Witness Name: Devi Sridhar
Statement No.: 1
Exhibits: DS
Dated: 25 October 2023

UK COVID-19 INQUIRY

WITNESS STATEMENT OF DEVI SRIDHAR

In relation to the issues raised by the Rule 9 request dated 1 August 2023 in connection with Module 2A, I, Devi Sridhar, will say as follows: -

1 I am Devi Sridhar of the University of Edinburgh. I am a Professor of Global Public Health at the Usher Institute of Population Health Sciences and Informatics at the University of Edinburgh Medical School. I have been a Professor at the University of Edinburgh since 2014.

2 I have prepared this statement myself by reference to records and material provided to me by the Scottish Government. I have also received assistance from the Scottish Government Covid Inquiry Information Governance Division to enable the statement to be completed.

3 Unless stated otherwise, the facts stated in this witness statement are within my own knowledge and are true. Where they are not within my own knowledge, they are derived from sources to which I refer and are true to the best of my knowledge and belief.

4 It will be recognised that I only joined the Scottish Government Covid Advisory Group (hereafter "the Group") on 2 April 2020. There are a number of questions posed by the Inquiry relating to Scottish Government advice or policy prior to this date which I cannot comment on. Furthermore, my role in the Group did not involve me offering advice directly to the core decision makers within the Scottish Government. This means that I am unable to answer certain questions relating to how advice was framed or received

by decision makers. A list of the questions that I am unable to answer are included in Annex D.

5 References to exhibits in this statement are in the form [DS/Number- INQ000000].

Sources of advice: medical and scientific expertise, data and modelling

Your roles and responsibilities

6 I am a Professor in Global Public Health. I specialise in policy, governance and finance related to health. This is largely in relation to low-income and middle-income countries where infectious diseases are a major cause of disability and death. I have worked closely with governments in many countries, along with the WHO, UNICEF and other NGOs such as Oxfam and MSF. I have international expertise which I use to try and transfer learnings from other countries to infectious disease management in Scotland.

7 I decided to write the book "Preventable" to capture the historical memory of the Covid-19 pandemic for an academic audience. When I am using the word "preventable", I am referring to preventing the unnecessary loss of life. I do consider that a stronger policy of containment and earlier institution of a testing regime could have prevented unnecessary loss of life in Scotland. I recognise that the Scottish Government's powers were limited in this regard in that financing, borders and science are all reserved powers. In the Covid-19 pandemic these were key policy areas necessary to contain the spread of the virus. There were ultimately limitations on what the Scottish Government could do alone in response to the pandemic.

8 I am asked about my role in the Scottish Covid-19 Advisory Group (hereinafter “the Group”). I was not a member of the Group when it was initially set up in March 2020. I only joined the Group on 2 April 2020. Within the Group, we would be asked to consider the evolving data and the risks of various policies to manage the pandemic. In my role I provided international analysis on what policies had worked in other countries. For example, I would consider how testing or re-opening of schools in other countries had occurred and what data was available on the impact of these policy measures. I was, however, not involved in making any decisions or providing formal direct advice to Scottish Government decision makers. I cannot comment on how well-prepared Scotland was for the pandemic, as I was not involved until after the emergence of Covid-19. I did not receive payment, funding or grants from Scottish government for this role.

9 I am asked about the role I played in the UK Cabinet Office International Best Practices Advisory Group (the "Advisory Group"). The Advisory Group met by Zoom call regularly. Each meeting was focused on a specific topic. I would provide information on international best practice; specifically what management policies were working best and what we could learn about them and learn from other advisory group members. The Advisory Group was focused on discussing international best practice. It was not involved in providing operational advice. I did not receive payment, funding or grants from UK government for this role.

10 The Royal Society of Edinburgh DELVE Group ("DELVE") was set up to provide scientific input to SAGE. I cannot recall the history of DELVE but was asked to join by the former President of the Royal Society. From my limited understanding, Patrick Vallance of SAGE would request data and the UK academic community was harnessed to do so through DELVE. DELVE operated outwith government bodies. I did not receive payment, funding or grants from the Royal Society for this role.

Principles/policy behind the use of medical/scientific advice in the Scottish Covid-19 pandemic response

11 I am not aware of whether the First Minister or any other individual involved in core decision making referred to "following the science" or following scientific advice. I did not provide direct advice to any decision makers so cannot comment on how scientific advice was received. I cannot comment on the extent to which policies were driven by scientific advice.

12 I am asked about the extent to which policy was driven by "the idea that no death from novel coronavirus is acceptable". As noted before, I cannot comment on how policy was driven, as I was not involved in providing direct advice to decision makers. However, I cannot recall this being the premise of any of the discussions within the Advisory Group. My understanding of the initial response in March 2020 was "contain, delay, research and mitigate". The underlying drive of the Advisory Group when I joined was to reduce the death toll and impact on the health service. This was the containment element of the policy. This impetus became stronger after vaccines became a realistic outcome in Spring 2020. The drive was to suppress the spread of Covid-19 until the vaccine was readily available.

Informal decision making and communication

13 I was not a member of any WhatsApp groups relating to my work around Covid-19. There was a Slack channel that was set up by the Scottish Government. Academic articles would be posted on the channel for everyone in the Group to view. The Slack exchanges informed subsequent discussion in the Group.

14 The Slack channel was not intended for decision making. It was a way to reduce email traffic and was not used too often. In practice, email was used for virtually all communications outside meetings.

15 I spoke to the First Minister around once a month or once every two months by telephone. I may have also emailed her directly with policy reports, with others copied in. The Scottish Government will hold any records of the emails sent, however there are no minutes of the phone calls. These have been provided to the Uk Inquiry with this statement

16 The First Minister was keen to know about what other countries were doing, not what Scotland ought to be doing. I was able to update her on international best practice based on the various advisory groups that I was sitting on.

17 Detailed minutes were taken of every meeting of the Group. Each member of the Group would be emailed with a draft of the minutes for their approval. There would sometimes be three to four meetings a week. I believe that copies of all minutes have been supplied by the Scottish Government.

18 I cannot recall any informal meetings of which I was a part in which significant matters were discussed.

19 The documents relating to communications would be on the Slack channel or email. These will be retained by the Scottish Government.

20 I cannot recall receiving any guidance from the Scottish Government regarding messaging or data retention. There was a shared terms of engagement, I think, to reinforce that background papers such as from SAGE were confidential.

21 I cannot comment on whether informal communications affected the efficacy of decision making as I was not involved in decision making.

Scottish Government Covid-19 Advisory Group and SAGE

22 I was not involved in deciding the constitution or membership of the Group. I only joined the Group on 2 April 2020, after it had been formed.

23 The Group took into account epidemiology, public health, clinical advice, virology, immunology, education and at risk and vulnerable groups.

