

Witness Name: Professor Andrew Morris

Statement No.: 4

Exhibits: AM3

Dated: 14 November 2023

## UK COVID-19 INQUIRY

---

### WITNESS STATEMENT OF ANDREW DAVID MORRIS

---

**In relation to the issues raised by the Rule 9 request dated 22 August 2023 in connection with Module 2A, I, Andrew Morris, will say as follows: -**

1. I am Andrew David Morris of Personal Data For the past nine years I have been an employee of the University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL, where I hold the positions of Professor of Medicine and Vice Principal, Data Science. Since August 2017 I have been seconded part time to be the inaugural Director of Health Data Research UK (HDR UK), the national Institute of health data science. HDR UK is a limited company and charity registered in England and Wales under company number 10887014. Its registered office is at 215 Euston Road, London, England, NW1 2BE. I was previously seconded to act as Chief Scientist (Health) for the Scottish Government 2012-2017. On 16 March 2020 I was appointed as Chair of the Scottish Government Covid-19 Advisory Group (C19AG). I am not an employee of the Scottish Government and all contributions during the COVID-19 pandemic in my role as Chair of the C19AG were voluntary and additional to my other professional responsibilities.
2. In the preparation of this statement, I have referred to records and material provided to me by the Scottish Government. I have also received assistance from the Scottish Government Covid Inquiry Response Directorate and external solicitors instructed by the Scottish Ministers have taken parts of my statement via interview and reviewed this. I have also received assistance from the Medical and Dental Defence Union of Scotland. Due to the significant volume of questions and material that the Inquiry has asked me to consider, I have referred to documents and factual information provided by the Scottish

Government C19AG Secretariat to assist me. However, any views or opinions expressed in this statement are my own.

3. I was the Chair of the Covid-19 Advisory Group (C19AG). In previous correspondence, the Inquiry has referred to this as the Scottish Government Covid-19 Advisory Group, or SGCAG, however, I will refer to the group throughout this statement as C19AG.
4. This is the fourth Witness Statement I have provided to the UK COVID-19 Inquiry. The previous submissions are for Module 1 [INQ000185353 dated 05 May 2023]; Module 2/2A [INQ000056491 dated 17 October 2022] submitted in my role as a participant of SAGE (UK Scientific Advisory Group for Emergencies); and a Scottish Government Corporate Statement [INQ000215468 dated 23 June 2023] that was signed by me as the independent chair of the C19AG.
5. I have answered the questions put to me by the Inquiry to the best of my ability. There are three areas where I am unable to answer the questions posed; (i) the question falls outside my remit as Independent Chair of the C19AG; (ii) the question falls outside my area of expertise; and/or, (iii) the events I am asked about took place before I took up my post as Chair of the C19AG. There are also several questions posed by the Inquiry on which I am not best placed to provide views on as I had no part in the decision-making process of the Scottish Government. I have completed Annex D of the request indicating the areas I am not able to answer.
6. 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.
7. References to exhibits in this statement are in the form [AM3/000 -INQ000000].

**A. Sources of advice: medical and scientific expertise, data and modelling**

**a) Your roles and responsibilities**

8. I have provided information on my career to date in the previous witness statement, but will provide more information, as requested, to inform the Inquiry of the areas which qualified me to sit on the C19AG. I am a medical doctor. I graduated from the University of Glasgow in 1987 and pursued a career in hospital medicine as a physician in Scotland (1987-1988), and Cornwall (1988-1990). Having passed my professional diploma qualification (MRCP), I trained in diabetes and endocrinology and clinical pharmacology as a university clinical academic. Initially this was at the University of Glasgow (1990 to

1994) and then at the University of Dundee (1994 to 2014). In Dundee I was appointed as a Consultant Physician in NHS Tayside (1996) as well as Professor of Medicine (2004) and latterly the Dean of the Medical School at the University (2012).

9. In 2014 I moved to the University of Edinburgh as Professor of Medicine and Vice Principal Data Science, and an Honorary Consultant Physician in NHS Lothian. My area of research interest has been in health data research since 1996. Initially in diabetes, I built multi-professional teams who used information technology and data science to provide near real time intelligence for the care of every person living with diabetes in Scotland (n=400,000). Data science brings together expertise in mathematics, statistics and computational science to apply it to a specific domain. In this circumstance the domain is clinical medicine and patient care. My research aim is to harness health data science to (i) optimise patient care; (ii) support population health management; (iii) improve efficiencies of clinical trials; (iv) support NHS planning to improve productivity; and (v) research and development. My research that has harnessed health data has contributed to over 350 publications that have been cited over 90,000 times and had a major impact on improving the outcomes of people living with diabetes and other common diseases.
10. Following competitive appointment, I was seconded to the Scottish Government as Chief Scientist (Health) for three days a week from my employer, initially the University of Dundee, and latterly the University of Edinburgh, from 2012-2017. Health data science in Scotland was a key focus during my tenure, and I led programmes that used data in a trustworthy way for the 5.2M citizens of Scotland. In that role I was also a member of the Health and Social Care Management Board of the Scottish Government. I stepped down from the position of Chief Scientist (Health) in August 2017 when I was appointed, following a competitive international search, to be Director of HDRUK.
11. I remain an employee of the University of Edinburgh and seconded to HDR UK. I have served and chaired numerous national and international grant committees and Governmental bodies.
12. I was previously Governor of the Health Foundation (2009-2017), a leading UK charity that supports quality improvement in health care, and I chaired the Informatics Board at UCL Partners, London (2014-2017). In 2007 I co-founded Aridhia Informatics, which uses high performance computing and analytics in health care. I am a Fellow of the Royal Society of Edinburgh and the Academy of Medical Sciences.

13. HDR UK is a research Institute. Its mission is to unite the UK's health data to enable discoveries that improve people's lives. It is supported by 12 research funders including the Medical Research Council, Wellcome, Cancer Research UK, British Heart Foundation and health research departments in the devolved administrations. In its first five years it has built on its £53 million of core funding to reach a total of £250 million in funding for its work. I also convened the International COVID-19 Data Alliance (ICODA) funded by the Bill and Melinda Gates Foundation and the Minderoo Foundation which coordinated COVID research across 19 countries, and am a member of the JBC (Joint Biosecurity Centre)/UKHSA Data Science Advisory Board. HDR UK is a "virtual institute" and works with 38 Universities and research institutes across the UK and ~80 NHS, charity and public sector bodies.
14. To deliver its mission, HDR UK focuses on (i) the assembly of UK-wide data infrastructure and services for health data research so that data from different sources can be linked and analysed in a secure and trustworthy way; (ii) using data to perform UK-wide research through a set of flagship projects; and, (iii) working in partnership across the UK and internationally so that data is used at scale for research that is beneficial to the public and improves lives.
15. This work has been recognised by an international peer-review panel convened by the MRC and other funders in 2022 as "establishing itself within a complex UK landscape and as an international leader in the health data research field" [AM3/002 – INQ000326315]. It is this experience spanning health system design, health policy, patient care, and biomedical health data research which qualified me to contribute to the C19AG.
16. The UK is in a unique position to realise the potential of health data, thanks largely to the NHS and its cradle-to-grave records for a population of over 65 million people. However, safe and secure access to this data for researchers is often a lengthy, fragmented process, meaning the potential for improving healthcare is not being realised in full. It can take two years or more for researchers to find, safely access, link and wrangle data from different places into a workable state they can then use for analysis to give new insights. This arduous process serves no one, least of all patients. This is the problem that HDR UK is trying to solve, in partnership with the NHS, universities, charities, industry and regulators. Current data assets that are necessary for research in health care and biomedicine are often poorly documented and siloed. For example, in the NHS, health data relevant to research are held in operational systems controlled by national bodies (e.g. NHS England, UK HSA, PHS (Public Health Scotland)), regionally (e.g. in NHS Trusts) and locally (e.g. GP practices). In addition,

data relevant to a pandemic response may be held by other public bodies (e.g. Office for National Statistics (ONS)) or academic institutions. There is often a lack of standardisation of the data. It can also be very difficult to access and to link data to follow patients across the health and social care system which is essential for research. If the UK is going to succeed in being a world-leader in pandemic preparedness, it needs to ensure that the underpinning data landscape is FAIR – Findable, Accessible, Interoperable and Reusable - so that the operational teams can use the data to optimise care delivery, and the academic research community can help play a crucial role in generating new knowledge needed to overcome the crisis. This “plumbing” or “wrangling” of the data is hard. Most researchers or organisations have not approached it in a systematic, scalable, reliable, secure, and sustainable way. That is the purpose of HDR UK – to work with organisations across the UK to develop standard approaches and methods to “sort the data” so that the technology infrastructure, governance infrastructure and data infrastructure are fit for purpose to enable research, whilst ensuring privacy and confidentiality.

17. HDR UK is a young organisation and in 2018 it had to decide on a small number of research priorities. In January 2020 it did not have a major focus on the use of data for research on infectious disease or pandemic preparedness. However, at the beginning of the pandemic, it was clear that there were going to be major data access and data engineering challenges, especially across organisations if the research community was to be supported to contribute to the pandemic response. HDR UK was well placed to play a role in this. There were excellent examples of individual surveys or studies during the pandemic, such as the ONS Covid Infection Survey, REACT and the VIVALDI Study, and situation report (“sit rep”) systems developed in the NHS by NHS England, UK HSA and others but no systematic way to make UK data relevant to the pandemic “FAIR” for the purposes of research. We did not know where data were, who had access to datasets and even when datasets existed. Governance arrangements to enable rapid access for research did not exist. HDR UK published a “COVID Data Strategy” on 20<sup>th</sup> March 2020 [AM3/003 – INQ000326316] and [AM3/003a - INQ000326317] to outline how access to data for research might be improved.
18. When I was invited by the Chief Medical Officer (CMO) on behalf of the First Minister to act as independent Chair of the C19AG, I had no official role within Scottish Government. I am not a virologist or an expert in infectious disease, immunology or modelling but have a good understanding of medicine and health care delivery in my

clinical role as a doctor and consultant physician. My understanding as to why I was invited to chair the group is:

- A track record of chairing interdisciplinary groups: the scientific response to COVID required bringing together expertise, sometimes for the first time, that spanned expertise in, amongst other areas, immunology, infectious disease, diagnostics, therapeutics, vaccines, public health, behavioural science, modelling, epidemiology, clinical trials, genetics and health care delivery. In my career I have chaired many groups and panels that required seeking consensus across a broad range of disciplines and views, and then synthesising key points for different audiences, including policymakers, health care professionals, and the public.
- Networks: in my previous role as Chief Scientist in Scotland and more recently in other roles at the University of Edinburgh and HDR UK, I have developed strong networks across policymakers, academia, NHS leaders, industry and the third sector in Scotland and across the UK. I also have good international networks, with research collaborations spanning four continents. I therefore had a broad view of the research landscape.
- Independence: my understanding was that the Scottish Government wished to have an independently chaired advisory group. The terms of my appointment protected my independence as I continued to be an employee of the University of Edinburgh. I was not remunerated by the Scottish Government at any time in my roles as Chair of the C19AG. As Chair of the Scottish Government Standing Committee on Pandemic Preparedness (SCOPP) I have been “sub-seconded” and a payment of £1,248.06 was made to the University of Edinburgh (10 hours of my time from May 2022 to May 2023). I have received no personal remuneration.
- Equanimity and imperturbability: in the volatility, uncertainty, complexity and ambiguity of a global public health emergency it was important not to be excited or upset and to strive to remain calm and composed.

19. After I was telephoned by the CMO for Scotland to invite me to act as an Independent Chair for the C19AG on the 16<sup>th</sup> March 2020 [AM3/004 – INQ000326318], Sir Patrick Vallance telephoned me at home to invite me to become a SAGE participant. We discussed the importance of the emergent science being “joined up” and that partnership working between scientific advisory bodies was essential across the four nations of the UK. Participation in SAGE also enabled me to highlight the fundamental

challenges that we faced with the UK's research data infrastructure that needed to be addressed if the UK was to respond rapidly to perform analyses of the evolving pandemic and guide responses using the best available research, evidence and data. I was thus able to contribute to SAGE not only in my role as Chair of C19AG but also using my experience as Director of HDR UK. I attended 63 SAGE meetings (as a participant in 46 meetings (between SAGE 20 and SAGE 79); and an observer in 17 (between SAGE 80 and SAGE 103)). The minutes of those meetings are available on the UK Government's website and the Inquiry has been provided with these.

Following SAGE discussions, HDR UK worked in partnership with members of the UK Health Data Research Alliance to present a paper to SAGE on the 14<sup>th</sup> of April 2020. [AM3/005 – INQ000326320]. It proposed a systematic way of bringing together the data science research community across the UK to ensure coordination and connectedness of the academic and research community response to the pandemic. As noted in my statement of 17<sup>th</sup> October 2022 [AM3/006 – INQ000056491], our intention was to build a UK-wide community of interest of both data custodians and researchers.

20. HDR UK worked with researchers and health data custodians across the UK and held meetings daily. The Institute also worked in partnership with the National Institute for Health Research (NIHR) and UK Research and Innovation (UKRI) and other partners to (i) convene a large, diverse UK interdisciplinary research community with expertise in data science; (ii) make large complex datasets available to enable research studies that were able to inform policymakers and the pandemic response; and (iii) work with the public to prioritise research questions relevant to the pandemic response. The UK through NIHR, UKRI, COG-UK and other programmes delivered an important portfolio of programmes that were of national and international importance and were effective in assisting the pandemic response.
21. Thus, HDR UK worked with its partners to ensure that the expertise needed to make diverse health data available for was made available as rapidly as possible and directly informed the pandemic response. Activities included:
22. **Bringing together the community** – HDR UK convened 36 weekly/fortnightly COVID-19 task force calls (chaired by myself) on Tuesday evenings at 8pm with 183 clinical and research health data leaders invited to each meeting with the aim of bringing the community together in an informal forum to discuss emergent scientific issues. These lasted for about 30-40 minutes and comprised brief updates on (i) status of the pandemic; (ii) UK-wide data infrastructure and research studies (the openly published

HDR UK SAGE report, an example has been provided) [AM3/007 – INQ000326319]; and (iii) hot scientific topics or guest speakers. These meetings were open, inclusive, involved public representatives and regularly attracted 100 people from across the four nations. Guest speakers included Professor Susan Hopkins, Professor Sir Chris Whitty, Professor Sir Jeremy Farrar and Sir Patrick Vallance.

23. **Communication** - HDR UK set up SLACK channels (a cloud-based platform that enables structured collaboration and communication among colleagues from multiple institutions/geographies) for core areas of health data enabled COVID-19 research, which included 1,300 people collaborating on projects and urgent research at specific times during the pandemic. These SLACK channels had no relationship to Scottish Government.
24. **Public and patient involvement and engagement (PPIE)** on Covid data research – HDR UK convened groups of members of the public and patients who worked with us on various projects during the pandemic to provide the public's perspectives.
25. **Enabling access to health data** – Building on the work of the UK Health Data Research Alliance, which brings together 80 UK organisations which control data, we worked with the national data custodians (NHS Digital (now part of NHS England)/PHS /SAIL Databank Wales/ HSC Northern Ireland/ ONS) across the four nations of the UK to accelerate safe and secure access to large scale health data assets to support research that informed the COVID-19 response.
26. **Collating research questions** – We used an online form for researchers and stakeholders (including members of the public) to submit questions: <https://www.hdr.uk.ac.uk/covid-19/covid19-research-question-form/> [AM3/008 – INQ000326321]. This was to facilitate a more coordinated response to the use of health data for COVID-19 research.
27. These activities were convened independently by HDR UK. However, they informed HDR UK's input to SAGE reporting as summarised below:
28. An initial paper was presented to SAGE on 14 April 2020 [AM3/005 – INQ000326320] by me, as Director of HDR UK. This paper outlined the opportunity to enable a national health data research capability to support COVID-19 research questions. Following this paper, HDR UK, worked with an increasing list of partners including members of the UK Health Data Research Alliance, British Heart Foundation Data Science Centre and CRUK, and provided weekly updates to SAGE on the progress achieved.



