming pools and so on. We have reduced the capacity of restaurants through having a maximum table size of four. The Government and private business are encouraging people to work from home. We have seen around 50% of working adults being able to change their working behaviours so that they work from home at least some of the time in Hong Kong. All those social-distancing measures have helped a lot. In Hong Kong, I do not know whether we would consider having more intense social distancing for a shorter period. It would be difficult.

The Chairperson (Mr Gildernew): Thank you. I have a quick point from Pam. Gerry, did you have a very quick follow-up point to make from earlier?

Mr Carroll: Yes, please.

The Chairperson (Mr Gildernew): I will go to Gerry first and then finish with Pam.

Mr Carroll: Thanks. Will you tease out the approach that was taken after SARS? I think that I read somewhere that, initially, there was concern that governments were treating the pandemic as an influenza-type rather than SARS-type disease. Epidemiologists have been warning about those types of outbreaks for many years. What can be done in the North, in the UK and across Europe by the likes of the European Centre for Disease Prevention and Control? What can we learn now, because these viruses are likely to be with us for some time?

Professor Cowling: Probably the biggest lesson that is relevant to COVID-19 has been the investment in infection control in hospitals. We have really stepped up infection control training, resources, usage of and training in the use of PPE, and we have the negative pressure rooms. We really stepped that up after SARS in 2003, so we have had more than 15 years of investment. That has paid off. In Hong Kong, as far as we know, we have not had one occupational infection of a healthcare worker among our 5,000 confirmed cases. There has been a handful of cases among healthcare workers. However, as far as we know, community exposure, not occupational exposure, led to their infection. That is remarkable because, around the world, in the past nine months, we have seen so many healthcare worker infections and even deaths. In mainland China, there were a lot of healthcare worker infections and deaths in March. I have not looked it up, but I would imagine that, in Northern Ireland, you have had healthcare worker infections — I am not sure about mortality.

In Hong Kong, there have been 5,000 confirmed cases among people of all ages, 100 confirmed deaths, and, as far as we know, not one single occupational infection of a healthcare worker because of investment in infection control since SARS. I think that, after this is all over, a lot of places in the world will look at investing in infection control in anticipation of future pandemics.

Mrs Cameron: Thank you, Professor. I want to ask you about the public mindset in Hong Kong. You mentioned that mask wearing is universally accepted there. It is a very new concept in Northern Ireland and the rest of the UK. We have had quite negative feedback from members of the public. There is quite a lot of negativity on the ground and on social media. I am sure that you would agree that social distancing is more important than mask wearing — not that one outweighs the other, but it is probably the most important element. The worry is that people feel that, when they wear a mask or even when they are forced to wear a mask, social distancing is not as important and they can get closer. That can be a greater concern. With regard to the mindset of the public in Hong Kong, have they universally accepted the social-distancing requirement?

Professor Cowling: Of course, there is fatigue with social distancing after it has been in place for some time. We have just come to the end of our recent epidemic in July and August, and there was a lot of fatigue in the community with social-distancing measures. People were very frustrated that they had to stay at home more than they normally like to do. They could not go out to restaurants. At one point, we had a table size restriction of two, so you could eat with only one other person in a restaurant in Hong Kong. We never closed restaurants because they are so important locally. A lot of people live in very small flats and do not cook for themselves. They rely on eating out in restaurants daily.

With regard to compliance with mask use, Hong Kong has a history of wearing masks going back to SARS. During the SARS epidemic in 2003, around 70% of people in Hong Kong wore masks *[Inaudible]* they were so concerned. Ever since there, there has been a culture of wearing masks, particularly when people are sick but also during other epidemics. As I said, in Hong Kong, since the end of January, 99% of people are wearing masks when out and about, on the street and in public areas. There is also a lot of mask wearing in workplaces. Hospitals have a universal mask wearing policy, so everybody in a hospital wears a mask all the time unless they are eating or sleeping. Therefore, there is widespread acceptance of face mask use.

We have not seen any consequence of that on compliance with social distancing. We have been able to do both. However, I understand that it has been a concern that people might think that, by wearing a mask, they did not need to socially distance. I can say only that, in Hong Kong, we have not found that to be the case. People are very good at socially distancing when there is a lot of COVID in the community, as was the case in March/April and, again, at the end of July. They are really very compliant in doing the right thing, I guess. They are staying at home as much as they can and away from large groups of people.

The Chairperson (Mr Gildernew): Thank you, Professor. I have one final question. Do you still maintain strict visiting restrictions in care homes, given that you have the other measures in place, or do those measures allow you to relax visiting restrictions in order to address loneliness, mental health and those types of issues? Where are you on that at present?

Professor Cowling: Right now, visitors are still restricted. We would relax visiting if all the other measures in Hong Kong were being relaxed. That happened in June. Right now, they are not being relaxed, although every home can, to some extent, have a little flexibility. Right now, no visitors are allowed. I think that, if that were relaxed, it would be back in place very quickly if or when there was another epidemic in the community. Unfortunately, although visitors are really important for residents' mental health, visitors are also one of the ways in which the virus is able to get into homes. Limiting or stopping visitors, as we do in Hong Kong, has been an important measure to protect elderly homes against outbreaks. I really hope that it will not have to go on for much longer. It will be another six months, I guess. As I said, we have to choose between a lot of bad choices. It is a difficult situation for everyone.

The Chairperson (Mr Gildernew): I want to thank you sincerely, Professor Cowling, on behalf of the entire Committee. It has been a fascinating session. We have heard some things that were entirely new, I have to say. Those will be very interesting for us. It demonstrates the benefit of having a perspective from somewhere entirely different. You have greatly assisted the Committee. I thank you sincerely. Good luck for the future.

Professor Cowling: Thanks very much. Bye-bye.