24 We were not asked to comment on the impact that measures would have on the economy. I presume that separate advice would have been provided at a ministerial level. We were asked to address questions from a medical/public health standpoint, not an economic standpoint.

25 I am asked how the Group weighed medical and scientific advice, with other considerations. The simple answer is that this was not the Group's role. There are trade-offs and calculations that have to be made in any public health response. These are political decisions and scientists cannot answer them. For example, the Group was asked to address Covid-19 certification. In doing so, it was not the Group's job to consider the costs of this to the Government and businesses. My research team could only provide how Covid-19 certification had been used in other countries such as Denmark or the United States, the impact this had on transmission and infection rates, and lessons learned.

26 I understand that expert advice was given to the Scottish Government. I do not understand the Inquiry's query regarding the bringing together of experts in a forum.

27 I cannot say whether the Group should have been formed earlier. Science is ultimately a reserved power. It would have been unusual if Scotland had formed its own group prior to the Covid-19 pandemic. Because there was a crisis, quicker decisions based on the local situation needed to be made. The Group was also formed to make what scientists were saying more open and transparent to the public.

Sub-groups

28 Sub-groups were formed to provide tailored advice on specific issues. Focus groups were created for one specific issue, rather than looking at everything in one, and I think they worked effectively.

29 Members of the sub-groups were producing research from their university teams. For example, I had a major grant from the Wellcome Trust and was allowed to redirect my team's research towards Covid-19 policy research. The sub-groups were therefore able to conduct relevant research through their academic members' research teams.

30 I do not know whether the Scottish Government took account of the advice of these sub-groups.

Operation of advisory structures

31 I am asked what advisory functions the Group provided towards significant organisations involved in the pandemic response. I am unsure whom the advice was provided to as it went to the Chief Medical Officer (CMO). I would have to refer to whatever the Scottish Government says on this.

32 I cannot comment on the impact that the formation of PHS had in 2020 with regards to the provision of data or the effectiveness of decision making.

33 I do not know whether the resignation of Catherine Calderwood in April 2020 had any impact on the provision of the Group's advice.

34 The only relationship I had with a decision maker was the First Minister, whom I would occasionally have a telephone call with and whom I sent policy papers to by email.

35 I am asked about the role I had in providing advice to cabinet meetings, SGORR and the Four Harms group. I did not attend meetings of any of these groups so cannot comment.

36 I think the Group was effective in bringing together advice. The Chair did a good job of keeping the meetings focused and targeted to the advice that they were asked to give. There was always a healthy debate within the group and any disagreement would have been captured within the minutes of each meeting. I do not know whether decision makers suffered from information overload. Advice emanating from the group would be delivered by the CMO. The CMO would usually sit in on the meeting; if not a deputy CMO was present. The CMO would have access to the minutes which would record all opinions. We were always given the opportunity to review and amend the minutes if we did not think they were accurate or reflective of the discussions.

37 There was usually disagreement within the group where there was uncertainty on data. When there was certainty over facts or clear data, there was little disagreement. We would be asked whether we could state something with low, medium or high confidence. Disagreements on the uncertain data was entirely healthy.

38 I am very happy that there were different perspectives in the group. This meant that each member had to think through their position with awareness to any gaps or flaws.

The healthy debate within the Group on most issues meant there was little risk of "groupthink".

39 The questions that the Group was asked to consider were usually straightforward. If there was any uncertainty we could always ask for further clarity.

40 I attended a number of "Deep Dive" meetings that the Group held with Ministers, the material from which has already been provided to the Inquiry. The purpose of these Deep Dives was to provide information on a specific topic. My role would be to provide advice on the latest science on international best practice. For example, there was a Deep Dive on testing. I shared my insights on how Denmark and Germany were carrying out testing on their populations.

41 Once the Office for National Statistics (ONS) surveillance system was in place it was very useful for allowing us to consider our advice. We had weekly data on the level of infection in the community, which meant modelling could be more accurate.

42 All members of the group were given opportunities to provide advice. This could be in the form of formal papers, within the Group's meeting minutes, or Deep Dives.

43 The Group did not tailor advice based on what we thought would be palatable for policy makers. This was not the role of the Group. I often knew that my suggestions were not what policy makers wanted to hear. For example, at a very early stage I was advocating community testing and limiting importation of Covid-19 by testing at airports. I pointed to the South Korean approach whereby voluntary isolation facilities were set up outside the home to reduce household transmission and provide supportive medical care in the early stages of COVID-19. None of these policy options were going to be easy for policy makers as they were all expensive to implement. My views were expressed in SGCAG meeting and in deep dive meetings. I am unable to provide any explanation as to why these suggestions were not taken up.

44 To ensure that the information advice provided by the Group was clear, a member of the Scottish Government secretariat was there to take minutes. This helped to ensure that any scientific jargon was minimised. The minutes were intended to be accessible to the public. There would sometimes be a delay of a few days in issuing the minutes, but this was because all members of the Group were very busy and would take some time to review them. I don't think there were any intentional delays.

45 The primary mechanism for the First Minister and other decision makers to challenge the advice from the Group was through the Deep Dives. For example, we had a Deep Dive regarding shielding on 15 May 2020. The First Minister asked questions about how well it had worked in other jurisdictions. I recall the First Minister asking me what countries I thought were handling Covid-19 well. I cited Japan, Taiwan and South Korea. The First Minister would then ask what small European countries she thought were doing well. I pointed to Denmark and Norway. I also recall group members being asked about the source of data for some of the graphs.

46 Meetings of the Group were chaired by Professor Andrew Morris. They would occur over Teams or Zoom. Whoever was leading on a particular item would start the discussion. We were not there to make decisions but rather have a discussion and present robust and independent evidence and data. The discussion would focus on the evidence base.

47 As I was not involved in the constitution or membership of the Group I cannot comment on whether it was too heavily influenced by particular scientific discipline.

48 In terms of conflicting medical and scientific information the Group would advise whether the certainty of data was low, medium or high. This was the mechanism that decision makers could use to assess their options.

49 The Group always engaged in robust debate. I can safely say that there was no "groupthink" as the Group would frequently disagree. We would have external guests from other countries. For example, we had a senior advisor to the German government join a call to add information on what they were doing with regards to testing.

50 I am asked about whether there were instances where the Scottish Government did not follow the Group's advice. The Group analysed the health impact of various policy options. Each of these options would be presented to decision makers, who would in turn have to make a cost/benefit analysis. It was not the Group's role to conduct this cost-benefit analysis.

51 For example, while we could comment on the potential impact that closing schools would have on the spread of Covid-19, or on risks to children or school staff or the household members of children in school, it was ultimately for politicians to balance the various stakeholders and to make a decision on whether and when to close schools. At no point would the Group be dictating to decision makers that they had to

follow one option over another. Ultimately, we could only advise on likely outcomes and the risks of the various policy options.