29. These reports were initially provided on a weekly and then fortnightly basis and provided an update on the use of health data research during the pandemic. All 36 of the HDR UK's reports have been published online.
30. Professor Sir John Aston, who was at the time the Chief Scientific Advisor to the Home Office, was nominated as the SAGE recipient of HDR UK's reports. In addition to direct provision to SAGE, the reports were provided directly to the MRC and NIHR to inform their own pandemic responses.
31. Multiple members across HDR UK contributed to each report. This was coordinated and led by: Professor Andrew Morris (myself), HDR UK Research Director; Caroline Cake: HDR UK CEO – who left HDR UK in January 2022; David Seymour: HDR UK Director of Infrastructure & Services; and Dr Rhoswyn Walker: HDR UK Director of Strategy.
32. On 11 June 2020 the above team was invited to attend SAGE to provide a short progress update and request feedback as to whether HDR UK's activities as summarised in the institute's reports were useful, and where HDR UK could otherwise focus its efforts to best support the pandemic response.
33. Following this meeting, HDR UK continued its regular reporting. However, Caroline Cake, David Seymour and Dr Rhoswyn Walker did not attend any further SAGE meetings.
34. At the start of the COVID-19 pandemic, experts and key UK funders of research and development identified areas where the UK needed to increase its research scale or infrastructure to respond to key near-term strategic, policy and operational questions regarding COVID-19. As a result, the National Core Studies (NCS) programme was established in 2020 to ensure critical questions could be answered quickly, and to the best of our capability. Sir Patrick Vallance formally launched the NCS programme on 28 October 2020 [AM3/009 – INQ000326342]. As Director of HDR UK, I was formally commissioned to assemble a national health data research capability to support COVID-19 research questions. This was called the Data and Connectivity Programme of the National Core Studies. Specifically, HDR UK, in partnership with Professor Sir Ian Diamond at ONS, was tasked to:
- Map the initial high priority COVID-19 data sets required by the National Core Studies;

- Deliver the necessary data infrastructure and services including quality and timely data, and ability to link the data and provide access to data for multiple researchers in five trusted research environments (TREs) across the UK to allow the high priority research questions to be answered efficiently in a transparent and trustworthy way;
  - Deliver a single “shop window” for the COVID-19 National Core Studies to ensure the national data sets for COVID-19 research are findable, accessible and interoperable and reusable (FAIR) by enhancing the capability of the UK Health Data Research Innovation Gateway.
35. NCS activity and outputs were incorporated into HDR UK reports to SAGE on a weekly basis, and thereafter fortnightly, and then on a three-monthly basis. HDR UK concluded its reports to SAGE on 2 November 2021. HDR UK co-ordinated investments across data controllers and “data platforms” in the UK including in NHS Digital, the SAIL Databank in Wales, the Health and Social Care Commission in Northern Ireland and PHS. Additional targeted investments supported data programmes including OpenSafely, QResearch and the EAVE II data set in Scotland. This activity all enabled research activity that informed the Scottish pandemic response. For example, the NCS enabled 91 priority COVID-19 datasets to be made available on the Health Data Research Innovation Gateway; data infrastructure and services to be developed and extended across five national TREs – ONS, NHS Digital, Wales, Scotland, Northern Ireland; and supported >315 active projects involving >640 researchers and produced 210 papers. Policy impact included reports to SAGE, SPI-M, JCVI, MHRA, Scottish and Welsh Governments.
36. My view is that this research community building was very helpful and supported focus, prioritisation and collaboration across the United Kingdom.
37. Scottish colleagues participated fully in this UK-wide response. In my view the scientific response to the pandemic was well coordinated and connected.
38. HDR UK received UKRI research funding to support the UK’s scientific response to the pandemic through its leadership of the COVID-19 Data & Connectivity National Core Study and as part of the wider set of National Core Studies.
39. It is important to highlight that HDR UK is a charity and does not control any data, hold data or provide data. It is a virtual institute bringing together leadership and expertise, from statistical and analytical know-how to standards, tools and protocols in data

science, ethics and governance, across 38 Universities in the UK to enable organisations to transform the trustworthy use of health data to improve lives. HDR UK also works in partnership with public bodies who are data controllers to support research insights into the pandemic progression.

40. One example of this collaboration was the Early Pandemic Evaluation and Enhanced Surveillance of COVID-19 study (EAVE II) initiated by Professor Sir Aziz Sheikh in April 2020 at the University of Edinburgh [AM3/010 – INQ000326359]. EAVE II was able to “shine a light” on key fundamental developments in the pandemic in terms of disease transmission, morbidity and mortality as well as vaccine effectiveness and safety. Unfortunately, much of the data infrastructure was not in place at the start of the pandemic. Ideally the underpinning infrastructure, data services, governance and ability to link data across patient pathways for the population of 68 million should be in place as a matter of routine so that best practice is embedded in the UK’s normal activity.
41. Of the major barriers to health data research present at the start of the pandemic, some were rapidly addressed. But the most challenging issue remained data access. An example is that in Scotland there are 1,000 General Practitioners and each is a data controller. Current guidance is that data controllers need to individually consent for secondary use of data, such as research. The red tape associated with this approach is not amenable to agility during a pandemic. The data therefore was siloed and unconnected to other health data making rapid analysis generation of insights during the pandemic challenging. EAVE II was partly an exception to this. Despite significant initial challenges and delays in securing approvals for data access Professor Sir Aziz Sheikh and PHS eventually managed to curate datasets in Scotland in near real time for research purposes. Likewise the BHF Data Science Centre within NHS England, the SAIL Databank in Wales, ONS and the OpenSafely research programmes partly addressed data access challenges.
42. In my statement of the 17<sup>th</sup> October 2022 I indicated that HDR UK worked with over 100 organisations to try to sort the data to help researchers create new evidence that would decision makers in the pandemic. This included large datasets that were generated in the pandemic including in the commercial sector (e.g. the ZOE App) or research sector. The Institute worked in partnership with other key UK initiatives, such as the viral sequencing programme led by Professor Sharon Peacock – COVID-19 Genomics UK Consortium (COG UK)) - to demonstrate the ability and utility of bringing together diverse datasets which previously had not been linked to reveal important insights. The specific data types were health data and viral genomic data which gave information on

the morbidity and mortality associated with specific variants of the virus. It was also able to bring some of the brightest minds to the analysis of very large datasets – this required considerable skill as the analysis of observational and complex multimodal datasets is scientifically challenging. I saw this as a strength of the pandemic response because the research community was able to add value to the analytical expertise that sits within the policy making, ONS, UK HSA and operational NHS environments. Please see [AM3/011 – INQ000326322] and [AM3/011a – INQ000326323]. HDR UK and COG-UK had no formal mechanism to feed research evidence directly into C19AG and Scottish Government. The principal relationship was via SAGE.

43. International experience suggests that those countries which respond best have near real-time whole system intelligence that links diverse datasets (e.g. GP data, vaccination data, hospitalisation data, mobility data, death data, antigen status data, viral sequence data, imaging data etc.) so that rapid and meaningful insights of pandemic progression can be derived.
44. Unfortunately, many of the problems in relation to data access (including but not restricted to GP data) remain problematic. Data access during the pandemic was enabled in England because of the Secretary of State for Health and Social Care issued NHS Digital with a Notice under Regulation 3(4) of the Health Service (Control of Patient Information) Regulations 2002 (COPI) to require NHS Digital to share confidential patient information with organisations entitled to process this under COPI for COVID-19 purposes. COPI does not apply to non-COVID purposes nor to the devolved administrations. Unless we address data access issues from a policy and public benefit perspective, we will be poorly prepared for the next pandemic. Some of the most able researchers in the UK had to wait months or longer to access data to address issues relevant to the pandemic response and in the public interest.

**b) Principles/ policy behind the use of medical/ scientific advice in the Scottish COVID-19 pandemic response**

45. My observation was that policymakers and elected officials rightly guarded their responsibility to define policy. Scientific advice was just one important component of the decision-making process. My role as Chair of the C19AG was to communicate advice in the context of the policy process by providing evidence that informed options rather than simply advocating a single course of action. I and C19AG were not involved in policy decision making.

46. I also saw a key role of the C19AG being to provide simple and consistent communication and explanations of complex scientific issues to policymakers and officials. Erudite and self-serving scholarly discourse was not the aim of the advisory process. The situation was dynamic and fluid, with new information and developments happening often and unfolding daily. I attempted to guide the group to provide clear communication of the knowns and the unknowns. I emphasised frequently during my “Chair’s Update” to members at meetings that as advisors we should expect to inform policy but not make it [AM3/012 – INQ000217837], [AM3/012a - INQ000217838], [AM3/12b - INQ000217839], [AM3/12c - INQ000217840], [AM3/012d - INQ000217841], [AM3/012e - INQ000217842] and [AM3/012f - INQ000217843]. The goal was to present a rigorous analysis but to be clear about what we did and did not know. I also emphasised the need for trustworthiness: science advisors must sustain in parallel the trust of the public, the media, policymakers, politicians and science community.
47. I was aware of the phrase “following the science” being used frequently by some policymakers. I did not specifically attribute this to the First Minister. My understanding was that the C19AG advice that was passed through the CMO to policymakers was just one input and that there were many other appropriate inputs to policy including economic/fiscal considerations and public opinion. I am not able to comment on the extent to which the First Minister or any other individual involved in core decision making referred to this phrase, as I was not involved in policy or decision making. For the same reason, I cannot comment on the effectiveness of this message in managing public confidence on the management of the pandemic.
48. Finally, my role as Chair of the C19AG was to act as a convenor, to encourage broad consultation and to help synthesise the evidence base, and not to be an advocate of science. However, I at no time had any decision- or policy-making role within either the UK Government or Scottish Government. As such, I am unable to comment on the extent to which certain key policies or principles influenced the Scottish Government’s decisions.

**c) Informal Decision Making and communication**

**SLACK/WhatsApp**

49. The C19AG provided advice to the Scottish Government in four keyways:
- i. Formal meetings of the Group - As described in my previous submission [AM3/013 – INQ000215468] the Group held 60 meetings over the time course of interest to the Inquiry.

Subgroups - The C19AG had four subgroups, chaired by members of the C19AG, who regularly provided updates on the subgroups' activity to the main C19AG Group. Details on these are provided in the sub-group section of this statement.

- ii. Deep Dives - These meetings occurred at key points in the pandemic. In brief, dedicated time was put aside for members of the C19AG to provide detailed informal relevant scientific updates to the First Minister and senior policy and Ministerial colleagues. On several occasions these were organised by the Scottish Government Resilience Room (SGoRR) secretariat. The format was a brief discussion or presentation from the C19AG members or invited guests followed by Q&A. [The dates are as made available in the attendance log and in deep-dive papers ]. [AM3/014 – INQ000326343].
- iii. SAGE Updates: Following each SAGE meeting as a participant representing the C19AG, I was often asked to provide an informal update of key issues under discussion as outlined in the draft SAGE papers that were distributed to Scottish Government. I understand other Scottish Government colleagues undertook this task prior to establishment of C19AG, and it fell to me after the departure of Professor Catherine Calderwood, as I had more domain knowledge compared with other observers, for example Professor Sheila Rowan the Chief Scientific Advisor in the Scottish Government who is a particle physicist. This was particularly in high demand in the early phases of the pandemic, in view of uncertainty and the rapid evolving scientific and policy environment. This constituted an informal update to C19AG colleagues (plus Ministers) on the current status of the pandemic plus my personal view on key priority issues. It was made clear that these were personal reflections and that the formal SAGE minutes once produced, often 48-72 hours later, superseded any correspondence from myself an example of this can be found at [AM3/015 –INQ000326344].

On the establishment of the C19AG on the 26<sup>th</sup> March 2020 I suggested:

- That the group met using ZOOM technology. Initially the suggestion was that we would adopt the old fashioned “bat phone” approach for the group to meet. I recognised that this was not a sustainable solution to building a team and earning trust across the members of the group; and
- That for knowledge management purposes we established a C19AG group SLACK channel. This was initiated by Scottish Government and used to share ideas, new

evidence from the international literature and also disseminate extensive subgroup working to the main members of the C19AG

- That transparency of group activity was essential and that both details of the membership of C19AG and an accessible public-facing minute of its meetings should be published on the C19AG website. The reason for this was to demonstrate trustworthiness to the public and enhance public understanding of science. It also allowed external scrutiny and challenge from the broader scientific community and public. My intention was that full minutes would be published to help to provide clarity about the difference between evidence, scientific advice and policy but in the first instance a summary minute was published.

50. I understand that the meeting 'chat' on Zoom was not retained by the Scottish Government and that no verbatim minutes or digital recordings were made.

51. The SLACK channels were used by the C19AG to routinely share information outside of meetings and, on occasion, the Secretariat would use this to ask group members to provide comments in response to requests for advice. These SLACK exchanges would inform the production of advice and once that advice was finalised and formally recorded, these exchanges were routinely deleted by the secretariat. The SLACK channels were under the jurisdiction of the Scottish Government and I do not hold those records.

52. I have provided to the Inquiry all relevant correspondence as exhibits to this statement. I have over 3,000 emails between myself and the Scottish Government in my role as Chair of the C19AG. These do not constitute advice or decisions. All advice and minutes from the C19AG has been provided to the Inquiry.

53. No advice was given by the C19AG outside formal processes. A record of the advice given by the C19AG was kept by the secretariat and has been provided to the Inquiry. I can confirm that as Chair of C19AG I had no informal, bilateral or private communication with any Scottish Minister, including the First Minister. The only time during the COVID-19 pandemic where I met the First Minister and Cabinet Secretary for Health and Social Care outside of deep dive meetings, was at a meeting in St Andrews House on 9<sup>th</sup> April 2020 at 12pm. My letter to the First Minister sent in anticipation of that meeting has been provided [AM3/016 - INQ000217465], [AM3/016a - INQ000217466] and [AM3/016b - INQ000217467].

54. The C19AG did not use WhatsApp or any other messaging platform other than SLACK and email. I was an infrequent user of WhatsApp but did have a personal WhatsApp

group with three members of the secretariat from 18<sup>th</sup> June 2020. This was used for routine exchanges and to check-in on wellbeing. I have provided a transcript of all messages to the Inquiry. This however was not used to provide advice to the Scottish Government. I never had any exchange of informal messages with any Minister in the UK or Scottish Governments. To the best of my recollection, I was not involved in any other WhatsApp groups. I did exchange either text messages or WhatsApp messages with certain individuals involved in the Covid-19 response, including Professor Catherine Calderwood, Sir Patrick Vallance and Professor Gregor Smith. These were personal messages, exchanged on an individual basis rather than as part of a group, and these did not concern government decision-making. I am now unable to find these messages on my phone, despite having retained the same phone. I have never deleted any messages.