52 I do not know whether the Scottish Government ought to have sought direct specific medical and scientific information for decisions beyond the advisory group as I was not involved in the decision making process.

53 As previously mentioned, I was an ad-hoc member of expert advisory groups in several other countries. Within these groups, we would discuss policies relating to areas such as travel measures, schools, masks and testing. Every country was facing the same core issues and in these groups we would summarise the latest data and how various policy options could potentially impact transmission.

54 I would be able to take the knowledge from the international groups to advise the Group on international best practice.

55 Information or views from the front line would be provided to the Scottish Government through the CMO.

56 I cannot recall if the Group had access to information and advice from patient groups or other representative group about the patient experience within the health care system during the pandemic. There may have been one on long-Covid, but I cannot recall.

57 I am asked of the potential advantages if there would have been had expert advisers sat with political decision makers. I do not understand the premise of this question as my understanding is that the CMO and National Clinical Directors were invited to cabinet meetings.

58 The Deep Dive meetings were done well and very useful. They were a good opportunity for the decision makers to ask us any questions they had. I would like to add that throughout the whole pandemic most members of the Group were entirely independent and not paid by the Scottish Government. The academics were independent and our salaries from the university were not conditional on the advice being given.

59 We had a reciprocal arrangement with SAGE in that all of our papers were shared. We had access to the SAGE papers and they had access to the Group's papers.

60 Within the Group, we were asked questions and provided our levels of confidence as to the steps that could be taken. Where there was high confidence in the data, there was consensus. Where there was low confidence, a bit more expert prediction was involved and there would be disagreements. The CMO or a deputy CMO was at all the meetings so would hear these.

61 I cannot comment on whether the right level of expertise was in the Group as I was not involved in deciding the membership.

62 In terms of data, we had full access to SAGE papers. I thought the provision of data worked well. The challenge was the sheer volume of the amount of data provided. I cannot recall whether there was ever any limitation on accessing data.

63 We received modelling data from Public Health Scotland and the Scottish Government Modelling Hub headed up by Audrey MacDougall, Chief Social Researcher at the Scottish Government. I thought they did a very good job. If you wanted more information on the models you could ask for more information.

64 I am asked about the effectiveness of the Group's interactions with Sage, SPI-M and SPI-B. I cannot comment on this as I was not involved in direct communications with these Groups.

International perspective

65 I felt the Group took into account international evidence in providing advice. The WHO had a role in sharing international evidence with all countries.

66 The Group would have visiting speakers from other countries. For example, we had to consider what impact the alpha strain of Covid-19 would have when schools were reopened. We therefore invited a Danish schools adviser to attend a meeting. They had opened schools two weeks prior to us. We asked the advisor to provide us with evidence from the spread of Covid-19 from this experience.

67 The impact that this input had would be recorded in the minutes and policy papers.

68 While international best practice is useful it is not simply a case of copying what other countries are doing. While a conscious effort can be made to learn from other countries, ultimately each country has their own characteristics that are not completely transferable. Policy makers in a pandemic have to consider how to limit the spread of the virus while limiting any harms related to the economic and social effects of doing

so. With Covid-19, the core question or all countries was how to adequately contain the virus without locking people in their homes. Unfortunately, within the UK, lockdown and suppression were often considered mutually exclusive, meaning other options weren't explored. The only choice wasn't 'let it rip' or 'lockdown': there were other paths as I discuss in my book Preventable.

69 In my book I talk about the lessons that ought to have been learned about policy in South Korea from January to March 2020. South Korea contained their first wave of Covid-19 very effectively. They rapidly brought in a series of strong measures, such as border controls at the airports, test-and-trace to isolate cases, and the widespread wearing of masks. There were very clear communications from the South Korean government to their population about this.

70 South Korea was able to identify all of those who were infected with precise testing. In contrast, in the UK everyone was treated as if they were infected. The UK approach meant that everybody had to be isolated from each other, i.e. a 'stay at home lockdown'. In contrast, the South Korean approach only took away freedoms from the few who were infected through requiring them to isolate and not infect others. This allowed workplaces and restaurants to remain open.

71 I cannot comment on advice given to the Scottish Government from January to March 2020 regarding these international comparisons as I was not involved in this. I only joined the Group in April 2020. I also do not know whether core decisions in the Scottish Government followed WHO advice.

72 Any advice or information I provided to the Group from the other international advisory groups I was on would be recorded in the minutes.

73 In my book, I discuss the response to the pandemic in Greece and the Czech Republic. Compared to the UK, Greece is a poor country with an aging population. It has low national healthcare capacity as a result of long-term austerity. Greek families also tend to live in multi-generational households. Greece would be unable to withstand waves of Covid-19 without healthcare collapse and mass death, so the Greek government focused on containing it from the outset by enacting strong border controls and limiting importation in winter and spring 2020.

74 In the Czech Republic, widespread use of masks was adopted at an early stage. This was also very effective in mitigating the spread of Covid-19 in the first waves of 2020.

75 I was in favour of both strong border controls and widespread mask wearing in early 2020 and made this clear in the Group's meetings.

76 Japan utilised "cluster busting" to stop the spread of the first wave. The Japanese authorities realised early on that it was more effective to go after superspreading events than chasing every individual case. This meant that everyone who was at a mass event would be contacted about potential transmission of Covid-19. This evidence was from February 2020 and I wasn't part of the Group then. I wrote about this in my Guardian columns and talked about it in my media interviews.

77 I do not know about standard scientific advisory structures in other countries. Every country set one up in their own way. I am not aware of a repository of all the various structures that were used.

78 I do not know how international comparisons affected decision making in the Scottish Government. However, in Deep Dive sessions there did seem to be an appetite to learn from other countries similar to us, such as Denmark and Germany.

Funding and powers

79 In my role, I was not to consider the specific funding and abilities of the Scottish Government to undertake policies. I do however recognise that science, the budget and borders are reserved issues. I was aware that the Scottish Government would not necessarily be able to act upon all the advice they were receiving from us.

80 In particular, the Scottish Government would not be able to do anything about border controls at airports as this was a reserved matter, or be able to provide 'furlough' without support from the UK Treasury.

Local government

81 I did not provide any advice to local authorities throughout the course of the pandemic, nor am I aware of how the Scottish Government liaised with Local Government during this time.

Conclusions and lessons learned

82 The precautionary principle is that if the costs of a policy are minimal and the potential benefits are large, you enact it before you have all the evidence to back it up This ensures that effective policies are put in place at an early stage. For example, at the

outset we did not have clear evidence on whether the wearing of masks would make a difference. Many countries however thought the benefit could be very large compared to the low costs involved, so moved quickly to make the wearing of masks mandatory in public spaces.

83 I would recommend the use of the precautionary principle, but I do not know how this consideration affected decision making.

84 I thought that the advice given by the Group worked well. Whether the Scottish Government acted on any of the recommendations would have to depend on their ability to do so. For example, we could advise on the potential impact two-week circuit breaker lockdown and the extent to which it would reduce transmission. However, if the UK Government was unwilling to give funding for a furlough scheme, then the Scottish Government would be unable to enact it.

85 This was not a unique issue to Scotland. For example, there were large outbreaks localised to the north of England such as Manchester. A local lockdown could however not be considered without guaranteed funding from the UK Government.

86 To ensure that advice from the Group was subject to sufficient internal and external scrutiny, there was complete transparency in the membership and the minutes.

87 I did not provide direct advice to any decision makers so cannot comment as to whether they understood it.

88 I am unsure who my counterpart would have been for the UK Government. I had no concern regarding the performance of members of SAGE as I didn't directly interact with them.

Initial understanding and responses to Covid-19 in the period from January to March 2020

Initial understanding of the nature and extent of the threat

89 In December 2019 I wrote an article for the Edinburgh University magazine describing the next fatal viral disease. This article was drafted in November 2019 and went to press in December 2019. It was not specifically about Covid-19. I had been working on viral diseases for a long time and wrote a book about them in 2008. This was not a novel thing to be writing about. It was well known within the global health academic

community that we were vulnerable to a pandemic of respiratory flu. I was not writing about Wuhan when I was drafting the article.

90 I first heard about Covid-19 when I returned from Christmas holiday in January 2020. I logged into my university email account and there were communications from colleagues about a small virus cluster around a wet market in Wuhan. I did not consider this to be particularly unusual at the time. There are around 30 serious warning signals a month regarding outbreaks around the world. Most are contained very quickly. These warnings are provided by the WHO. To explain, members of the WHO have a legal obligation to alert the body of any outbreaks. I understand the Chinese Government alerted the WHO on 5 January 2020. There was also the Pro-Med message board for clinicians which had reports of the outbreak.

91 I received many of these warnings every month and there was no indication to begin with that it would be that serious. In particular, there was no evidence that there was human-to-human transmission in early January 2020. The South East Asian countries were a bit more proactive in containing Covid-19 because of their recent experience of SARS. In Britain, we had experience of near misses in the past, such as Swine Flu.

92 In early January 2020, I did not evaluate the threat that Covid-19 posed to Scotland or consider what implications it would have for Scotland. My research had been focused on low to middle-income countries and I was more concerned about countries like South Africa, Senegal and Haiti. Prior to the pandemic, the UK and USA were considered the best prepared nations to deal with most outbreak scenarios. We have water and sanitation infrastructure and well-developed healthcare systems. Other countries were seen to lack the essentials and would require more support to help contain Covid-19.

93 My understanding regarding the transmission of Covid-19 developed over the course of early 2020. The information I got from this came from various articles published in the Lancet in early 2020. These articles confirmed that Covid-19 could be spread from human-to-human symptomatically and asymptomatically. By the end of January 2020, there was quite a lot of information about this. All the Lancet articles are cited in my book "Preventable".

94 I do not know what the Scottish Government reaction in January and February 2020 was to the news of the epidemic in China. Most epidemics are simply handled behind the scenes and you do not necessarily know if they have even occurred.

95 I am asked whether the mortality rate for Covid-19 was considered to be low in January 2020. This was a subject of much debate. It was certainly low enough that some public debate was focused on whether it was similar to seasonal flu, yet it was high enough to kill tens of millions of people at a population level. Eventually it seemed to be roughly 3% at a population level. This is lower than Ebola which has a death rate of 70%, or Avian Flu which has a death rate of 50%. On the other hand, the potential hospitalisation rate was so high that it would have a huge impact on the effectiveness of national healthcare systems.

Pre-lockdown response

96 I was not involved at all in the Scottish Government prior to joining the Group on 2 April 2020.

97 I am aware that there was an overarching concern that it would be dangerous to have a second wave of Covid-19 in the winter. It was seen to be easier to manage an outbreak in the spring when the NHS is generally less strained.

98 Herd immunity is an approach classically used in vaccination campaigns. Generally, there is a small percentage of a population which cannot be vaccinated for health reasons. The idea of the strategy is that you vaccinate the "herd", which consists of around 80-90% of the population. This stops the virus from circulating as enough people have sterilizing immunity. Vaccinating the herd protects those who cannot get vaccinated. The general effect of this strategy is that the population as a whole acquires immunity and the disease is eliminated. This is how measles was dealt with as well as several other diseases. As vaccines provide sterilizing immunity, those that are vulnerable can be protected by those who are vaccinated.

99 Herd immunity was never an appropriate concept to apply to Covid-19. For one, it has never been applied in a context where there is no proven effective vaccine. Furthermore, it only works where one gains immunity after contracting the disease. With Covid-19 you can catch it on several occasions. The same communities can get hit with the virus over and over. It has simply never been a strategy for infectious disease control, where the focus is usually removal of the disease. I think it would have been a terrible idea to attempt a herd immunity strategy for handling Covid-19.

100 For example, in Brazil in Manaus around 60% to 70% of the population got antibodies from an initial Covid-19 wave. Despite this, the beta variant strain of Covid-19 ripped through the community again. There was a high death rate when beta spread through

the same community. It was clear re-infection was happening. I wrote about this in an article for Science with the title, 'Herd immunity by infection is not an option.' There was no emerging data to justify the use of an infection-driven herd immunity strategy. With infectious diseases such as monkeypox, the focus is almost always on elimination. In public health, we develop and implement scientific tools to manage diseases we have to live with and limit the disability and death impact.

101 I cannot comment on whether the Scottish Government adopted a herd immunity strategy as I was not involved in decision making at any point.

102 In my book I discuss super spreading events, such as at the ski resort Ischgl in Austria. Many of the early cases of Covid-19 in Europe can be traced to a single bartender at this resort. This means that super spreader events were very important to the initial spread of Covid-19. I do not know the specifics of the Nike conference in Edinburgh or the rugby matches at Murrayfield to really comment on those. I wasn't involved in the government at all or even knew about them prior to media coverage.

Testing

103 In Scotland we were quite late in instituting widespread testing and did not have the capacity to test at the rate we needed to. In contrast, South Korea was already contracting biotech producers on 2 January 2020 to produce tests.

104 My view from the outset was that regular and widespread testing was essential for preventing the spread of Covid-19. The testing subgroup will likely have minutes that capture Scottish testing capacity in March 2020. I don't know why Scotland was late in instituting widespread testing. We did debate in the SGCAG if testing mattered and how best to roll this out.