## **Minutes**

55. From the first meeting on 26<sup>th</sup> March 2020 a short summary note of meetings was published on the C19AG website. The format of these was inspired by the shortnotes published by SPI-M-O. At the first meeting of the 26<sup>th</sup> March 2020, as Chair, I emphasised the importance of transparency in terms of membership of the group the topics that were being discussed, and publication of minutes.
56. The publication of full minutes from SAGE began 29<sup>th</sup> May 2020. This also included all minutes from meetings between January 2020 to the beginning of May 2020. The establishment of SAGE COVID and C19AG during the pandemic required a systematic and enduring approach to managing agenda setting, papers and minutes. I observed significant improvements in the approach to information management systems and production of accessible minutes. The membership and terms of reference were published shortly after the first meeting of C19AG.
57. Secretariat of the C19AG sent a submission to the First Minister on the 1<sup>st</sup> June 2020 noting the change in SAGE's publication approach. The recommendation was that the publication of short notes continued, along with publication of evidence papers considered by the group. This recognised the decision not to publish the full minute of the C19AG meetings may need to be revisited in the future.
58. In a written Parliamentary question on the 29<sup>th</sup> October 2020, Ms Freeman, the Cabinet Secretary for Health and Sport, announced the publication of expanded minutes of the C19AG from their next meeting. On the 2<sup>nd</sup> November 2020 the publication of full minutes replaced the publication of summary minutes. All full minutes since the first



meeting of the group were subsequently published. The minutes were an accurate record of what C19AG discussed.

59. Advice from the C19AG was not routinely published to protect the group's ability to provide free and frank advice to Ministers. Two pieces of advice were published, and these were the advice on physical distancing and the advice on super spreading.
60. My statement of 23 June 2023 [AM3/013 - INQ000215468] provides copies of the minutes, meeting papers, and advice produced by the Group. At paragraph 13, this outlines the process for recording where there was not a consensus on an issue or on aspects of an issue. I can confirm that the minutes were not verbatim and, while they did not usually attribute views to individuals, both the minutes and the formal advice produced by the Group did record instances of differing views within the Group where a consensus was not reached.
61. At a number of meetings, the C19AG heard from policy officials who provided context for the advice being sought from the C19AG. In my statement of 23 June [AM3/013 - INQ000215468] these are referred to as personal briefings. Minutes of all C19AG meetings have been provided to the Inquiry. These minutes of meetings include the list of attendees at meetings.
62. Records of key conclusions reached at C19AG meetings and all formal advice produced by the Group were maintained by the Secretariat, in line with Scottish Government policy. Ministers and officials would also routinely receive a brief informal update or 'weekly note' following meetings of the C19AG, noting the issues discussed in advance of the formal minutes of the meeting being available. I understand these have been provided to the Inquiry by the Scottish Government.
63. As independent Chair I was accountable to ensure that lack of consensus or disagreement was noted when present amongst participants.
64. I have previously submitted a chronological list of all formal meetings of the C19AG and the minutes of the meetings that I attended. I was not privy to any forum where decision making processes were undertaken. The role of the C19AG was to advise.
65. In my capacity as Chair of the C19AG I held routine meetings with the secretariat to plan upcoming meetings for the C19AG. These would be fitted in amid a backdrop of me attending 15 meetings or more per day, 7 days per week as part of my C19AG and other roles. My working day often ran from 7am until 10pm or longer. The dynamic nature of

informal meetings meant that a record of these were not kept. These meetings did not constitute advice to government.

66. I have provided a copy of the entries in my outlook calendar [AM3/017 – INQ000326360] for the relevant period which show scheduled informal meetings, however, a comprehensive list is not available. I was not part of decision making and as far as meetings with the CMO, I was not party to any decision-making process during these meetings. A record of all meetings of the C19AG was kept by the secretariat including meetings and deep dive briefing events.
67. Policies and frameworks that guided retention policy and use of messaging platforms such as Teams, ZOOM, emails, text message, WhatsApp and SLACK messages were and are the responsibility of the Scottish Government. I am not aware of any non-compliance with these policies.

**d) Scottish Government Covid-19 Advisory Group (C19AG) and SAGE**

Constitution, membership and role of the C19AG

**Membership and Remit**

68. The C19AG was established by the Scottish First Minister, CMO and the Deputy Chief Medical Officer (DCMO) in Scotland in consultation with the Chief Scientific Advisor for Scotland (CSA). I understand they had identified the need for additional scientific analysis of the impact of COVID-19 in Scotland, based on regularly updated advice and modelling for the UK Scientific Advisory Group for Emergencies (SAGE) and other emerging scientific evidence. I cannot comment on why the group was set up at that stage and not earlier; that would be a matter for Government.
69. The purpose of the group was explained to me by the CMO, Professor Catherine Calderwood, in a telephone call on the 16<sup>th</sup> March 2020. She approached me and invited me, on behalf of the First Minister, to chair an expert group which would advise the Scottish Government on the scientific aspects of the COVID-19 pandemic. Professor David Crossman, the Chief Scientist (Health) was invited to serve as Vice-Chair. Initial correspondence which includes the purpose of the group is provided here. [AM3/018 – INQ000326324], [AM3/018a – INQ000326325], [AM3/019 – INQ000326326] and [AM3/019a – INQ000326327].
70. Following the invitation to chair the group, I worked with Scottish Government officials including the CMO and CSA to define the membership, ways of working and terms of reference. A copy of the formal invitation that I received to participate in C19AG is

included here as an example of the invitations received by all members of the group [AM3/020 – INQ000326345].

71. Following the receipt of invitation all members were asked to confirm their acceptance of this and the confidentiality terms included in the terms of reference. Membership included a wide range of independent members in addition to Scottish government advisors. All independent members served on a *pro-bono* basis and did not receive any financial contribution for their work.
72. Members of the group were chosen based on the scientific and technical expertise which they could contribute and were invited to join by means of a letter from the CMO, together with a copy of the terms of reference. The members were drawn up in discussion with CMO and the CSA who stressed the importance of representation from the Scottish Scientific Advisory Committee (SSAC). This included but was not limited to: epidemiology, behavioural sciences, primary care, clinical infectious disease management, diagnostics, and global health. I am not aware that any specific areas of expertise were considered for input and rejected.
73. The following people invited as members from the outset were: myself; Chief Scientist (Health), CMO; DCMO; CSA; Chief Statistician; Professor Tom Evans, Angela Leitch; Dr Jim McMenamin; Professor Jill Pell; Professor Stephen Reicher; Professor Chris Robertson; Professor Sir Aziz Sheikh; and Professor Mark Woolhouse.
74. The core membership of the group remained largely unchanged over time and the following members were added to the group:
  - Professor Devi Sridhar (since 30 March 2020)
  - Professor Jacqui Reilly (since 23 April 2020) – as Chair of the Covid Nosocomial Review Group
  - Professor Sir Harry Burns (since 15 June 2020) – as Chair of the Public Health Threat Assessment subgroup
  - Chief Social Policy Advisor (since 19 June 2020) – as Chair of the Education and Children's Issues subgroup
  - Professor Nick Hopkins (since 16 October 2020) – to provide additional behavioural science expertise
  - Chief Social Researcher (since 11 August 2021) – replacing the Chief Statistician

- Professor Nick Phin (since 7 December 2021) – replacing Angela Leitch for PHS

75. Additional members were added at the Chair's discretion and with input from the CMO.
76. The roles and expertise of members are publicly available [AM3/021 - INQ000326346] and [AM3/021a – INQ000326347]. The Group received clinical input from infectious disease experts such as Professor Tom Evans, as well as public health expertise from Dr Jim McMenamin and expertise in primary care from Professor Sir Aziz Sheikh.
77. As Chair I did my best to encourage all participants to contribute to discussions and to provide advice. At no time were individual C19AG members not invited to attend meetings due to concerns they would disagree with the consensus view. The minutes and advice of the C19AG typically did not attribute contributions to individuals, but both the minutes and the formal advice produced by the Group did record instances of differing views within the Group where a consensus was not reached.
78. The CMO, CSA, DCMOs were members of the C19AG and the C19AG reported to the CMO. Professor Jason Leitch, the National Clinical Director (NCD) was not a member of the C19AG but did attend some meetings as an observer. Details of attendance have been provided in the C19AG's attendance log [AM3/014 - INQ000326343]. Details of the membership of the C19AG and copies of its minutes have also been provided to the Inquiry.
79. Scottish Government Advisors (civil servants) were appointed ex-officio. When the appointment of these changed over time they were replaced by their successors, with the exception of the Chief Statistician who was replaced by the Chief Social Researcher who led the newly created COVID analysis division within Scottish Government.
80. Dr Gabe Docherty was granted regular observer status in the C19AG from October 2020 in his position as Chair of the Scottish Directors of Public Health. This was ex-officio and moved to Dr Graham Forster when he took up the position of Chair of the Scottish Directors of Public Health.
81. The C19AG was regularly attended by observers, who were invited based on the agenda of the day. Their attendance was recorded in the minutes of the meetings.
82. My understanding is that medical and scientific advice was provided to the Scottish Government prior to the establishment of the C19AG, but it was considered helpful to convene a group to consider scientific advice in the context of the Scottish health and social care ecosystem. I was not involved in the provision of any advice to the Scottish

Government prior to the establishment of the C19AG and so I cannot comment on its effectiveness.

83. The group first met on the 26<sup>th</sup> March 2020 and the terms of reference were agreed at that meeting. As the C19AG was a new approach to providing scientific advice, at the time of a public health emergency, its way of working was iterative. I wrote to the First Minister on the 8<sup>th</sup> April 2020, in advance of a planned meeting with her on the 9<sup>th</sup> April 2020, to outline the planned focus of the group. A copy of this letter is exhibited [AM3/016 – INQ000217465], [AM3/016a - INQ000217466] and [AM3/016b - INQ000217467]. The work of the group had already started by the 9<sup>th</sup> April 2020 but it had taken ten days to host the first meeting of the group on 26<sup>th</sup> March following my initial contact with CMO on 16<sup>th</sup> March. My understanding was that Scottish Government wished to ensure the role, remit, membership and reporting was optimal, and that the public announcement of the group was coordinated which may have been associated with one or two-days' delay. I did request an update on progress on group set-up on 25<sup>th</sup> March 2020 [AM3/022 – INQ000326362]. I do not consider that there was any specific additional delay in the group's activities caused by matters occurring around that time, such as the resignation of Professor Catherine Calderwood as CMO on the 5<sup>th</sup> April 2020 which was after C19AG had met. The Scottish Government immediately appointed Professor Sir Gregor Smith as interim CMO, who provided his full support to the group.
84. The breadth of scientific and expert advisory structures that were available to the Scottish Government in my mind was appropriate to address the need of the provision of independent scientific advice on the core public health considerations of the pandemic.
85. The C19AG's role never extended to providing advice on non-health related harm such as economic scarring. The remit of the C19AG was "to consider the scientific and technical concepts and processes that are key to understanding the evolving COVID-19 situation and potential impacts in Scotland". The membership of the C19AG and the advice it produced reflected that role. The C19AG's remit, membership and the advice it produced have been made available to the Inquiry.
86. The C19AG received a briefing and detailed discussion on the "four harms" on the 16<sup>th</sup> November 2020 [AM3/023 - INQ000217972], [AM3/023a - INQ000217973] and [AM3/023b - INQ000217974]. This confirmed that Ministers also considered social and economic harms in their decision-making [AM3/024 - INQ000217976]. It was never in the C19AG's remit to incorporate deep and broad

economic expertise. The C19AG's remit was provided in its terms of reference [AM3/025 - INQ000217419], and this did not include economic considerations.

## **SAGE**

87. A core principle of the C19AG was the reciprocity agreement with Sir Patrick Vallance and the SAGE Secretariat, which gave the C19AG access to the papers of SAGE and its sub- groups and gave the SAGE Secretariat access to C19AG papers. The C19AG did not seek to duplicate the work of SAGE but to interpret this in the Scottish context (bearing in mind that health and education in Scotland are devolved matters). I participated in SAGE in my capacity as Chair of the C19AG. Other Scottish participants of SAGE included the CMO, DCMO, Dr Jim McMenamin from PHS and the Chief Scientist (Health).
88. The C19AG received SAGE meeting minutes, and these were uploaded on the group's *Objective Connect* space for C19AG members to access, as well as routinely being discussed at C19AG meetings.
89. On the 4<sup>th</sup> April 2020 I emailed Sir Patrick Vallance to thank him for his invitation to SAGE. At that time I had attended two SAGE meetings. I have previously submitted a record of my participation in SAGE meetings (within my personal submission for module 2, found at [AM3/006 – INQ000056491]).
90. In the context of this public health emergency I considered that the SAGE/C19AG system and their sub-groups was appropriate on advising on scientific matters in relation to the pandemic. Following the invitation from Sir Patrick Vallance I was a full participant in SAGE meetings alongside Welsh and Northern Ireland participants. This enabled clear and transparent sharing of scientific advice across the four nations of the UK. Science is global and therefore it was important that open trusted and transparent communication between scientific advisory structures was established in the pandemic. I did not have any specific concerns regarding the adequacy or sufficiency of scientific and other expert advice provided by SAGE or C19AG to inform decisions about the Scottish Government's response to COVID-19. Members of C19AG were diverse in expertise, actively listened, shared ideas, and gave honest feedback. As Chair I encouraged members to consider whether the right expertise was involved and weighed appropriately.
91. A register of interests for C19AG members was made, with the purpose of ensuring that any conflicts of interest were raised by members of the group if applicable. A copy of this

register is produced at [AM3/026 – INQ000326328]. At each meeting, members were invited to declare any conflicts of interest, however, in practice, we found that no significant conflicts were identified relevant to the activities of the C19AG. I did not consider my previous role as Chief Scientist (Health) to be a conflict as that secondment had ended more than three years previously. I believed and still believe that I was able to be fully independent of the Scottish Government. During my tenure as Chief Scientist I had been a secondee to Scottish Government for three days a week, whilst remaining an employee and working two days a week for the University of Edinburgh. Likewise, Professor David Crossman was a secondee into Government for three days a week in his role as Chief Scientist (Health).

92. As Chair of the C19AG, my role was to be impartial, trustworthy and to work in the public interest. I endeavoured to provide advice to Scottish Ministers, through CMO, that was honest, reliable and competent. In practical terms, this meant considering the urgency with which advice was needed. I prioritised my role as Chair of C19AG above my other commitments at the University of Edinburgh and as Director of HDR UK. I also tried to adopt a consensus style of chairing to ensure that every voice in the group was heard and that constructive challenge was welcomed. However, I would also explicitly identify areas where consensus was or was not reached to ensure these were reflected in verbal summaries, minutes and advice.

#### Sub-groups

93. The C19AG had four subgroups, each chaired by members of the C19AG. Details of these subgroups are listed in the table below.

<b>Group Name</b>	<b>Chair</b>	<b>Date of First Meeting</b>	<b>Date of Last Meeting</b>
Scientific Advisory Board on Testing	Chief Scientist (Health) – Professor David Crossman	1 April 2020	8 March 2022
Public Health Threat Assessment subgroup (PHTA)	Professor Sir Harry Burns	16 July 2020	12 August 2020
Education and Children's Issues subgroup	Chief Social Policy Advisor – firstly Professor Carol Tannahill, then Professor Linda Bauld	23 June 2020	8 March 2022

Universities and Colleges subgroup	Chief Social Policy Advisor – firstly Professor Carol Tannahill, then Professor Linda Bauld	19 May 2021	24 May 2022
------------------------------------	---	-------------	-------------

94. The Scientific Advisory Board on Testing; the Education and Children's Issues subgroup; and the Universities and Colleges subgroup had their own secretariat, and their records are separate from those of the C19AG. While not formally a subgroup, the Covid Nosocomial Review Group (CNRG), chaired by Professor Jacqui Reilly regularly reported on its activities at C19AG meetings.
95. The remit of each of the subgroups can be found in their terms of reference and minutes and advice from these groups have been provided to the Inquiry by the Scottish Government at [AM3/027 – INQ000326313] [AM3/028 – INQ000326311] [AM3/029 – INQ000326312] [AM3/030 – INQ000326310]. I understand members were agreed upon by the Scottish Government in discussion with the Chairs. It was important that links between the Groups were maintained to ensure a consistency in the advice provided, which was supported by the subgroups Chairs providing regular updates at the C19AG meetings.
96. The subgroup advice was used by Ministers and officials to support their decision making throughout the various stages of the pandemic. My observation was that it was evidence-based, effective and welcomed by policy makers.
97. I have been asked by the Inquiry about the PHTA subgroup. The PHTA subgroup's terms of reference, minutes and advice have been provided to the Inquiry by the Scottish Government. As I was not a member of that subgroup I am not best placed to comment on its advice and the frequency of its meetings.

#### Operation of advisory structures

#### **Regular Meetings and Minutes**

98. The C19AG worked as a coherent and cohesive group, which reported to the Scottish Government through the office of the CMO. My observation was that members participated actively in discussions, and the meetings well attended. Paragraph 12 of my corporate statement [AM3/013 – INQ000215468] describes the process for setting C19AG meeting agendas. Senior policy officials attended meetings and I observed that trusted personal and working relationships developed, whilst respecting the different roles and responsibilities of participants.



99. Minutes of the C19AG meetings were routinely shared with Ministers and alongside this a summary of the activity of the C19AG was regularly circulated. This would often include a contribution from the sub-groups. As chair of the Group, my principal personal and working relationship was with the CMO, initially, Professor Catherine Calderwood, and latterly Professor Sir Gregor Smith. I was at all times encouraged and supported to provide advice in an independent capacity. I had no direct personal or working relationships with Ministers beyond the remit of the group.
100. The C19AG was one source of advice for Scottish Ministers. Advice was submitted to CMO and Ministers. My understanding was that Scottish Government received advice from and engaged deeply with other organisations such as PHS, the four nation CMOs, Scottish Territorial Health Boards, Scottish local authorities, Primary Care Services, the Scottish business community and the Independent Care Sector. It was not the role of C19AG to engage routinely with all these bodies except for senior leaders of PHS who were important and constant members of the C19AG.
101. As stated at paragraph 85 of this statement, the C19AG was not involved in consideration of the wider issues, including economic and social impacts.

### **Deep-dives**

102. My Chair's Statement [AM3/013 - INQ000215468] sets out the process by which the C19AG provided advice to Ministers and officials, including at meetings with Ministers, known as 'deep-dives'. The C19AG had no direct contact with Ministers out with these arranged in-depth briefing meetings.
103. Deep-dives lasted from 60-90 minutes and topics included "Test, Trace, Isolate and Support" (8<sup>th</sup> May 2020), and "Shielding: Scientific and Behavioural Science Considerations (15<sup>th</sup> May 2020). I chaired these meetings and agreed the agendas with the secretariat. The First Minister participated in the majority of them. These focused on issues of current interest to the Scottish Government where a better understanding of the science could be helpful to Ministers. A deep-dive with business leaders was also held on 19 March 2021 for Scottish Government and a deep-dive with business organisation representatives was held on 11 June 2021. Materials from these deep-dives have been provided to the Inquiry [AM3/031 - INQ000218276] and [AM3/031a - INQ000218277], [AM3/032 – INQ000326348] and [AM3/032a – INQ000326349].
104. These deep-dive briefings provided the opportunity for Ministers to pose questions to experts about the science. The usual format of these deep-dive meetings was short presentations by the C19AG members followed by discussion and questions from

Ministers. Decisions made in relation to the issues discussed at these deep-dive briefings were made separately by the Scottish Government and the C19AG's role, as with written advice, was only to advise, not to decide. Agendas and papers for these meetings have been provided to the Inquiry.

105. On occasion, these deep-dive meetings were arranged through the SGoRR and SGoRR officials received copies of meeting agendas and papers, in addition to those who regularly received C19AG meeting papers. The C19AG did not provide advice directly to the Four Harms group or to SGoRR.
106. Whether the First Minister and core decision-makers considered that they could challenge the advice of the C19AG is a question to which the Scottish Government and those individuals are better placed to respond. Certainly deep-dive the sessions were well attended, often overran because of the level of interest, and were characterised by constructive challenge and discussion.
107. I understand that the full list of minutes, advice, and deep-dives of the C19AG has been provided to the Inquiry. Those were agreed and cleared by members of the C19AG. Those full documents represent the agreed advice from the C19AG and the Inquiry should refer to those documents in full.
108. Over the course of the pandemic, the C19AG was not subject to any external assessment or peer review. The C19AG's membership drew on a diverse range of expertise, experience and interests which would tend to mitigate against any tendency towards 'groupthink' as did the status of the C19AG's membership; the majority of members, including the Chair, were independent of Government. At paragraphs 16 and 41 of my statement [AM3/013 - INQ000215468] I make clear that membership of the Group was not intended to interfere with the freedom of members to hold and express their own views and that the Government publicly stated that they valued that independence of views.
109. Discussions were wide ranging and specific scientific topics did not dominate. Specifically, epidemiology and modelling played an important role, but in my mind not a disproportionate one, as the group's expertise extended to multiple other important disciplines as referred to at paragraph 73. Epidemiologists, public health experts, infectious diseases experts and behavioural scientists actively engaged in the deliberations and advice of the group.

110. In addition, prominent individuals (including Sir Jeremy Farrar, Sir John Bell and Sir David Nabarro) who were independent of the Group participated in ‘deep-dives’ arranged by the C19AG to brief Ministers on scientific issues related to the pandemic. Each was invited to give a personal view of the science and international developments. For example Sir Jeremy Farrar on 16<sup>th</sup> December suggested (i) as we looked to 2021 the key milestone is August. We cannot go into winter 2021 with rising transmission; (ii) we must keep broad, vaccination is not the be all; (iii). we must maintain test, trace, isolate and surveillance; (iv) NPIs will be as important in 2021 as it was in 2020; (v). testing is a fig leaf on its own, isolation remains at the heart of our approach; (vi) the idea of tension between health and the economic sector is a fallacy – economic growth won’t return until we suppress the virus; (vii) continued transparency with the public is important and we must be clear on our priorities. Better to under promise and over deliver; and (viii) vaccines should target the vulnerable. In future, could be a case for adding staff to the priority list to maintain confidence in schools remaining open; (ix) it was unlikely to know if vaccines prevent transmission until mid-2021. Surveillance remains key in informing data-driven developments; (x) a big unknown is the trajectory of the virus. It is an RNA virus under immense selection pressure. If the virus changes and it affects immunity, transmission, causes vaccine and therapeutics evasion, then we’d have a new event; and (xi) to prepare for future pandemic, international collaboration and data sharing are key. [AM3/033 – INQ000218308], [AM3/034 – INQ000218307, AM3/034a – INQ000316292], [AM3/035 – INQ000218305], [AM3/036 – INQ000218299, AM3/036a – INQ000218300, AM3/036b – INQ000218301], [AM3/037 – INQ000217801, AM3/037a – INQ000217802, AM3/037b – INQ000217803, AM3/037c – INQ000217804, AM3/037d – INQ000217805, AM3/037e – INQ000217806], [AM3/038 – INQ000218295, AM3/038a – INQ000233316], [AM3/039 – INQ000218291] and [AM3/040 – INQ000218278, AM3/040a – INQ000218279, AM3/040b – INQ000218280, AM3/040c – INQ000218281, AM3/040d – INQ000218282, AM3/040e – INQ000218283, AM3/040f – INQ000218284, AM3/040g – INQ000218285, AM3/040h – INQ000218286, AM3/040i – INQ000218287, AM3/040j – INQ000218288, AM3/040k – INQ000218289].

#### **Advice**

111. The C19AG advice took the form of papers setting out the consensus view of the group.

112. Advice was typically requested by the lead official for a policy area or by the CMO. This could be a general request for scientific advice in a policy area, or scientific advice in relation to implications of decisions that we were told were in contemplation. Terms of requests for advice received by the C19AG were examined by the secretariat and were adjusted where necessary, following discussion, to ensure that they focused on the

scientific and technical aspects of the pandemic that were within the Group's remit. Over time a commissioning process was developed by the secretariat to support the triaging, coordination and prioritisation of these by the secretariat. In other cases, advice was provided by the C19AG on its own initiative where a particular topic was seen as a priority at that stage in the pandemic and the C19AG judged it important to provide further information on this. This was a strength of an independent group as it had the flexibility to do more than just answer the questions that were posed. For the purpose of record keeping, no distinction was made between advice requested and advice provided by the Group on its own initiative. I am not aware of any decisions being made when medical and scientific information or advice or data modelling was not sought but which ought to have been sought by the Scottish Ministers.

113. The C19AG provided advice based on the evidence that was made available to it. There was often a rapid turnaround of advice required, notwithstanding the often-limited information available. The group would sometimes be shown draft policy documents by officials when scientific advice was sought in relation to these. Policy observers also frequently attended meetings, which helped the Group to understand the policy context and how scientific advice would support their policy deliberations. It also enabled group members to pose questions directly to policy leads on this and vice versa. The Minutes recorded the attendance of policy observers. Understanding the policy context enabled the Group to provide more effective and timely advice. I refer to this in my corporate statement [AM3/013 - INQ000215468] at paragraph 27. These attendances are referred to as personal briefings in the Scottish Government Covid-19 Advisory Group corporate statement [AM3/013 - INQ000215468] at paragraph 27.
114. Where possible, advice was discussed in plenary before this was finalised. As stated elsewhere in this statement, no recordings of meetings were made.
115. If there was not a consensus on the issue or on aspects of an issue, then the written advice made clear where that was the case. For example, minutes from 27th April 2020 note that "frank discussion, including lack of consensus between the group's opinion and political opinion is important and should not be inhibited." The C19AG aimed to present concise and clear advice which summarised and reflected the currently available scientific evidence; as far as possible in plain English. The C19AG routinely drew on information from SAGE which usually included an assessment of the level of confidence in analysis or advice.
116. In my statement [AM3/013 - INQ000215468] I set out details of the process followed in relation to different opinions expressed by members of the C19AG when offering advice and I also address this elsewhere in this statement. Although CMO, CS(H) and

DCMOs were all members of the C19AG, they all had other significant roles unrelated to the C19AG during the course of the pandemic. In my chairing of the group I welcomed all views and advice including those from officials in our deliberations. A consistent approach to the reconciliation of different views was adopted for both expert advisors and officials. I endeavoured to ensure the advice of the C19AG was honest, reliable, and competent, in the context of huge uncertainty and a rapidly changing environment and the challenges of the pandemic. In my view, C19AG undertook the role that was asked of it by Scottish Government and was effective by providing important scientific inputs to the decision makers in Government.

117. Advice from the C19AG was agreed by the Group and cleared by myself in my capacity as Chair. The advice from the C19AG was issued by its secretariat.
118. Among those routinely copied into the Group's advice were the First Minister, Deputy First Minister, Cabinet Secretary for Health and Sport (subsequently Cabinet Secretary for Health and Social Care), the Director General for Health and Social Care and Chief Executive of the NHS, the NCD, Covid Public Health Director and other senior officials involved in the response to COVID-19. As members of the Group, the CMO, DCMO the Chief Scientist (Health), the CSA and senior officials from PHS would normally have been involved in discussing and agreeing advice and they and/or their offices would receive copies of the advice once it was issued. They did not unduly influence discussions. Those officials and Ministerial offices may have shared the advice further, where necessary, but the secretariat to the C19AG did not track that information. I am not aware of any instances where officials filtered C19AG advice. Copies of the advice issued by the Group has been provided to the Inquiry. No thematic record of the advice was kept.
119. The role of the C19AG was purely advisory and the Group made no decisions in relation to the Scottish Government response to the pandemic. The Group did not keep records as to whether its advice was acted on or whether there were differences of opinion between its advice and that of other advisers to the Scottish Government. This might have been helpful but did not significantly detract from the effectiveness of the group as I consider it would have been desirable but not essential for the C19AG to have received feedback on how its advice had been considered by Scottish Ministers. The Group did receive periodic, and positive, feedback during meetings, which the group appreciated. However, there was no regular or systematic feedback on how policy decisions had been impacted by the advice provided by the group.
120. It was apparent that there was a risk of information overload or repetition for key

decision-makers during the pandemic. In an attempt to mitigate this, we sought to provide advice which was succinct, and evidence-based. We also in our advice tried to “assume no knowledge” so that the advice was understandable. As I explain elsewhere in this statement, policy officials were routinely invited to observe C19AG meetings where advice was to be discussed. This helped provide officials with additional background information and explanations into the deliberations of the C19AG in its production of advice.

121. The role of the C19AG was to advise on the scientific and technical aspects of the pandemic. The Group did not propose policy options nor consider their palatability.
122. Information on the advice provided with regards to non-pharmaceutical interventions (NPIs) has been provided in section D (see below at paragraph 210 page 47).
123. Advice related to travel and borders was provided on 28 January 2021. The structure was normally to provide the key points of advice. I am unable to comment on why this advice was commissioned at the time it was; this would be a matter for Scottish Government to confirm.
124. I am asked about CMO seeking to focus medical advice to Cabinet on “the centre ground where there was most confidence and agreement”. I am not aware of and cannot comment on the CMO's focus in relation to the medical advice that was being provided to Cabinet.

## **EVIDENCE**

125. The C19AG maintained close and constructive links to the COVID-19 Analysis Division. The Chief Social Researcher replaced the Chief Statistician as a member of the C19AG on 11 August 2021. The terms of reference set out the broad range of areas where the C19AG could provide advice on the scientific and technical concepts and processes that were key to understanding the evolving COVID-19 situation and potential impacts in Scotland.
126. The C19AG benefited from membership of Dr Audrey MacDougall, who led the COVID-19 Analysis Division, and the CMO, who had overall responsibility for clinical advice to Ministers. Dr Jim McMenamin also, through his leadership role in PHS, was responsible for national incident management which included NHS and social care mobilisation.
127. Group members could draw on a wide range of sources, including the national and international groups they sat on, and their professional connections. A record was kept

whenever these sources formed part of the C19AG meetingpapers.

128. At its meeting on 28 January 2021, the C19AG was given an overview of the difference sources of advice and scientific advice that feed into government, noting the role of scientific advice in the broader policy process in government. In terms of other sources of information, my Chair's Corporate Statement in paragraphs 25 to 30 describes the wide range of data and other information available to the Group. This included sources such as advice from the World Health Organization and national organisations. The data was not real-time but was as up to date as possible within the limitations of our data systems and the developing understanding of the pandemic. There was a requirement for those limitations to be borne in mind when drawing any conclusions from the available information.
129. No record of all the other sources of information available to Group members was kept, as noted at paragraph 28 of my Chair's Corporate Statement [AM3/013 - INQ000215468].
130. The constitution of the C19AG did not include patient groups. It was a scientific group, although we did have strong behavioural science expertise within the group. The C19AG did not have access to information and advice from patient groups or other representative groups about the patient experience within the healthcare system during the pandemic. I do however discuss below at paragraph 234 that we received information from Professor Jacqui Reilly which was of assistance in terms of her expertise and the remit of the Covid Nosocomial Review Group she chaired.
131. Information available to the Group in meeting papers has been shared with the inquiry Agenda items could be suggested by C19AG members and were agreed, where possible, by the secretariat and the Chair.
132. The C19AG did not commission behavioural modelling.
133. I do not know why the C19AG was not involved in policy or decision impact assessments as this was not a specific request of CMO or the Scottish Government
134. At the C19AG meeting on 11 May 2020 the CMO asked group members whether the C19AG had met their expectations thus far. C19AG members spoke of the appreciation of hearing that their advice was valued by Ministers and of their privilege of being invited to participate in C19AG meetings, and willingness to serve [AM3/041 - INQ000217609].