105 SARS was effectively eliminated using a test-and-trace-and isolation system. Whoever contracted it was identified and their contacts were immediately traced and put into isolation. This is however much easier with SARS as people who get it become very sick and seek medical assistance. In other words, those who are infected come forward whether voluntarily or involuntarily. The challenge with Covid-19 is the asymptomatic nature of it. People can go to their workplace without even realising that their carrying Covid-19. In contrast, SARS is a much more serious disease that has a 10% death rate.

106 The WHO released advice that countries ought to "test, test, test" in response to Covid-19. In my book I discuss how Jenny Harries, then deputy CMO for England, described this as being a method for countries poorer than the UK. I was very surprised when she said this. This suggested to me that there was a widespread belief in the UK Government that we would be able to treat our way through the pandemic. This was simply not going to be possible. As a result, we spent far too much time in the UK debating whether testing matters, instead of taking a proactive approach that it should be instituted and figuring out how to do it in communities. We seemed to follow the flu model, whereby you only test those who are in hospital. We continued following this model into spring 2020 and resulted in having to treat everyone as infectious (stay at home order for everyone) instead of precise public health (just asking those who were infectious to stay at home).

107 I believe I advocated for mass testing in all the meetings of the Group. This would be recorded in the minutes.

108 I agree that testing was vital given the asymptomatic nature of Covid-19. I was writing articles in the Guardian from early March 2020 regarding this. I have provided copies of these articles to the Inquiry.

Decisions in relation to Non-Pharmaceutical Interventions (NPIs)

109 I did not provide advice on any of the wider socioeconomic impacts of NPIs or how the public would react to them. There are many NPIs which are not lockdown, but they unfortunately have been seen as the same think. Scientific advice can estimate the likely impact in reducing transmission and infection rates of various NPIs. Economic advice can tell you the implications of adopting various NPIs. It's then up to politicians to decide how to weigh the various inputs. Overall, the socioeconomic impacts or public compliance with NPIs are not within my expertise and I cannot comment on either.

110 Our understanding of those most at risk from Covid-19 developed with time. Risk factors include age, gender, health status, occupation, socioeconomic status and race. The situation with children shows the evolving understanding. At the start of the first wave in Britain, there were indications that Covid-19 could cause multi inflammatory syndrome in children. This could result in children getting severely ill, but by the summer of 2020 we knew this was a minimal risk. I discuss this in detail in my book Preventable. However, in the summer of 2020 long-Covid also became an issue. There was little discussion about possible long-term morbidity from COVID-19, long-Covid, before we received information that people were simply not recovering from

infections of Covid-19. This early information came from the United States, Sweden, and Britain.

111 Our understanding of the asymptomatic nature of Covid-19 did not really develop as we knew from the outset this was the case. The evidence we had of this was from the spread on the Diamond Princess Cruise ship in February 2020 and from Lancet articles in late January 2020. This also confirmed the risks of Covid-19 being an airborne disease.

112 I do not know what the specific Scottish Government rationale and strategy was for the use of face coverings. However, my view is that the efficacy of face coverings was debated for far too long. It was obvious that they were effective as surgeons have used them in clinical settings for decades, and construction workers have used them on building sites for a long time as well. Whether it was proportional to be mandated in public settings had to be balanced against other factors. For example, within the children subgroup we knew that it was very important for young children's development that they needed to see faces. Yet we also knew that masks are indeed effective if used correctly (covering mouth and nose). Our team did research on this in detail for the DELVE study on face coverings. [DS/001 - **INQ000282378**].

113 In April 2020 one of the German states mandated mask wearing. There was high compliance and it reduced transmission to almost nothing. People were very willing to do it. In contrast, in the UK whether or not you wore a mask too often became a sign of personal freedom and how seriously you took COVID-19 individually.

114 There maybe should have been a more acknowledgement that some people really did not like wearing masks and considered it a major infringement on personal freedom. I am speaking of the discourse as a whole and it was not my role to communicate this as part of Scottish government.

115 I do not know how NHS capacity informed the Scottish Government's strategy regarding NPIs.

116 In terms of school closures, to begin with in March and April 2020 there was a concern that children could become seriously ill due to Covid-19. New York City and Lombardy were reporting a tenfold increase in children coming in with a Kawasaki-like syndrome several weeks after exposure to SARS-CoV-2; this research was published in the Lancet in May 2020. This is quite a serious disease including cardiac arrest and admission to ICU. This led to concerns in countries across the world that children could

be severely affected by COVID-19 if it wasn't contained. There was also the added concern of transmission in household members of children, and occupational risk to teachers and schools staff. The school closure NPI had to be balanced against requests from unions for adequate PPE and safety in schools along with the wider impact that transmission could have on the NHS.

117 It should be recalled that in August 2020 schools in Scotland went back to full-time return. This was considered revolutionary on a global scale and I wrote a Scotsman article saying as much in August 2020. New York State had virtual learning in schools until the spring of 2021. Kerala State in India closed its schools until the autumn of 2021. Scotland was able to re-open schools fully and in-person because at the time there were very low infection rates in July and August 2020. Schools were able to go back without whole classrooms becoming infected with the original SARS-CoV-2. This changed with the alpha and omicron variants which were much more transmissible.

118 The overall imperative was to get children back into full-time, in-person, learning. But ensuring the virus wouldn't badly affect children was vital. There is a very low public tolerance for children dying or being admitted to ICU.

119 Children and young people had a specific subgroup. The advice from the subgroup is available in the minutes of the group.

120 I understand that the definition of those medically vulnerable to Covid-19 were those more at risk of hospitalisation and death. I do not recall the group being asked to define who should be included.

121 I provided advice on shielding on one of the Deep Dives. My view was that the best way to protect vulnerable people was to keep transmission at a low level. It's practically impossible to separate 'the healthy' from the 'vulnerable' because the vulnerable live in homes with 'healthy' people, they rely on 'healthy' people for care and support, and many people don't even know they're vulnerable until they get sick and realize they have an underlying health issue. People often refer to Sweden as an alternative model for shielding, but they had a huge care home death toll. They admitted that shielding care homes didn't work. I talk about this in my book Preventable.

Decisions relating to the first lockdown

The imposition of the national lockdown in March 2020

122 Stronger NPIs in place at an earlier stage could have prevented the spread of Covid-19. With Covid-19, the general rule was the longer you wait, the larger the wave and the longer it takes to bring down transmission and infection numbers.