SAGE

135. My understanding is that SAGE was activated in January 2020 and was convened to provide independent scientific advice to support decision making in the Cabinet Office Briefing Room (COBR) in the event of a national emergency.
136. SAGE – COVID was activated and met over 100 times. Participants to the best of my knowledge were identified by the Cabinet Office and the Government Office for Science. I do not know if representatives of the devolved administrations were present at initial meetings of SAGE.
137. Following the establishment of the C19AG, Scottish representation at SAGE was in my view proportionate and sufficient. Individuals who participated at least once included Professor Ian Boyd (St Andrews), Professor Doreen Cantrell (Dundee), Dr Annemarie Docherty (Edinburgh), Professor Sir Michael Ferguson (Dundee), Professor Julie Fitzpatrick (CSA Scotland), Professor Andrew Morris (Edinburgh and HDR UK), Dr Jim McMenamin (Health Protection Scotland), Professor Andrew Rambolt (Edinburgh), Professor Shelia Rowan (CSA Scotland), Professor Tim Sharp (Strathclyde), Professor Sir Gregor Smith (CMO Scotland) Professor Nicola Steedman (Deputy CMO Scottish Government). Devolved administration representation on SAGE is a matter for the UK and Scottish Governments.
138. The chairs of SAGE encouraged all participants to contribute to discussions and to provide advice. Specific updates and contributions from Scotland were welcomed in the discussions. This was in my view sufficient and appropriate.
139. Advice that emanated from SAGE and its sub-groups was co-opted into advice developed by the C19AG. Advice from the C19AG was to fortify, and not to duplicate, advice from SAGE and its sub-groups and to put it into the Scottish context. Contextual issues included; (i) different phase of the pandemic in Scotland; (ii) geographical and remote and rural considerations (iii) demographic considerations; and, (iv) different NHS, public health and social work structures across the four nations.
140. In my statement as Chair of the C19AG [AM3/013 - INQ000215468] at paragraphs 18 to 21 I set out the relationship between the C19AG and SAGE. This also makes clear that the C19AG benefitted from significant advice on the fundamental science of COVID-19 provided by SAGE and that SAGE advice was held in very high regard by members of the C19AG.
141. The modelling data emanating from SAGE and its sub-groups including SPI-M-O and SPI-B was invaluable. During the pandemic the Chief Statistician for Scotland



developed modelling capability which provided more granular information about the status of the pandemic in Scotland. I did not consider that epidemiology/modelling played too prominent a role in the advice provided by SAGE. Scientific contributions, challenge and views were sought from a diverse range of scientists.

142. The C19AG benefitted from having members who also sat on SPI-M-O and SPI-B, and the principle of reciprocity with SAGE enabled the C19AG to receive updates from those members on the activity of those subgroups in addition to receiving the SPI-M-O and SPI-B papers which SAGE circulated.
143. The C19AG had no role in relaying information from Scottish Government to SAGE and SPI-M-O. The C19AG was not a formal conduit of information from Scottish Government to SAGE. I understand, to the best of my knowledge, that there was Scottish representation on SAGE agenda setting, though I had no role or involvement in this.
144. The C19AG did not keep records as to whether its advice differed from SAGE advice.
145. The role of the C19AG was to interpret the often complex scientific and modelling advice coming from SAGE and Scottish sources for the benefit of Scottish Ministers. The scientific endeavour during the pandemic was global. SAGE and C19AG contributed to the emergent evidence base. To the best of my knowledge there was no data or evidence limited to SAGE which would have been helpful to be seen by C19AG participants.
146. Members of C19AG who were members of SAGE were encouraged to participate fully in SAGE discussions and pose questions at SAGE meetings relevant to Scotland. Members of C19AG who participated in SAGE, including myself, routinely gave a verbal "SAGE Update" at the beginning of C19AG meetings which was a helpful way to ensure the science was joined up.
147. The roles of SAGE and the C19AG changed throughout the pandemic, as understanding of the pandemic and the virus became broader, which eventually led to these advisory groups being stood down. During the course of the pandemic, the capability, expertise and capacity within government and public services (e.g. PHS, UKHSA) matured significantly.

148. There are opportunities by which the integration of the UK and Scottish-based scientific advice groups could be strengthened. This have been identified by the Scottish SCOPP as one of four main priorities.

149. In the initial phases of the pandemic, prior to the establishment of C19AG and my involvement in advising the Scottish Government and participating in SAGE, I understand that Influenza pandemic assumptions were an important contribution to scientific advice. The planning for an influenza pandemic, in contrast to a SARS-like pandemic (such as COVID-19), is characterised by more emphasis on social distancing rather than diagnostics, case detection and isolation. The explicit modelling of influenza also incorporated features/variables that were less relevant to COVID-19 (for example schools and not care homes), when many more COVID-19 deaths were of elderly care home residents. I am unable to comment on how influenza pandemic assumptions influenced the pandemic response in Scotland prior to establishment of C19AG.

150. The partnership and collaboration across modelling groups was to my mind very good. This enabled the development of consensus statements that expressed degrees of certainty/uncertainty to CMO and policymakers.

**e) Data and modelling**

General

151. Data Science is the study and analysis of data in various forms that aims to extract meaningful insight from data to support research and evidence generation. During the pandemic important data types included patient data across “journeys of care” including general practitioner data, testing data, vaccination data, viral genome data, hospitalisation data, and mortality data. Other important data sources included administrative, financial and commercial datasets and those providing an indication of population movement.

152. Data science is a multidisciplinary endeavour that combines expertise in mathematics, statistics, computational science, artificial intelligence, and the development of software and infrastructure to analyse large amounts of data in a secure and trustworthy way.

153. During the pandemic the key sources of data modelling information used by SAGE and the C19AG in advising on the Scottish Government’s response to COVID-19 came from numerous sources, including SPI-M-O, modelling performed by the Scottish

Government Chief Statistician, operational data from JBC/UKHSA, NHS and social work sources, and evidence generated by academic groups. The coordination across these groups of expertise mediated by SAGE, was excellent and analyses provided information on transmission, rates of infection, differential effects of virus mutations, reinfection and death rates. C19AG had adequate access to the data and modelling information that was available.

154. In addition to these sources, the C19AG regularly received updates from its members (i.e. Professor Mark Woolhouse and Professor Chris Robertson) as well as from the Scottish Government Analytical team (initially Professor Roger Halliday the Chief Statistician and latterly Dr Audrey McDougall) on the latest modelling information.

#### Data

155. The Scottish Government not only sponsored modelling but received operational information from COVID-19 dashboards and the NHS Scotland COVID status App. These were not commissioned by or the responsibility of C19AG. The C19AG did not specifically or routinely use COVID-19 dashboards but had expert representation from PHS, including Professor Chris Robertson and Dr Jim McMenamin, who often provided important updates on the status of the pandemic derived from public health and NHS operational systems. I do not know how or to what extent the Scottish Government relied on this information and therefore cannot comment on effectiveness or areas of improvement.
156. The goal during pandemic management is to have near real-time whole system intelligence. This requires data infrastructures and data systems that can, in near real-time, track pandemic activity, i.e. infection rates, vaccination rates, hospitalisations and patient outcomes. There are the capabilities of an excellent surveillance system.
157. We did not have this at the start of the pandemic. The data landscape was fragmented with data distributed across multiple data systems and data controllers. There is the ability in Scotland because of the Community Health Index number (CHI number) to link data to enable analysis. In his email to me on the 11<sup>th</sup> June 2020 Professor Mark Woolhouse correctly identified that the delivery of a reliable, scalable, secure and interoperable data system that enabled surveillance of the pandemic to a significant challenge.
158. Important progress was made during the pandemic in the four nations of the UK in the ability to link large-scale population-level datasets and generate insights that helped

inform decision making. I believe we need to build on these advances in infrastructure and learning, expanding the applications out beyond COVID-19 related illness and impacts to drive new understanding in other areas, such as cancer, heart disease and dementia. There is a risk that we instead allow things to go back to the way they were as focus moves on from the pandemic. We are still a long way from achieving the near real time whole system intelligence that would serve us well in future pandemics. It is time to address the blocks to data access and lack of consistency and inefficient data governance frameworks that prevent data from different sources to be linked and accessed for research purposes. Clear rules, processes and role delegations are required to allow access to data but also to ensure privacy of patient data and compliance in overall data management across organisations. A survey of current practice across the UK by HDR UK in 2022 confirms lack of standardisation and protocols. This results in data not being available for analysis and research despite the wealth of health data assets we have in Scotland and across the UK, largely thanks to the NHS.

159. A key goal of HDR UK is to address this lack of standardisation and realise the potential of health data science to generate new insights and improve lives by developing principles and best practice of data governance frameworks. For example, under the leadership of Cassie Smith, Head of Legal, Trust and Transparency HDR UK has established a pan-UK Data Governance Steering Group in partnership with ONS, NHS England, Research Data Scotland, SAIL Databank in Wales that is starting to look at the standardisation of data access requests, and the approvals processes for the use of data by researchers.
160. This is however a long and arduous challenge as there are huge variances in practice. There is also often caution, inconsistency and at times confusion about what is a “legal basis” for data access and data sharing. During the working life of the C19AG we found that key data were either not accessible, or required multiple applications and requests that took a considerable amount of time. As a result, despite excellent analysis by ONS, NHS England, UK HSA and PHS, multiple research groups who had the ability to contribute further evidence and insights to the pandemic response were unable to access data or suffered significant delays in the access to data.
161. This has been a significant challenge for many years and despite multiple reviews, little progress has been made. There are specific challenges in relation to data from the care home sector and the care at home sector. Reliable real-time information on people being cared for in these settings is often just not available.

162. In Scotland, PHS, and National Services for Scotland have the joint responsibility for the delivery of information governance processes and systems for national data under the jurisdiction of the Digital Directorate of Scottish Government. Other data sets are the legal responsibility of NHS Boards, individual general practices and local authorities. The NHS/Scottish Government will be able to inform the Inquiry what the specific response was after Professor Woolhouse in 2017 brought data access challenges to the attention of the then CMO. As Chair of the Scottish Government SCOPP, I can confirm this has been identified as an issue in need of urgent reform. The Committee has initiated a specific work data programme to make recommendations to Scottish Government. The collection and dissemination of data between Scottish Government directorates and between the Scottish Government, the NHS and the care sector work is an area that needs improvement if we are to deliver public benefit.
163. The C19AG had adequate access to data to inform advice generation but at times it could have been improved by speed of access and granularity of access. For example, a “lead indicator” was well coded data on hospitalisations for COVID related illness. Some historical coding systems only make this data available up to six weeks following hospital discharge. This is a very long way from near real-time intelligence and is nowhere near what is required to respond to a pandemic.
164. An important issue for data sharing during the pandemic is collaboration. Data are complex and it is essential that modern and sophisticated analysis and statistical techniques are applied to the data, including data cleaning to ensure meaningful insights are derived. This requires partnership working between NHS, operational leadership, and Government data analysts and academic groups. In Scotland there were good examples of such partnership working – for example the EAVE II study and the work of Professor Mark Woolhouse. This however could be improved by defining agreed ways of working governance and best practice. This is a feature of a so called “learning health system”. At times different groups could have been better aligned to enable such collaboration. The benefits of this could have included more robust analysis and novel approaches to data visualisation to enable core decision makers to better understand the C19AG’s advice. Examples of useful data would include environmental and self-monitoring data such as mobility data, data from wearable devices such as smart watches, Fitbits and mobile phones, and transportation and footfall data, to give an indication of population mixing. Looking ahead there is an opportunity to make the exceptional the routine by embedding best practice and preparation into business as

usual. For data there is a need to agree which data will be shared, how and by whom and for what purpose.

165. Some datasets were not available routinely to the C19AG. For example, mobility data and commercial data were not routinely part of the research data ecosystem, although ONS made important progress in this regard. We were therefore reliant on UK-wide research endeavours such as the COMIX study. Data from the Scottish COVID-19 contact survey was included in situation updates from Dr Audrey MacDougall, who led the COVID-19 Analysis Division in the Scottish Government. These data systems provided important insight to inform core political decision-making by the Scottish Government and were notable for their effectiveness when they had to be developed rapidly during the pandemic or even built from scratch.
166. The EAVE II study was a collaborative partnership between PHS, Universities in Scotland and Public Health physicians. Led by Professor Sir Aziz Sheikh, the EAVE platform was established in 2012, through funding from NIHR, alongside a portfolio of nine pandemic preparedness and responsiveness projects consequent to the 2009 influenza A/H1N1 pandemic. In response to the emergence of COVID-19, funding was made available to support studies that could rapidly respond to this new pandemic. There was no precedent at this point for a whole country population platform and so UK Research and Innovation/Medical Research Council (UKRI/MRC) and Scottish Government funding was used to bring EAVE out of hibernation and create a unique national resource (EAVE II) – the first national, real-time, multi-dimensional, surveillance platform in the world – with data from all people resident in Scotland.
167. EAVE II created a multi-disciplinary, Scotland-wide team that worked closely with government, academic, public health, patient and public involvement representatives and professional bodies. It created a novel analytical capability within the secure data environment in PHS. There were several 'world's first' studies that ensued that were proactively made available to key decision-making bodies. For example, high quality scientific publications and partnership working with global media agencies ensured accurate reporting of findings, on the safety and effectiveness of vaccines.
168. Key to EAVE II was data linkage across multiple datasets. Data from general practice was invaluable – in Scotland derived data from all 1,000 General Practices enabled the analysis of the impact of different morbidities on COVID related outcomes.

169. In 2020 HDR UK was supporting a Data Research Hub on Respiratory Disease (BREATHE) directed by Professor Sir Aziz Sheikh who is also a Research Director at HDR UK. As Director of HDR UK I encouraged Professor Sheikh to redirect resource which was initially designed to look at other respiratory illnesses for example asthma, to support dedicated research activity on COVID and its outcomes. The success of EAVE II is clear and shone a light on the effectiveness, efficiency, and safety of COVID vaccines in Scotland, and other key indicators important to pandemic response. This had global implications. Resources however to support EAVE II were not in place routinely and required targeted UKRI and HDR UK investment and support. Ideally such data infrastructure and capability should be routine.

### Modelling

170. In terms of modelling the C19AG had no resources at its disposal to focus on commissioning of specific models. It may have been helpful if this had been available, but only if coordinated and connected with SPI-M-O. Members however were active and provided significant and high-quality and reliable work during the pandemic. Academic groups in Scotland included those at the Universities of Edinburgh, Strathclyde and Glasgow. Many had excellent links to other expert groups and Professors Woolhouse and Robertson were members of SPI-M-O. This enabled the C19AG to have adequate and timely access to clear relevant and reliable modelling. For example, on 2<sup>nd</sup> April 2020 the Chief Statistician shared with C19AG a model which was based on the Imperial model for the UK, but calibrated with Scottish data. On the same day Professor Chris Robertson gave a brief update on the modelling work he was leading at Health Protection Scotland. He fitted a simple Susceptible, Latent period, Infectious, Recovery model to hospital data and fed the methodology into the Scottish Modelling team. C19AG members would discuss and advise Dr Audrey MacDougall, who led the COVID-19 Analysis Division within Scottish Government who had overall responsibility for modelling to Ministers. It is my understanding that this Division and Scottish Government also worked on modelling with SPI-M and academic groups.

171. The effective reproduction number  $R$  was widely accepted as a key indicator during the early stages of the COVID-19 pandemic. The C19AG benefited from consensus modelling from SPI-M-O, a combined analysis using an ensemble of 14 epidemiological models that was derived from a collaborated initiative between academia and Government. This established combination method that used heterogeneous data sources for validation increased robustness and reduced the biases and limitations associated with a single source of data.

172. The modelling of epidemiological outcomes improved over the course of the pandemic. Some data sources were elusive – for example data lags existed on hospitalisation due to COVID in the early stages of the pandemic. In addition, data on care home residents often did not exist, and general practice (primary care) data did exist but was very difficult to obtain for research purposes, despite being invaluable to truly understand population stratification and risk.
173. To my mind the modelling available to the C19AG was useful and proportionate.
174. My observation is that models used were transparent and when uncertainty existed, this was explained. Policymaking during a pandemic is extremely challenging, and decisions are taken in a highly complex and rapidly changing environment. The science does not give a single answer and Government responses, both in policies and actions, have varied widely and with variable success.
175. Decisions in policy need to weigh up the different effects of a pandemic on society, especially on public health and the economy. Health and economy are often considered in isolation whereas an integrated approach in my view may facilitate better political decisions. Other important aspects that need careful thought and integration include communication, public engagement and behavioural science; this is essential if public trust is to be earned in the application of NPIs and vaccination programmes.
176. A key policy challenge we observed was how to communicate uncertainty in exchanges between modellers and politicians – not only the uncertainty within the models but also the uncertainty of modelling itself. The C19AG therefore attempted to convey this uncertainty through illustrating a range of outcomes and probabilities. This cut across normal advice to Government where a single best prediction is often preferred.
177. In terms of models, different scenarios were modelled as part of best practice and specific outcomes, for example, application of different levels of lockdown were modelled. Sir Patrick Vallance noted this in his article “It’s not true COVID-19 modellers only look at worst outcomes” [AM3/042 – INQ000326339]. Because of regular dialogue with CMO and Scottish Ministers, my view is that Scottish Government appreciated the level of uncertainty.
178. It is my belief that modelling information, as a guiding principle, should be provided to the public within a relatively short timeframe. In the pandemic context, SAGE oversaw the consensus statements and publication of SPI-M-O reports as formal advice to



Ministers. In my view, the information upon which decisions were based (not just in relation to modelling) should be provided to the public to understand those decisions.

179. Various different models were used to inform advice throughout the pandemic. I was not however personally involved in any modelling groups, and I am not a modeller by profession, and therefore I cannot speak further in relation to the sufficiency of the content within the models provided to decision-makers. I am aware that the Scottish Ministers had an approach to considering the Four Harms, including those which were non-covid related. As noted at paragraph 85 of this statement, the remit of the group was medical and scientific advice, not other considerations, which were dealt with by other fora. The work of the C19AG and its subgroups considered inequalities, mental health and educational issues as part of its advice.

180. Following considerable effort, availability of data in Scotland enabled the impacts of the pandemic on vulnerable and risk groups to be modelled. For example, working in partnership with the QCOVID research group, and supported by HDR UK, Scottish data was able to define “at risk” patient sub-groups who were at greater risk of adverse COVID outcomes. The challenges to achieve this were considerable. C19AG provided a paper on 6<sup>th</sup> August 2020 [AM3/043 – INQ000218311] and [AM3/043a - INQ000218312] which provided advice (i) COVID- 19 risks; (ii) tools to measure risk from COVID-19; and (iii) the principles of risk communication, with a focus on clinically vulnerable groups. The aim of the National Core Studies Data and Connectivity programme aimed to improve data access to academic researchers/modellers throughout Scotland to enable wide ranges of models to be generated and used in planning the management of the pandemic.

## Conclusions

181. I have been asked to conclude what if anything can be done to improve data linkage and access across health care systems. As part of the work of the Scottish Government SCOPP, which I chair, data infrastructure, data governance and a pandemic data strategy has been identified as one of four key priorities. Clear policy, leadership and investment will be essential if we are to respond better to future threats in this pandemic era. This was anticipated at the start of the pandemic: I highlighted this necessity in my letter to the First Minister on the 8<sup>th</sup> April 2020. [AM3/016 -INQ000217465], [AM3/016a - INQ000217466] and [AM3/016b - INQ000217467].

## **f) Other Sources of Information and Advice**

### International sources of information/ advice

182. Outbreaks do not respect political boundaries so combatting them is most successful when there is a high degree of international cooperation. At the first meeting of the C19AG on the 26<sup>th</sup> March 2020 I emphasised the principle of openness, transparency, and collaboration, not only with colleagues across the UK but in other countries and their relevant authorities.
183. I am not able to comment on what access Scottish Government had to the response of other countries to COVID-19 between January and March 2020, as the C19AG had not been constituted during that period.
184. C19AG members had access to ICJU (International Comparators Joint Unit) reports in Objective Connect and on occasion, these were included in meeting papers. ICJU was a helpful contribution to a corpus of evidence that highlighted approaches to pandemic management from elsewhere in the world.
185. Group members regularly highlighted and discussed the global pandemic progression, and brought insight and evidence from Nordic countries, South Asian countries and the US, as well as elsewhere in the UK. This was reported to CMO and Ministers, for example, in the Annex to its advice on the 14<sup>th</sup> April 2020 the C19AG compared different approaches to COVID-19, including international comparisons. Other examples where C19AG provided international insights included updates from Taiwan, Singapore, and New Zealand, and regular reference to ICJU reports on NPIs and other interventions.
186. Consistent with the principle of openness, the C19AG members also used their personal networks to invite global key opinion leaders to offer a perspective on pandemic progression at times of great uncertainty. This included Andreas Poensgen on the 13<sup>th</sup> April 2020 and David Nabarro on the 9<sup>th</sup> March 2022. They contributed insight, challenge and new ideas to the work of the group. These were examples of international participation in the work of the group. Group members routinely solicited insight, information and intelligence from a broad network of international partners including the WHO, Wellcome, CEPI and other key international organisations. Members often referred to information they had received from the international networks or groups of which they were also members. One example is that early in March 2020 I contacted Professor Chorh Chuan, the Chief Scientist in Singapore, who provided detailed information on the status of the pandemic in Singapore including scientific evidence. [AM3/044 – INQ000326329], [AM3/044a – INQ000326330], [AM3/044b – INQ000326331], [AM3/044c – INQ000326332], [AM3/044d – INQ000326333], [AM3/044e – INQ000326334], [AM3/044f –

INQ000326335], [AM3/044g – INQ000326336], [AM3/044h – INQ000326337] and [AM3/044i – INQ000326338]. As previously stated at paragraph 24 of my corporate statement [AM3/013 – INQ000215468], we endeavoured to understand and present a broad international view of differential approaches to pandemic management.

187. No record was kept by the C19AG secretariat of instances where WHO advice was not followed. C19AG had no formal interaction with any interest groups.

188. In terms of learning, there is a need for longer term thinking in relation to pandemic preparedness. This includes better international cooperation, better integration of modellers and decision making, the development of networked randomised clinical trial platforms, better harmonised regulation, a coordinated approach to sharing of data, routine surveillance, and the development of point of care diagnostics and vaccines. There is also a need for better understanding of other factors including “economic scarring”, the components of vital national infrastructure, legal models and leadership/advisory structures for future pandemics.

#### Other sources of information/ advice

189. Scottish Government had access to a wide range of formal and other independent advisory structures beyond the C19AG and SAGE. I assume that advice from other sources was made available as appropriate. Original research was a key component of the pandemic response. In Scotland the Chief Scientist (Health) reports to the CMO, the Chief Scientist Office (CSO) has a modest budget (~£70M per annum) compared with UK research funding structures. CSO did solicit rapid research calls during the pandemic with approximately £5M investment. Most strategic and large-scale funding however was administered by UKRI, NIHR with guidance from the Government Office for Science. The Scottish Government will be able to advise the Inquiry on what specific research it commissioned directly. UK research contributed greatly to advice provided by C19AG and the Scottish Government’s response to the pandemic. For example, UKRI has produced a compendium of the breadth of scientific contributions [AM3/045 – INQ000326361]. Many of these studies were helpful in informing the deliberations of the group alongside evidence from a wide range of sources to inform its advice. These are detailed in the group’s formal advice as previously exhibited.

190. CMO benefited from a wide range of expertise including clinical expertise. Clinical input to the C19AG was provided by infectious disease expertise (e.g. Professor Tom Evans who is clinically active) as well as Public Health expertise (e.g. Dr Jim McMenamin) and Primary Care expertise (e.g. Professor Sir Aziz Sheikh who is a

General Practitioner). C19AG members had strong clinical networks which they used to provide a “front line” observational perspective into deliberations.

191. The Scottish Government established the C19AG at the time of an international public health emergency. Existing medical scientific advisory structures (e.g. Scottish Science Advisory Committee) had members who also joined the C19AG. Looking forward, the Scottish Government SCOPP has identified the formalisation of medical scientific advisory structures as being an opportunity to ensure that optimal advisory structures are in place with appropriately linkage to UK and international advisory structures.

#### **g) Funding and competence**

192. The C19AG as an independent advisory body relied on members to voluntarily provide time and expertise in addition to their day-to-day professional responsibilities. In future, consideration should be given to the sustainability of this and the need for further support to enable independent contributions from advisors over protracted time periods, and the implications that has for their existing educational and research responsibilities. The secretariat support to the group provided by Scottish Government was excellent.

193. I am asked whether the devolution settlement presented any issues to the medical/scientific advisory structures of the Scottish Government. There were no limitations imposed by Scottish Government on the activity of the group due to the devolution agreement. In my statement as Chair of the C19AG [AM3/013 – INQ000215468] at paragraph 35 I note that devolution was not an issue for significant discussion.

194. I am also asked about the connection of the C19AG to the Office of the Secretary of State for Scotland. The C19AG did not provide advice to the Office of the Secretary of State for Scotland, nor was it ever asked to do so. The C19AG provided advice to the Scottish Government and did not have a role in the working relationship between the Scottish Government and the office of the Secretary of State for Scotland.

#### **h) Conclusions and lessons learned**

195. The specific needs of the Scottish Government for medical scientific advice were identified rapidly in late March 2020, with the C19AG assembled in response. The role, remit, membership and purpose of the C19AG in my view supported the Scottish Government in its pandemic response. Ideally, the rapid assembly of the C19AG would

have been part of mature and pre-existing advisory structures, with deep integration across the four nations. Scrutiny of the effectiveness of such advisory structures is an important principle. Transparency and the publication of minutes and outputs of such advisory groups is an essential part of such scrutiny.

196. Once established the procedures for preparing and communicating medical and scientific advice to inform core decisions made by the Scottish Government in connection with the management of the pandemic were fit for purpose. The transparency of key advice was a principle that we tried to embrace from the establishment of the group.

197. As independent Chair of the C19AG it was my responsibility to provide scientific advice to the Scottish Government. It was not in my remit as independent Chair of C19AG to take a view on the performance of the First Minister, any Cabinet Secretary, Minister, Senior Civil Servants, or any special advisor, in respect of the Scottish response to the pandemic between Jan 2020 and April 2022. My expectation is that policy makers act according to the Nolan principles and hold their own leadership to account and behave with selflessness, integrity, objectivity, accountability, openness and honesty.

## **B. Initial Understanding Response to COVID-19 19<sup>th</sup> January to March 2020**

### **a) Initial Understanding of the nature and extent of the threat**

198. I first became aware of COVID-19 in January 2020 and was very concerned of the potential global threat following stories of Dr Li Wen Liang who sent a message to fellow medics about the outbreak of COVID at the end of December 2019. I was personally unaware of advice being offered to CMO and her staff before the C19AG was established. I do not know to what extent the First Minister and other core decision-makers were aware of the imminent threat in January 2020 and I did not seek to bring it to their attention. My first discussion with the CMO was when I was contacted by Dr Catherine Calderwood on 16<sup>th</sup> March 2020.

199. At the outset, I had an awareness of key scientific principles in relation to the pandemic (for example, the significance of exponential spread, “R”, role of community transmission, incubation period of COVID-19, declaration of Public Health Emergency of Immediate Concern (PHEIC) by the WHO Director General). I dedicated significant time increasing my understanding of these key factors following my appointment as Chair of C19AG. I read widely in January and February 2020 to try to enhance my knowledge about the emergent pandemic - I have not archived these articles.

200. I am unable to comment on the knowledge of the Scottish Government in January and February 2020. As the C19AG was established in March 2020, I and the C19AG did not provide any advice to the Scottish Government or the CMO prior to the first lockdown. When it was established in March 2020, the C19AG was not provided with any information that had come from China in January 2020. My observation was that the lack of effective early actions was a feature of the UK's pandemic response in 2020. Early proactive action is necessary with a commitment to escalate quickly if necessary. The UK's response was characterised by being iterative and 'wait and see' despite the WHO's declaration of a PHEIC. I cannot comment on what the UK or Scottish Government understanding was on the case fatality and mortality rates in January 2020.

201. The World Health Organization defines herd immunity as “the indirect protection from an infectious disease that happens when a population is immune either through vaccination or immunity developed through previous infection” [AM3/046 – INQ000326340]. This is also my understanding of herd immunity. I was not privy to the role, if any, that the concept of herd immunity played in Scottish Government policy- or decision-making. I do not know whether the Scottish Government adopted herd immunity as an initial or subsequent strategy for preventing a second wave.

#### **b) Pre-lockdown response**

202. I cannot comment on advice provided to the Scottish Government between January 2020 and mid-March 2020. As noted above, I did not provide any advice to the Scottish Government in this period regarding pre-lockdown response, as the C19AG had not yet been constituted. I do not know what advice or information was relied upon by the Scottish Government in its decision-making during this time and so I am not in a position to express an opinion on the appropriateness of these decisions.

#### **c) Super Spreader Events**

203. I am asked about key events that took place in Edinburgh, namely the NIKE Conference on the 27<sup>th</sup> February 2020, the Scotland and France rugby international at Murrayfield on the 8<sup>th</sup> March 2020 and the Scotland and Wales rugby international on the 14<sup>th</sup> March 2020. These events all occurred prior to the C19AG establishment. I therefore do not feel able to comment on steps the Scottish Government took or ought to have taken in relation to these events. Large scale events are likely to have increased transmission of Covid-19.

### **C. Testing**

204. I cannot comment on Scottish Government decisions on testing in the period January 2020 to March 2020, as the C19AG was not constituted during this period.

205. The C19AG recognised that testing was a cornerstone of efficient pandemic response. The issue was discussed regularly at group meetings and the group benefitted from the input of the Scientific Advisory Board on Testing sub-group, established on the 1<sup>st</sup> April 2020, and was discussed in detail at the third meeting of C19AG on 3<sup>rd</sup> April 2020. Access to and acceptance of rapid and reliable testing around the country was an essential component of the pandemic response as testing can help people determine if they are infected with SARS-CoV-2 – regardless of whether they have symptoms – and whether they are at risk of spreading the infection to others. The announcement by Matt Hancock of 100,000 tests per day served to highlight the importance of testing.

206. Due to the importance of testing to the pandemic response, testing featured frequently in advice from the C19AG. The main advice the group provided on testing was the advice: 'Who and how to test in Covid-19' [AM3/047 - INQ000217687], [AM3/047a - INQ000217688], [AM3/047b - INQ000217689], [AM3/047c - INQ000217690], [AM3/047d - INQ000217691], [AM3/047e - INQ000217692] and [AM3/047f - INQ000217693]. This was joint advice from the C19AG and the Scientific Advisory Board on Testing.