123 A lockdown is akin to a national emergency button being pressed. It is difficult to say whether this was appropriate when it was instituted in March 2020. Frankly, by this stage there was little other choice to prevent the NHS being overwhelmed. It is important to consider what would have occurred had the NHS been overwhelmed by too many people being admitted to hospital with Covid-19 symptoms. The lack of hospital capacity means people would have been turning up to hospital and not receiving care. This is not just for groups vulnerable to Covid-19. For example, relatively healthy people in their 30s could have died as they would not have had access to something as basic as oxygen. People may also have struggled to get treatment for unrelated health issues, such as heart attacks and emergency surgery. There would not have been enough doctors or nurses available and it would have been a survival of the fittest chaotic result. This happened in Jordan, Brazil and India and in many countries across the world which saw real-time healthcare collapse with COVID-19. The UK would have been left with the healthcare system akin to that of a poor, failed state. By the time the national lockdown was implemented in late March 2020, this was probably the only strategy available to keep the NHS afloat and contain the spread of Covid-19.

124 Lockdowns are effective in that they reduce infection. The purpose is to reduce the number of contacts that a person has. They do however have economic and societal harms. In the UK, there was no testing infrastructure and no widespread buy-in for mask wearing. No preparation was done for containment like the measures taken in East Asia. The decision was then just made to make the emergency lockdown response. I was not involved in the making of that decision or gave any advice regarding it. I found out about the lockdown along with everyone else via the news. I do not know whether the lockdown was “inevitable”, and "lockdown" can have different meanings in different places.

125 There should have been more aggressive suppression in Scotland in the beginning of March 2020, but this would have had to be a UK-wide approach. Scotland could not have successfully acted alone because of the limits on its powers: it’s not a country with full control over what it does. There should have been community testing linked to isolation and tracing, widespread adoption of face masks, a strategy to limit infections in airports such as testing, and communication regarding necessary behavioural

changes. The fates of all four UK nations were tied together and it would not have been possible for each to go in different paths. I do not know what advice was provided to the Scottish Government about this at the time.

126 While I consider that interventions should have been adopted at an earlier stage, I appreciate that it was unlikely the Scottish Government had the powers to do so given that science, finance and borders are reserved powers to UK government.

127 I do not think it would have been possible to simply shield the most medically vulnerable. The million dollar question was how to suppress the virus without a national lockdown. In my view, countries that were successful used precise public health policies. South Korea had intensive IT systems which allowed them to track and isolate those carrying Covid-19. New Zealand completely closed its borders. Denmark adopted mass testing as well as re-opening schools quickly using large venues such as conference centres. Japan used cluster-busting and masks. I discuss all of these in my book Preventable. To be clear, all of these options have trade-offs. There was no perfect path: just various paths with different outcomes. Overall, the best way to protect people was through a vaccine and containing until mass vaccination.

128 I do not know what the Scottish Government's lockdown exit strategy was in March 2020.

129 In January 2020 over 100 teams around the world started to develop a vaccine for Covid-19. By March 2020 early trials had come through showing that some were working. By the summer of 2020, advice given to governments was that we knew there was going to be a vaccine, if not several, that were going to work, which is why they were purchased in bulk.

130 I never had any concern that there would be sufficient vaccines for the Scottish population. The UK Government was ordering a huge amount of vaccines. Scotland's requirements were really a drop in a bucket compared to a country like India.

131 In terms of treatments the first patients went into trials in March 2020 and then results started to get released. There was an incredibly steep learning curve as to what was clinically effective.

Continuation of the first lockdown

132 In my interpretation, "Zero Covid" does not equate to literally no cases of Covid-19. Rather, it refers to maximum suppression. I said this in my Guardian columns at the time (summer 2020). In the summer of 2020, as a result of widespread surveillance and testing, Covid-19 was basically non-existent in Scotland and genetic sequencing research by colleagues at the University of Edinburgh shows that the early strains of SARS-CoV-2 were eliminated within Scotland before new strains were imported in August 2020. There were an incredibly low number of daily recorded cases, around four or five a day. We could also see that other countries had practically or completely eliminated Covid-19 and their economies were doing quite well too.

133 By the summer of 2020 we knew there was going to be a vaccine within months. We had to consider what restrictions should be kept in place until the vaccines could be rolled-out. Going into the autumn, we wanted to avoid a surge in cases by keeping transmission as low as possible in the summer. The overall goal would be to contain Covid-19 until there was widespread availability of a vaccine. This was not an unrealistic goal and was managed by countries like South Korea, Japan, Vietnam, Thailand, New Zealand, Australia, Iceland, Denmark and Norway.

134 I am asked about a series of policy decisions made by the Scottish Government in April and May 2020. I was not involved in providing direct advice to Scottish Government decision makers. I refer to minutes of the Group for what we were asked to consider during this period of time.

135 A main lesson from the first period of lockdown was that vulnerable and at risk groups were going to be the worst affected by Covid-19. This was both in terms of the direct symptoms of Covid-19 and the indirect impact of NPIs.

136 We also learned during this period that it was possible to contain Covid-19. There were measures that worked to contain it until a vaccine could be developed. We also learned about how deadly the virus was. Despite the tight restrictions, there was a very high death rate during this period and the NHS was under a huge amount of pressure.

137 A final lesson was that the Scottish public were very compliant with the restrictions. When it was clearly explained to the public why these measures were being taken, compliance tended to be high.

Decisions relating to easing the first lockdown in the period from 29 May 2020 to 7 September 2020

138 I am asked about a series of policy decisions made by the Scottish Government from 29 May 2020 to 7 September 2020. I was not involved in providing direct advice to Scottish Government decision makers. I refer to minutes of the Group for what we were asked to consider during this period of time.

139 I only learned about the "Eat Out to Help Out" scheme after it had been publicly announced by the UK Government. The Group was not consulted about it. At thetime this scheme was introduced, Scotland was virtually free of Covid-19. I refer to my previous comments about the level of infection within Scotland by the summer of 2020.

140 "Eat Out to Help Out" undoubtedly had an effect of increasing transmission of Covid-19. There were less risky alternative methods that could have been used to support the hospitality sector, such as subsidising outdoor dining or takeaways. I do not know what medical or scientific advice regarding transmission rates was provided to UK Government decision makers in creating the scheme.

141 The elimination path describes keeping Covid-19 infection rates as low as possible by aiming for maximum suppression. Many countries adopted this approach. Genetic sequencing was undertaken by a team at the University of Edinburgh found that strains of the first wave of Covid-19 had effectively died off by the summer of 2020. A major cause of the second wave was the resumption of travel, with tourism and students returning to university. As soon as people move, the virus moves.

142 On 30 June 2020 I was quoted in an article titled "Scotland could eliminate coronavirus if it were not for England" [DS/002 - INQ000282430]. In this article, I offered my opinion that there seemed to be two different approaches to managing Covid-19 in England and Scotland. The Scottish strategy seemed to aim for maximum suppression while keeping cases of Covid-19 at really low levels. England's approach appeared to be to keep Covid-19 within NHS capacity and try to get back to normality as soon as possible. In other words, Scotland was looking to suppress Covid-19 until a vaccine was available, while England seemed to be focused on how to live with Covid-19 before mass vaccination.

143 It is important to recall that by the summer of 2020 the vast majority of people in Scotland had not been infected with Covid-19. There were only around 5% of the population with antibodies. Comparatively, today around 99% of people in Scotland have Covid-19 antibodies in their systems as a result of infection and the vaccines. This meant that in the summer of 2020 95% of the Scottish population had yet to be

infected with Covid-19: uncontrolled spread would have undoubtedly resulted in an extremely high death toll.

144 On 21 October 2020 the Scotsman published my article "The next four months might be the hardest of your life" [DS/003 - INQ000282431].In writing this article, I was trying to prepare the public for a difficult winter. While we knew that vaccines would be getting rolled-out in the next few months, this would not be until the New Year. The rates of Covid-19 infection were increasing and the health system is usually under pressure during the winter. We also knew that the public's behaviour changes in the winter, with more people staying indoors, using public transport and closing windows and doors. I felt it was necessary to prepare the public for the fact that while the pandemic would eventually be over, this was not going to happen over the next few months.

145 I do not know what steps the Scottish Government took with regards to managing the border with England. The problem with the land border applies to any international boundaries. It is not possible for a population to be on the same island and have different approaches to Covid-19. For example, Northern Ireland was more affected by the infection rates in the Republic of Ireland than the rules in the rest of the UK.

146 I previously mentioned that the resurgence of Covid-19 cases in Scotland in the autumn of 2020 can be partly assigned to the return of travel. This led to the importation of a new strain of Covid-19.

147 Another factor was the return of in-person teaching in schools. This was not so much through infection of pupils (though this became a factor during the Omicron variant). Rather, the reopening of schools led to more adults mixing with each other. Partly this involved teachers and parents mixing with each other at the schools themselves. Having children in school allowed parents to return to their workplaces, which increased the opportunities to become infected. I do not know whether the return of travel and school reopening could have been prevented as I was not involved in the decision-making process.

148 During this period, it would have been ideal if there was a more coherent approach between managing the virus between Scotland and England. There should have been greater clarity of what the aim of Covid-19 policies were. For example, if the UK Government's goal was to restore normality to people's lives and communicate that 'COVID is over', then the "Eat Out to Help Out" scheme successfully encouraged people back to indoor hospitality. The cost was spread of COVID_19, and increased

hospitalisations and deaths. However, if the UK Government's goal was suppress Covid-19 until a vaccine, then the scheme undermined this by increasing transmission rates.

Decisions relating to the period between 7 September 2020 and the end of 2020

149 I am asked about a series of policy decisions made by the Scottish Government from 7 September 2020 and the end of 2020. I was not involved in providing direct advice to Scottish Government decision makers. I refer to minutes of the Group for what we were asked to consider during this period of time. The minutes will also include any discussions we had regarding the Alpha and Delta variants. I believe these minutes have already been provided to the UK Inquiry by the Scottish Government as part of Tranche 6.

150 The main lesson I learned during this period was that variants of Covid-19 were emerging quite quickly. We expected mutations, but it was unclear when this would happen and what the variants would do. Delta was certainly more severe, leading to an uptake in hospitalisation and death rates. Mutations also impacted the effectiveness of the vaccines.

Decisions relating to the second lockdown (January 2021 to 2 April 2021)

151 I am asked about a series of policy decisions made by the Scottish Government from January 2021 to 2 April 2021. I was not involved in providing direct advice to Scottish Government decision makers. I refer to minutes of the Group for what we were asked to consider during this period of time.

152 The Great Barrington Declaration was published in October 2020. This document got a lot of attention and I believe some of the signatories provided briefings to the UK Government. I can understand the interest it received as it was effectively proposing living with Covid-19 without any death or any restrictions. It provided false hope that there was an easy solution to the pandemic instead of grappling with how to manage a deadly infectious disease which spreads among people. I did consider the document to be a massive distraction as it was entirely theoretical and not based on practical data or real-world public health experience.

153 I am not aware of any place in the world that adopted the recommendations of the Great Barrington Declaration. The U.S. State of Florida was probably closest to putting into practice what the document advocated for. I would describe the policy of the State of Florida as essentially to privatise the response to Covid-19. Responsibility for

managing Covid-19 was transferred from the State to the public. This led to a huge amount of uncertainty and private sector restrictions. For example, businesses would shut or require customers to wear masks due to concerns over COVID-19, even if there was no state mandate. Members of the public were also reluctant to resume economic activity without any protections against Covid-19. In terms of the health outcomes of this measure, death rates in Florida were considerably higher than the equivalent U.S. State of California, which had more rigorous restrictions. The economic cost was also high in Florida due to changes in consumer and business behaviour.

154 Supporters of the Great Barrington Declaration approach point to the relatively lighter measures adopted by Sweden. For one, the Swedish death rate was significantly higher than comparable Nordic countries. In addition, lighter measures did not demonstrably benefit the Swedish economy, which was as badly affected as comparable Nordic countries.

155 In any event, Sweden cannot be compared to Scotland or the UK. Scotland and the UK have much higher obesity rates and chronic conditions in the population. Sweden has a strong sick benefit system and roughly 40% of people live in single households meaning household transmission is limited.

156 The frustrating thing about the Great Barrington Declaration is the amount of attention it received and the confusion it caused in the public that there was a magical path to normal life with no restrictions and no illness. In contrast, countries like South Korea, Japan and Norway accepted there was a serious virus and took steps to minimise the spread while keeping society open as much as possible. I consider their policies were appropriate and successful, and that we could have learned from them.

157 The main lesson I would take from the first lockdown was that delaying it ultimately resulted in a longer period in lockdown.

158 Any discussions the Group had regarding the policy measures from January to April 2021 will be found in the minutes. Copies of minutes and advice have already been provided to the Inquiry by the Scottish Government.

159 I recall the goals of the second lockdown were to preserve the functioning of the NHS and buy time for a full roll-out of vaccines. I do not know whether it can be said that the second lockdown was successful as a lot of people died during this period.

160 The lesson I learned from the second lockdown was that there had to be an end to restrictions and an exit to the emergency phase of the pandemic. People needed to know restrictions would end. We were also able to find out that vaccination was very successful at reducing hospitalization and death rates. Vaccination was the game-changer in the pandemic.

Decisions relating to the period between April 2021 and April 2022

161 I am asked about a series of policy decisions made by the Scottish Government from April 2021 to April 2022. I was not involved in providing direct advice to Scottish Government decision makers. I refer to minutes of the Group for what we were asked to consider during this period of time.

162 I first received information about the Omicron variant in November 2021. I received this from the WHO which provided regular updates of interest regarding Covid-19. It was known to be an incredibly infectious variant and South African scientists provided the first information.