207. The group also convened a deep-dive meeting with the First Minister and other colleagues on contact tracing on the 8<sup>th</sup> May 2020 [AM3/048 - INQ000218313] and [AM3/048a - INQ000218314].

208. In my view, and consistent with the G7 countries' 100 days mission, a strategic approach to diagnostics, therapeutics and vaccines will be essential to any future management of pandemics. As part of our work on pandemic preparedness, we are assessing Scotland's current capability and possible future contributions in the context of a UK-wide and global response.

209. Testing targets are just one useful metric of the judicious use of testing in pandemic. Agreement on the purpose of testing strategy and public health and clinical response are also important dimensions.

### **D. Decisions in relation to non-pharmaceutical interventions ("NPIs")**

210. On establishing the group in March 2020, there was widespread community transmission of SARS-CoV-2. In the absence of widely available diagnostics, and the complete absence of therapeutics and vaccines, non-pharmaceutical interventions (NPIs) such as washing hands, social distancing and face masks were the mainstay of pandemic policy response. Given their importance as a tool to manage the pandemic, the group often considered scientific evidence on multiple NPIs and NPIs featured frequently in advice from the Group. This is reflected in the minutes of the meetings and the formal advice that was submitted to Scottish Ministers. I understand these have been provided to the Inquiry. In my corporate statement at paragraphs 32 to 38 [AM3/013 – INQ000215468] I have explained the C19AG approach to advice on NPIs. C19AG did not provide advice specifically on NHS capacity - the management of this was not in the scope of the group. Nevertheless, the need to 'protect the NHS' steered UK and Scottish approaches to the pandemic and the group provided advice in that context.

211. The advice provided to the Scottish Ministers by C19AG reflected the broad input and expertise of all members of the group, and not my personal opinion or expertise alone. As I have explained at paragraph 18, I am not an expert in virology, infectious disease or epidemiology. As such, I do not consider that I am the right witness to provide the Inquiry with opinion evidence on the appropriateness, effectiveness or impact of the Scottish Government's strategy on NPIs. Notwithstanding the significant development of my knowledge and expertise in the scientific issues relevant to the pandemic over the course of my tenure as Chair of C19AG, I remain of the view that I am not a specialist or an expert in infectious disease and I consider that others who do have that background and expertise would be better placed to provide the Inquiry with reliable evidence on these matters.

212. The C19AG did not provide advice on religious worship specifically. The C19AG provided specific advice on the use of medical and non-medical facemasks on the 12<sup>th</sup> June 2020 [AM3/049 - INQ000217681] and [AM3/049a - INQ000217682]. Facemasks and face coverings were frequently discussed at C19AG meetings and feature widely across minutes and advice of the Group. Copies of all minutes and advice have been provided to the Inquiry.

213. The C19AG provided specific advice on schools on the 8<sup>th</sup> May 2020 when it was asked to provide scientific advice on two Scottish Government documents relating to schools. These were: i) 'Education Recovery Group – Phased Reopening and Physical Distancing in Schools and ELC Settings – Infrastructure and Organization' and ii) "Excellence and Equity During the COVID-19 Pandemic: A Strategic Framework for the



Reopening of Schools and Early Learning and Childcare Provision in Scotland'. An exhibit of this advice is provided here [AM3/050 - INQ000217593] and [AM3/050a - INQ000217594].

214. Specific Advice on early learning and childcare (ELC) and schools was also provided by the C19AG on the 20<sup>th</sup> May 2020 [AM3/051 - INQ000217642], [AM3/051a - INQ000217643] and [AM3/051b - INQ000217644]. The Education and Children's Issues advisory sub-group held its first meeting on the 23<sup>rd</sup> June 2020 and became the dedicated forum for advice relating to schools.

215. The group discussed the rapidly evolving scientific base and chronology of SARS-CoV-2 infection risk and the impact of COVID-19 on different societal groups and those at greater risk throughout its deliberations and was a key focus when providing advice to Scottish Government. The C19AG specifically provided advice on 'Reducing risk and improving outcomes from COVID-19 in Scotland's ethnic and religious minority communities [AM3/052 - INQ000217727] and [AM3/052a - INQ000217728]. Members of the group contributed to sentinel UK-wide studies that enabled prediction of the highest risk populations. For example, the UK CMO sponsored the development and deployment of the QCOVID risk calculator, which influenced vaccination policy and shielding. Risk stratification was discussed, in particular, at the meeting on the 2<sup>nd</sup> July 2020, with C19AG members being granted access to the QCOVID algorithm ahead of this [AM3/053 - INQ000326341].

216. The C19AG held a deep-dive briefing on shielding on the 15<sup>th</sup> May 2020. Ministers and senior officials attended that briefing [AM3/033 - INQ000218308]. I understand that the Scottish Government established a dedicated advisory group on shielding. That group will be better placed to comments on issues relating to shielding and those at highest clinical risk.

#### **E. Decisions relating to the first lockdown**

##### **a) The imposition of the national lockdown in March 2020**

217. The imposition of the national lockdown by the Scottish Government preceded the establishment of the C19AG. Therefore, the C19AG had no role in providing advice to the Scottish Government about the position of the lockdown.

218. In relation to the Scottish Government's lockdown exit strategy in April 2020, I understood that the main option at this time was (i) to suppress the virus through compliance with physical distancing and hygiene measures, ensuring that the reproduction number remains below 1 and that the NHS remains within capacity; (ii) to care for those who need it, whether infected by the virus or not; (iii) to support people,

business and organisations affected by the crisis; (iv) to recover to a new normal, carefully easing restrictions when safe to do so while maintaining necessary measures and ensuring that transmission remains controlled, supported by developments in medicine and technology; (iv) to protect against this and future pandemics, including through effective testing, contact tracing and isolation. The development of a vaccine to achieve herd immunity was a medium to long term strategy. The C19AG discussed the necessity of having a lockdown exit strategy at a number of meetings and the group provided formal advice on this on the 14<sup>th</sup> April 2020 [AM3/055 - INQ000217504], [AM3/055a - INQ000217505] and [AM3/055b - INQ000217506]. The C19AG noted the considerable uncertainty because of absence of a vaccine at that time. There was rapid development and scientific progress of therapeutics and diagnostics over that period also, which were key considerations in the strategy.

219. Up until the COVID-19 pandemic, the development of effective vaccines for infectious disease usually had a time lag of up to fifteen years. There was an international collaborative endeavour between industry, academia, and multilateral organisations to accelerate vaccine development for SARS-CoV-2. This embraced multiple platform technologies including mRNA vaccines and activated vaccine and protein sub-unit strategies. The likelihood of an effective vaccine being available globally increased between January and September 2020 as research development programmes advanced globally. In my opinion, at the commencement of the pandemic, it was unlikely that an effective vaccine would become available before 2023. The availability of proven vaccines by December 2020 was a remarkable achievement.

#### **b) Continuation of the first lockdown**

220. The C19AG considered various options around a lockdown exit strategy. The minority view of the group was that a zero COVID approach (the objective to eliminate the virus, not merely suppress it) should be considered. However, a zero COVID strategy in Scotland was unlikely to have been sustainable because of essential travel to and from Scotland. In its scientific advice on 14<sup>th</sup> April 2020 [AM3/055 – INQ000217504], [AM3/055a - INQ000217505] and [AM3/055b - INQ000217506] the key principles underpinning the Advisory Group's decision making at that point were informed by the fact that there was currently no vaccine or specific drug treatments available to prevent or treat COVID-19. In such a context, the Group did not believe that it would be possible (for the foreseeable future) to eradicate the SARS-CoV-2 virus and therefore advice was that Government needed to find ways of living with the virus, as best as possible, which included protecting the NHS and social care capacity to care for citizens. The advice was to balance the following considerations (i) to minimise transmission of the virus, and

morbidity and mortality from COVID-19 maintaining these, as far as is possible, within the capacity of NHS Scotland;(ii) to minimise adverse health impacts on those with other non-COVID-19 related disease; and, (iii) to minimise disruption to society and allow the people of Scotland to return to normal functioning as soon as possible. In so doing, the group recognised the need to be cognisant of UK- wide decision making by, in particular, bodies such as SAGE, SPI-M-O, SPI-B and NERVTAG. The group recognised the essential importance of also considering economic impacts and that this was out with the scope and expertise of the Advisory Group as currently configured. The Group therefore urged that this was borne in mind when reviewing our advice. In its scientific advice on 16<sup>th</sup> June 2020 on 'Feedback and Advice on Phase 2 Plan' the group notes this and that such an approach cannot be a Scotland only aspiration. [AM3/056 – INQ000217684], [AM3/056a - INQ000217685] and [AM3/056b - INQ000217686].

221. From the 16<sup>th</sup> April 2020 to the 11<sup>th</sup> May 2020, the group met eight times. The minutes of the group are available here [AM3/057 – INQ000217519] [AM3/058 – INQ000217536] [AM3/059 – INQ000217548] [AM3/060 – INQ000217557] [AM3/061 – INQ000217569] [AM3/041 - INQ000217609]. The group also provided the following advice to the Scottish Government on potential options in relation to lockdown at this stage of the pandemic. [AM3/055 – INQ000217504], [AM3/055a - INQ000217505] and [AM3/055b - INQ000217506]. Member of C19AG were asked to comment on the Scottish Government's " COVID-19 framework for decision making" on the 2<sup>nd</sup> May 2020. Formal advice was provided on the 4<sup>th</sup> May 2020 [AM3/063 – INQ000217580]. The C19AG had no role in drafting the policy document. The advice provided to the Scottish Ministers by C19AG reflected the broad input and expertise of all members of the group, and not my personal opinion or expertise alone. As I am not an expert in infectious disease, I do not consider that I am the right witness to provide the Inquiry with opinion evidence on the timeliness and appropriateness of core decisions taken by the Scottish Government. Other witnesses with appropriate personal expertise will be able to provide more reliable evidence on such matters.

222. The first lockdown drove home the importance of a package of pandemic prevention measures that included; the accurate identification of high-risk groups and the ability to stratify the population based upon risk; the importance of consistent policy objectives across the four nations with international collaboration; the importance of public involvement and engagement about uncertainty, with clear explanations of what underpinned decision making; and transparency about the roles and responsibilities of all members of society.

#### **F. Decisions relating to easing the first lockdown in the period from 29 May 2020 to 7**

## **September 2020**

223. Advice provided by the C19AG to the CMO and the Scottish Government between May 2020 and September 2020 has been have been provided to the Inquiry. During the pandemic, I was always under considerable pressure to review new information and evolving data in a time-pressured context. As I was never party to the decision-making process within the Scottish Government, I do not feel able to offer a properly-informed view on the timeliness or appropriateness of core decisions including the Eat Out to Help Out scheme. C19AG did however provide advice on Transmission in Hospitality Settings on 12<sup>th</sup> November 2020 [AM3/064 - INQ000217961] and [AM3/064a - INQ000217962]. The advice of the C19AG during the period of easing of restrictions was based on scientific evidence available on the status of the pandemic between March 2020 and May 2020. The advice was put forward following consideration of scientific evidence from SAGE and other sources. At no time did we consider the underlying reasons for any divergence in policy between the UK Government and devolved administrations. Given the porous borders between the UK nations, where possible, the C19AG advised on 14<sup>th</sup> April 2020 that decision making should be at a UK level applying to all four UK nations, whilst recognising that differential and/or segmented approaches to relaxation of the lockdown may be recommended in the [AM3/055 – INQ000217504], [AM3/055a - INQ000217505] and [AM3/055b - INQ000217506] future. The policy decision to lift the first lockdown was made by the Scottish Government. I was not involved in decision making and it was not within the C19AG's remit to make decisions about how policy was communicated to the Scottish public. The advice of the C19AG formed part of the scientific and other inputs that led to that policy decision. Lessons learned during this period are covered under paragraph 249. I am not able to comment on what lessons have been learned by RSE; I am a Fellow of the Society but have no formal responsibility in its governance.

## **G. Advice provided by the C19AG to the CMO and the Scottish Government between September 2020 and the end of December 2020 has been provided to the inquiry.**

224. Advice provided by the C19AG to the CMO and the Scottish Government between September 2020 and the end of December 2020 has been provided to the Inquiry.

225. The C19AG first discussed the emergence of the Alpha variant and the Delta variant on the 16<sup>th</sup> December 2020 and the 13<sup>th</sup> May 2021 respectively. Initially the threat posed by these variants was uncertain. The discussions of the C19AG on these variants were recorded in the minutes of meetings [AM3/065 – INQ000218003] [AM3/066 - INQ000218145], [AM3/066a - INQ000218146], [AM3/066b - INQ000218147], [AM3/066c - INQ000218148] and [AM3/066d - INQ000218149]. For example, C19AG provided

advice to Ministers on 30<sup>th</sup> December 2020 confirming a base case that we were dealing with a new strain of enhanced transmissibility (alpha) and noted that (i) the spread of the new variant in Scotland and its likely enhanced transmissibility and move to dominance; (ii) early data from PHE Technical briefing (update 28th December) that no current evidence of different morbidity/mortality associated with the variant, but the key message is that that an increase in something that grows exponentially (i.e. transmission) can have far more effect than the same proportional increase in something that just scales an outcome (i.e. severity). C19AG advised a significant challenge to the healthcare system in coming weeks and little or no headroom in the modelling for controlling the virus. The space for having schools open without losing control of the virus was very limited. The Group concluded that the new variant was very concerning – and the emergence of new strains generally requires significant enhancements to surveillance and data measures and to the levels of restrictions in place to contain the disease. I am unable to comment on how this advice was received by Scottish Government.

226. The possibility of a circuit breaker was discussed by the C19AG on the 21<sup>st</sup> September 2020 [AM3/067 – INQ000217894], [AM3/067a - INQ000217895] and [AM3/067b - INQ000217896]. This drew heavily from a discussion at SAGE 57 which had discussed in detail the rationale and potential impact of a circuit breaker to avoid a second lockdown. I am unable to comment on how this advice was received by Scottish Government.

#### **H. Decisions relating to the second lockdown (January 2021 to 2 April 2021)**

227. The C19AG discussed the scientific evidence relating to the status of the pandemic between December 2020 to April 2021. The minutes and advice from that period have been provided to the Inquiry. I was not involved in decision making and it was not within the C19AG's remit to make decisions about how policy was communicated to the Scottish public. This included scientific advice to the Scottish Government about the rationale for imposing a second lockdown.

228. The C19AG considered risk and the concept of protecting the most medically vulnerable on several occasions including on 6<sup>th</sup> August 2020 when this was formulated into formal advice to Ministers, which is produced at exhibit [AM3/043 – INQ000218311] and [AM3/043a - INQ000218312]. The group did not specifically discuss nor provide advice on the Great Barrington Declaration.

229. As I have referred to elsewhere in my statement, an Education and Children's Issues advisory sub-group was established and met for the first time on the 23<sup>rd</sup> June 2020. This group met over 40 times under the expert chairmanship of Professor Carol Tannahill

and then Professor Linda Bauld. Advice for that group can be provided by the Scottish Government.

230. The C19AG provided no direct advice relevant to the "Stay at Home" order for the duration of the lockdown until mid-February 2021, as these were policy decisions of Scottish Ministers. I was not party to any discussions within Scottish Government regarding opposing a new legal requirement forbidding anyone from leaving their home except for essential purposes, and so I am unable to comment on the rationale for this.