163 I refer to the minutes of the Group for any consideration we gave to restrictions in response to the Omicron variant. Copies of these minutes have already been provided to the Inquiry by the Scottish Government.

164 I learned during this period that we were going to be living with Covid-19 so the challenge for public health was to learn how to lower the impact it had and how it would layer on top of the other causes of disability and death.

Care homes and social care

165 I am asked about the Scottish Government strategy in relation to care homes. I was not involved in providing direct advice to Scottish Government decision makers. I also cannot recall the discussions regarding care homes which were held by the Group. I have been advised that discussion and advice regarding care homes was provided on 6 June 2020 and 17 July 2020, documents pertaining to these meetings and subsequent advice have already been provided to the Inquiry.

166 I only joined the Group on 2 April 2020. I cannot comment on any policies or advice prior to this date.

Borders

167 I am aware that external borders are a reserved matter so do not know what the Scottish Government strategy was with regards to this.

168 Regarding internal borders, I learned that these are very difficult to manage. I do not know how you can enforce land border control.

COVID-19 public health communications

169 I cannot recall myself or the Group being asked to consider Scottish Government public health communications. The CMO and the National Clinical Director took charge of this. I was never asked to present publicly on behalf of the Group or the Scottish Government.

170 The primary challenge in presenting data and scientific information throughout the Covid-19 pandemic was the great deal of uncertainty regarding the effects of it with regards to symptoms. This was constantly evolving over the course of the pandemic. We also did not know when the pandemic would be over. I went regularly on TV and radio programmes, wrote in newspapers and answered questions by journalists about the latest data and scientific knowledge.

171 I do not feel I have sufficient communications expertise to comment on whether the Scottish Government was producing messages that promoted public confidence.

172 I do not know what the Scottish Government did to combat misinformation. I am aware that some social media platforms did try to remove posts with false information about Covid-19.

173 I recall signing some kind of code of conduct regarding our behaviour, but I do not recall this changing.

174 In my book "Preventable" I discuss the so-called "Cummings effect" [DS/004 - INQ000282459]. There was data which suggested that willingness of the public to comply with NPIs dropped after revelations emerged regarding Dominic Cummings' visit to Barnard Castle. The data showed that there was a steeper drop in willingness to comply in England compared to Scotland and Wales. This data emerged from a University College London paper which was published in the Lancet on 6 August 2020. I have provided copies of correspondence between myself and Chris Whitty regarding these breaches [DS/005 - **INQ000282435**].

175 Dominic Cummings refused to resign following these revelations. In contrast, Catherine Calderwood immediately resigned as CMO after revelations emerged of her breaching NPIs.

176 I am not aware of any data that has been produced regarding public reaction to the actions of Catherine Calderwood, Margaret Ferrier or the First Minister, so cannot comment on these.

177 As I have mentioned, public communications are not my area of expertise. My impression is that the Scottish Government daily briefings were effective and people seemed to tune in to them. I also think it was effective to have senior clinicians answering questions about science. The biggest problem in public communication was online misinformation.

178 I do not know what can be done about online misinformation. It can be very difficult for online users to differentiate between the truth and falsehood. This is a problem that every country faces.

Public health and coronavirus legislation and regulations

179 The Group and I were not involved in the drafting of any legislation or regulations. I cannot recall the Group or I being asked for an opinion as to how legislation or regulations should be drafted.

180 The Group was asked to consider the science on a macro scale. We did not consider the micro aspects, such as household mixing policies. This was the job of the civil servants.

Key challenges and lessons learned

181 I am asked for documents insofar as they relate to the discharge of my duties as chair of the Group. I am unable to do so as I was not chair of the Group.

182 Within my own capacity, I did provide oral evidence to the UK Parliament Health and Select Committee and the All-Group Select Committee. I also provided oral evidence to the Scottish Parliament Committee on Covid [DS/006 - INQ000282432].

183 In my role in the Group, I did not participate in any reviews or lesson learned exercises.

184 I am unable to identify the key issues and junctures in the decision-making process. The Group and I were several steps removed from the final decisions. This means I am unable to comment on what the key challenges were for decision makers.

185 I do not know if other members of the Group were involved in any lessons learned exercises. If they were not, I do not know why.

186 I was happy to serve on the Group as I am passionate about my work in global public health and I felt I had the correct expertise to contribute to a more effective response. However, it did come at a major cost. All members of the Group contributed a significant amount of time on a pro bono basis. I also have been subject to public abuse, death threats and online conspiracy theories.

187 I honestly do not know whether I would serve on such a group again. Participation might be easier if it is done so on a private basis with no media engagement or communication with the public (similar to how SAGE members were initially not publicly named), but I do feel that the purpose of being on such a group is that you engage with the public to explain the current scientific thinking and that transparency is important.

188 I think there was a meeting of the Group where we were asked to provide feedback by the Scottish Government. This will be included in the Group's minutes.

189 The key themes of evidence I have provided to parliamentary committees were regarding infectious disease management, preparedness and response.

190 I do not feel I can comment on how core decisions were made by the Scottish Government as I was removed from this process.

191 I make several recommendations in my book "Preventable" about best practice for policy makers to respond to the pandemic. These are intended as lessons for all countries and not just Scotland.

192 My recommendations include having an effective system for surveillance, having good data systems that can be accessed and shared, adequate PPE for health workers, strong international links for information, and good pandemic planning so that we can keep essential parts of society functioning in a safe way (like keeping schools open). Ongoing investment in scientific research is required. These are just a few of many I've listed in my book and Nature publications on the topic.

193 I understand that recommendations which would improve the Scottish Government's response to a future pandemic are forming part of the interim report of the Standing Committee on Pandemic Preparedness [DS/007 - INQ000103004].

194 The terms of reference for the Group are provided [DS/008 -INQ000217419]. I think the Group worked well in achieving what it was meant to do in these terms of reference. There was a good balance of experts on the Group and very different opinions were aired. Indeed, I was surprised I was even invited as a member as I know I am capable of being very critical and speaking 'truth to power' which can make politicians uncomfortable.

195 I have submitted what I consider to be all key emails in relation to the testimony provided here.

196 I was not a member of any informal or private communications regarding the Scottish Government's response to Covid-19.

197 I am not aware of any diaries or notes that I still have. I have thrown away or destroyed all of my notes.

198 The Scottish Government should have copies of any advice notes I drafted or contributed to. We have already provided the Inquiry with all the advice provided the Covid-10 Advisory Group.

199 I wrote several articles for the Guardian and Scotsman throughout the pandemic which are provided here in documents.

Statement of truth

200 I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by statement of truth without an honest belief of its truth.

Personal Data

Signed ……

Dated ……**25 October 2023**……