231. Assessments of the effectiveness of lockdowns was not within the remit of C19AG. The group, however, did consider scientific evidence primarily undertaken by academic groups which have modelled the impact on morbidity (cases of severe COVID) and mortality. Lockdowns had not been previously considered a public health intervention and there was insufficient planning or consideration of how to alleviate any of the severe consequences of shutting down much of society for months at a time.

**I. Decisions relating to the period between April 2021 and April 2022**

232. The C19AG met 15 times between April 2021 and April 2022. All minutes are available as previously provided to the Inquiry. In this period the group provided four pieces of advice to Ministers [AM3/068 – INQ000218154], [AM3/068a – INQ000218155], [AM3/069 – INQ000218173], [AM3/070 – INQ000218274], [AM3/070a – INQ000218275] and [AM3/071 – INQ000218290].

233. The C19AG first reviewed information and discussed the omicron variant at its meeting on the 2<sup>nd</sup> December 2021. At the meeting on 17<sup>th</sup> December 2021, the C19AG was shown modelling by Professor Mark Woolhouse which specifically highlighted the transmission advantage of this variant which was certain in the context of uncertain morbidity impact. The C19AG also discussed Omicron at its meetings on 9 December 2021 and 11 January 2022. The discussions of the C19AG on the omicron variant were recorded in the minutes of meetings, [AM3/072 – INQ000218231], [AM3/073 – INQ000218239], [AM3/074 – INQ000218253] and [AM3/075 – INQ000218263]. Advice was submitted to Scottish Ministers on the new Strategic Framework on 18 February 2022 [AM3/070 – INQ000218274], [AM3/070a – INQ000218275] and [AM3/071 – INQ000218290] and was the subject of a joint deep-dive on the future of COVID-19 on 9 March 2022 [AM3/071 – INQ000218290]. This was intended to inform policy decisions around appropriate restrictions in light of the transmissibility of this new variant.

**J. Care homes and social care**

234. The C19AG benefited from the expert leadership and advice of Professor Jacqui Riley, who chaired the Scottish Government Covid Nosocomial Review Group (CNRG). This group was expert in hospital and care home associated infection. CNRG reported to the Chief Nursing Officer and provided advice to Scottish Ministers and senior clinical advisers. Policy in relation to care homes was the responsibility of Scottish Government and not within my remit or that of C19AG. At the beginning of the pandemic, information on care homes was very fragmented and incomplete. For example, great uncertainty existed on who was actually a resident within care homes. Information on "care at home" was even more incomplete. The nature of people resident in care homes meant that they often represented those at the highest risk of COVID related morbidity and mortality. C19AG discussed the potential influence of nosocomial infection at its meeting on 9<sup>th</sup> April and its potential impact within the care home setting. Formal advice provided by the C19AG on easing lockdown in care homes was provided on the 28<sup>th</sup> May 2020. [AM3/076 – INQ000217659], [AM3/076a - INQ000217660], [AM3/076b - INQ000217661] and [AM3/076c - INQ000217662] On the 17<sup>th</sup> July 2020 the C19AG provided advice on respite care and day care, and on care home visiting [AM3/077 – INQ000217796], [AM3/077a - INQ000217797] and [AM3/077b - INQ000217798].

**K. Borders**

235. As I have noted at paragraph 123, the C19AG provided advice on borders and travel. Lessons learned indicate that the impact of measures to safeguard against importation by international travel on transmission is highest when prevalence is low and that no country was able to effectively suppress COVID-19 without travel restrictions in place. Given the high level of interconnectivity of the UK and the lower sequencing capacities of other countries, it was probable that new variants were already be in the UK by the time these were identified. Unless all international importation is controlled with either a complete closure of borders, or the mandatory quarantine of all visitors upon arrival in designed facilities, irrespective of testing history, the impact would not be the eradication of importations, but to delay and slow down the importation and establishment of new and potentially dominant strains. This C19AG advised that once community transmission is established, closing borders had a negligible effect on transmission. Border measures delay but do not prevent importation. The best-case scenario was that a full travel ban would only delay the virus by a matter of months.

**L. Decision-making between the Scottish Government and (a) the UK Government (b) the other devolved administrations in Wales and Northern Ireland and (c) local authorities in Scotland**

236. As previously I have noted at paragraph 90, the C19AG adopted a collaborative, four-nations approach to acquisition and provision of scientific advice to policy makers over the course of the pandemic. Reciprocity of information sharing with SAGE was an important principle. The collaborative approach of C19AG was communicated to Scottish and UK Governments, and advisory colleagues in the other devolved administrations.
237. I am not in a position to comment on the level of collaboration, coordination or communication between Governments in relation to key policy decisions ranging from border control, to closures of schools, to public communication or national policy documents, as I was not involved in this process, nor was this within the remit of the C19AG.
238. The C19AG was fortunate to have very strong and thoughtful behavioural science expertise within its membership. Public involvement and communication was a frequent topic of discussions. A specific piece of advice was provided to Ministers by the C19AG in relation to risk and risk communication [AM3/043 - INQ000218311] and [AM3/043a - INQ000218312]. How that advice was received and to what extent it was acted upon is for Scottish Government officials to comment on.

**M. Covid-19 public health communications**

239. It was not within the C19AG's remit to make decisions in relation to how advice was communicated to the public. As chair of the C19AG, I reminded members frequently about their responsibilities as members of the group. They were advised that if they did make any public expressions of opinion on the pandemic and its management, that this should be in a personal capacity and that requests to the group should be handled by the Scottish Government's communications team. Exhibit [AM3/079 - INQ000217570], [AM3/079a - INQ000217571] [AM3/079b - INQ000217572], [AM3/079c - INQ000217573], [AM3/079d - INQ000217574], [AM3/079e - INQ000217575], [AM3/079f - INQ000217576], [AM3/079g - INQ000217577], [AM3/079h - INQ000217578] and [AM3/079i - INQ000217579] evidences this message. I was not restricted or regulated as to any media interactions. It was a personal decision to decline multiple requests for live appearances on national TV/media outlets (Today programme, BBC News, BBC Scotland, STV, Sky) as I took the view that my purpose was to remain focused on providing independent advice to Scottish Government and participation in SAGE. I declined an offer in April 2020 to participate in the daily media briefings led by the First Minister, but on the whole considered they worked well as one approach to promoting public confidence. I have no knowledge of how proportionate or effective the efforts of the Scottish Government were to counter dis- information, or how the effectiveness of



communication was monitored by Scottish Government.

240. I have no specific opinions on, or knowledge of, the effect that reported breaches of rules or the resignation of senior Government officials or Ministers had on public confidence. I would reiterate the important principles as outlined in paragraph 197.

**N. Public health and coronavirus legislation and regulations**

241. The C19AG made no recommendations or guidance on the use of legislation or criminal sanctions. These were decisions made by policy makers.

**O. Key challenges and lessons learned**

242. The COVID-19 pandemic caused unparalleled suffering, grief and hardship globally. It was an honour to serve in a small way to the pandemic response and to consider how we might learn lessons for the future. The remarkable contributions of healthcare professionals, members of the public and thousands of scientists were outstanding. My experience of serving on the C19AG is primarily one of feeling privileged to be invited to serve Government and the public at a time of national emergency. It was, however, hard and the most demanding period of my professional career. It was complex, fast-moving and required a scale of partnership, working and collaboration across policy makers, academia, industrial science, NHS, and most importantly, the public that I had never previously experienced.

243. The support I received from the Secretariat at Scottish Government was superb. The selfless contribution of colleagues on the C19AG was remarkable. Inevitably there will be things the Inquiry may find we could have done better, but the honesty, commitment, and expertise of the scientific community was outstanding. Overall, I thought the relationship between members of the group and Scottish Government officials was respectful, and that there was clarity that we were there to advise.

244. Members of C19AG all had full-time jobs. The demands on me and my colleagues from a physical and mental health perspective, and in many instances the demands on our families, have been immense. For example, this is my fourth Rule 9 response and I have had to rely on good will and generous support from numerous colleagues. There are not the support structures and resources in place at the University of Edinburgh or HDR UK to answer >500 questions posed by the Inquiry in various Rule 9 requests. I would like to thank them sincerely for their immense support.

245. I would sit on such a group again as I believe in a duty to serve. Talking to colleagues I don't think anyone anticipated the intensity and duration of the C19AG work

commitment In brief, for me it involved sixty formal meetings of C19AG, participating in sixty-three SAGE meetings, and contributing to and signing off on 40 items of advice for the CMO and Scottish Government. As Chair, there was a responsibility to be “on call” to respond to many inquiries from the Secretariat. There has also been significant work carried out in the participation of four UK Parliament and Scottish Parliament Committees. The Secretariat to C19AG was superb but consisted only of three people. If Scottish Government seeks to commission advice in the future, I would suggest that it is essential that resilient and sustainable support structures are established for any group, the chair and its members to ensure that workload is manageable. In addition to C19AG duties, I was also accountable for leading HDR UK as CEO and a National Core Study as a principal investigator that had the aim of improving the UK wide data infrastructure for research. It was helpful that Go-Science and Scottish Government coordinated communications from Sir Patrick Vallance and the CMO in Scotland with my employers to highlight that the day job would be impacted.

246. I have not been asked for formal feedback by the Scottish Government on my involvement in the C19AG, or offered appraisal as to my contribution.

247. The members of SGCAG were not involved in any lessons learned exercise or been involved in any activities concerning the changes of roles of the medical officers to the Scottish Government. I have not been involved in any internal or external reviews undertaken by the Scottish Government. I personally find “After Action Reviews” helpful in professional life, and therefore would have found it helpful, recognising that it would not have been feasible in the intense the early days of the pandemic. In my role as Chair, I felt a responsibility for well-being of group members and kept in touch informally, especially when some members were subject to intimidation from members of the public/media. I also telephoned all members of the C19AG individually and systematically, around March 2021 to enquire about their well-being, to canvass views on the workings of the group, and to ask whether they wished to continue to participate on the group. Feedback was generally very positive. No notes of these call were recorded.

248. The key themes of the evidence that I have given thus far, are available within the statements previously provided [AM3/006 – INQ000056491], [AM3/013 – INQ000215468] and [AM3/080 - INQ000185353].

249. In terms of lessons learned, it is essential that we are not complacent. The UK must learn from the pandemic and develop new resilient capabilities and structures which will prove to be invaluable for any future UK and international response. As set out at paragraph 39 of my corporate witness statement on behalf of the C19AG dated the 23<sup>rd</sup> June 2023 [AM3/013 – INQ000215468] and at paragraph 5.2 of my questionnaire

response dated 17<sup>th</sup> October 2022 [AM3/006 – INQ000056491], I gave evidence to four Parliamentary committees [AM3/081 - INQ000326350], [AM3/082 - INQ000326351], [AM3/083 - INQ000326352] and [AM3/084 - INQ000326353]. Key themes included:

- the dangers of complacency, as another pandemic is a significant global risk;
- the importance of whole system intelligence and surveillance. The UK has a unique opportunity to connect UK-wide data of different types held in different places at scale, so that we are not "driving at night with no headlights". Our data systems, architecture and governance need radical engineering and dedicated investment to achieve this. Specifically for any emergency situation, existing capability should be in place that defines (i) which data are required; (ii) who is the data custodian and how are the data stored and collected (metadata); (iii) how will data flow, be linked and accessed so that it is FAIR; and (iv) how can the data be accessed by operational teams and the research community in a secure and trustworthy way so that new insight, information and knowledge can rapidly be accrued. The resistance to sharing health data for research purposes that we observed even in the pandemic, because of perceived security security/confidentiality concerns, or because of a strong sense of "personal ownership" of the data needs to be addressed urgently;
- the risk of public sector organisations, policy makers and industry going back into their silos. We developed productive and collaborative cross-sectoral systems working that not only could benefit future pandemics, but also those epidemics that are continually with us, such as heart disease, cancer and diabetes.
- the characteristics of countries which will respond well to the pandemic, including health service resilience, leadership, support for research and development, and research and development in diagnostics, data, science, vaccine, development, and therapeutics;
- the importance of strong primary care and public health systems – we cannot be entirely reliant on plans for vaccine and diagnostic developments especially in the early days of a pandemic; increasing health care capacity, surveillance, the plans for procurement of PPE and plan for sustained social distancing measures are essential
- the public were the solution, not the problem and publication of all advisory group minutes with minimum delay (allowing Ministers time to consider advice) is worthy of consideration;

- UK-wide collaboration at the scientific, health system and political levels; and the importance of establishing clear leadership with clarity of roles and responsibility.
- Coordination and connectivity of between intergovernmental structures of the UK and internationally will be essential if pandemic preparedness is to be improved. The science advice mechanisms mostly operated effectively, whilst always recognising there are areas where they can be improved. The UK also had the benefit of drawing from a very strong pre-existing science base. Clarity on the direct links between policy and operational parts of government and major public bodies (NHS/local authorities) across the four nations is an area and opportunity for improvement.
- Overall, in my view, Scotland's and the UK's pandemic preparedness planning should have placed much greater emphasis on the need for a rapid response to an incipient pandemic. A greater sense of urgency and the need to act extremely quickly, within days, would have underlined the need for early intervention at the beginning of a pandemic. Earlier intervention would have had an impact on infection, illness and death amongst the Scottish population.

250. The Scottish Government did not establish C19AG until late March 2020. By that time a UK-wide lockdown had been imposed and the group missed a vital opportunity to provide advice to decision makers over the preceding 2-3 months. The Scottish Government's SCOPP was established by the Scottish Government in August 2021. I was invited to act as independent Chair by the First Minister in January 2022 [AM3/085 - INQ000326354] and [AM3/085a - INQ INQ000326355]. The Committee's Interim Report [AM3/086 - INQ000326356], published in August 2022, identified advice to Scottish Government on four key areas for further work. These are:

- To develop proposals for the creation of a Centre of Pandemic Preparedness in Scotland;
- To build on Scotland's existing data and analytics strengths to support proposals that advance the development of these as core infrastructure for future pandemics;
- To develop linkages to Scottish, UK and international scientific advisory structures, networks and agencies, and strengthen information flows from these in order to inform Scottish preparedness and response in the face of future pandemic threats; and

- iv. To support continued innovation in life sciences and public health research for the development of diagnostics, vaccines, and therapeutics to provide the capability to respond to novel threats when required. .

My intention is that SCOPP should address the lack of formal pandemic-relevant Scottish Government advisory structures that were evident in early 2020 and provide formal integration with UK structures.

- 251. The Committee's Final Report, due to be published by early 2024, will report on progress with work on that and the other key recommendations.
- 252. In terms of any recommendations to improve the Scottish Government's response to a future pandemics, I would encourage the Scottish Government to consider the recommendations of the SCOPP carefully. It will also be important to resource any infrastructure requirements going forward adequately and effectively, including data infrastructure/surveillance, genomic testing, partnership working with UK structures and to recognise that preparedness planning is a continual process rather than a one-off exercise.

#### **P. Documents**

- 253. I have no contemporaneous notes or voice memos to submit. All copies of advice and deep-dive briefings, hosted by SGoRR have been provided to the Inquiry. I have submitted all relevant emails as exhibits. I have over 3,000 emails between myself and the Scottish Government in my role as Chair of the C19AG. These do not constitute advice or decisions but are available as required to the Inquiry. All advice and minutes from the C19AG have already been provided to the Inquiry by the Scottish Government. I have provided the two articles in *Lancet Digital Health* [AM3/087 – INQ000326357] and *Trials* [AM3/088 – INQ000326358] as requested.

#### **Statement of Truth**

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 a statement of truth without an honest belief of its truth.

**Personal Data**

**Signed:** \_\_\_\_\_

**Dated:** \_\_\_\_\_ 14 November 2023 \_\_\_\_\_