Witness Name: Professor Sir Peter Horby
Statement No.: 1
Exhibits:
Dated: 9 May 2023

UK COVID-19 INQUIRY

WITNESS STATEMENT OF PROFESSOR SIR PETER HORBY

I, Professor Sir Peter Horby, will say as follows: -

1. This statement is provided in response to a rule 9 request from the UK COVID-19 Inquiry in relation to Module 1 and is intended to cover the relevant time period identified in the Module 1 Rule 9 request from 11 June 2009 to 21 January 2020.

Career history and professional background

2. I am a qualified medical doctor with a background in public health medicine and infectious diseases. I have led clinical and epidemiological research on a wide range of emerging and epidemic infections over the last twenty years including SARS, avian influenza, Ebola, Lassa fever, mpox (formerly monkeypox), plague and COVID-19.

3. I am employed by the University of Oxford as a clinical academic and I am currently the Director of the Oxford University Pandemic Sciences Institute.

4. As part of my role at the University of Oxford, I set up and ran a clinical research unit on behalf of the University in Hanoi, Vietnam from February 2006 to July 2011, and then I was based in Singapore from July 2011 to July 2014, working on infectious diseases, with a special focus on epidemic prone infectious diseases.

Therefore, I can only comment on UK matters from August 2014 onwards, which is the month I returned to the UK from an extended period working overseas.

5. I am a member of a number of different committees and hold a number of different advisory positions (both national and international) relating to preparedness for various infectious disease threats.

6. From an international perspective, these positions include:

    a) Leading the patient-based research component of the UK Public Health Rapid Support Team, a specialist team ready to be deployed to tackle outbreaks anywhere in the world within 48 hours.

    b) Executive Director of the International Severe Acute Respiratory and emerging Infections Consortium (ISARIC), a consortium of 57 international, national, and local research networks whose research activities span 132 countries worldwide.

    c) Coordinating the African Coalition for Epidemic Research, Response and Training (ALERRT), a sub-Saharan Africa consortium on clinical research for epidemic-prone infections, with 19 partner institutions and activities across 25 sub-Saharan Africa countries.

    d) Chief Investigator of randomised controlled treatment trials in plague, mpox and COVID-19.

7. I have advised the European Medicines Agency (EMA) on treatments for Ebola and influenza within the period up to 21 January 2020, and provided extensive advice to the World Health Organisation (WHO) over the last 20 years on epidemic preparedness, clinical research, and clinical trial design for epidemic infectious diseases. I have also advised the EMA and the U.S. Food and Drug Administration on treatments for COVID-19, which I intend to refer to in responding to the Module 2 rule 9 request I have received.

8. From a UK perspective, I have been a member of the Department of Health and Social Care's (DHSC) expert scientific advisory committee called the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) since 1 August 2014 and have held the position of Chair of the Committee since 21 May 2018.

9. I was also invited to attend a UK Ebola Scientific Assessment and Response Group in 2014. This group was convened at short notice given the emerging threat at that time from the Ebola virus. I attended one meeting of this group on 19 September 2014. The meeting paper for, and minutes of, this meeting are exhibited at PH1 ***[PH/1 - INQ000146011]*** and PH2 ***[PH/2 -INQ000146010].***

10. I gave oral evidence at a parliamentary select committee hearing in relation to the Zika virus the transcript of which is exhibited at PH3 ***[PH/3 - INQ000146012]***. I also contributed to written evidence provided to parliamentary select committees on:

    a) Science in emergencies, exhibited at PH4 ***[PH/4 - INQ000146007]*** and;
    b) EU membership and UK science, exhibited at PH5 ***[PH/5 - INQ000146008]***.

NERVTAG – Background, structure and contributions

11. I became a member of NERVTAG on 1 August 2014 when the committee was formed. I held the role of member until 20 May 2018 whereupon, following competitive interview, I was appointed Chair of NERVTAG on 21 May 2018 and I continue to hold this position.

12. The role of NERVTAG is to act as a scientific advisory committee to provide the Chief Medical Officer (CMO) and, through the CMO, ministers, the DHSC and other Government departments, with scientific risk assessment and mitigation advice on the threat posed by new and emerging respiratory viruses and advice on options for their management. Seasonal influenza is excluded from the scope of NERVTAG. The composition of NERVTAG is as an independent scientific

advisory committee and therefore NERVTAG's expertise is limited to providing science advice.

13. While NERVTAG's remit appears to be quite broad, in practice it is narrower and mainly involves responding to specific commissions from DHSC. As described in the Chair's Foreword to the first NERVTAG Annual Report (Exhibit PH6 ***[PH/6 - INQ000057013]***) '*The underpinning ethos of NERVTAG will always be that it exists to service the Government's need for timely, independent, scientific and clinical advice; and that it should be task-oriented, responding to requests from DH, Public Health England (PHE) and the NHS'*. The NERVTAG committee was therefore set up and operated in a way that was necessarily responsive to the commissions set by DHSC, PHE and the NHS.

14. Whilst NERVTAG members are encouraged to raise concerns about virus threats coming out of their own horizon scanning activities, NERVTAG was not tasked with reviewing or providing advice on the overall state of UK pandemic preparedness.

15. The Terms of Reference for NERVTAG are published each year in the NERVTAG annual reports. The annual reports covering the period from December 2014 to December 2019 are exhibited at PH6 to PH9 ***[PH/6 - INQ000057013, PH/7 - INQ000146018, PH/8 - INQ000146019 and PH/9 - INQ000146017].***

16. NERVTAG is made up of about 15 scientists and health care professionals, including clinicians, microbiologists, mathematical modellers, and public health practitioners, and colleagues in related disciplines. The committee was supported by a scientific secretariat from PHE (now the UK Health Security Agency) and is scientifically independent. NERVTAG's membership is made up of volunteers and has been relatively stable since 2014. The number of attendees in meetings can fluctuate as they were sometimes attended by observers depending on the topic being discussed or people from other organisations and groups who were presenting papers.

17. I became a member of NERVTAG by responding to a public advert from DHSC inviting applications to become part of the group. I applied because NERVTAG's terms of reference were close to my areas of expertise, and I have done a lot of work with emerging respiratory diseases. A copy of the information pack for applicants for the position, the letter inviting my attendance for interview and confirmation of my appointment to NERVTAG on 1 August 2014 are exhibited at PH10 ***[PH/10 - INQ000146016]***, PH11 ***[PH/11 - INQ000146014]*** and PH12 ***[PH/12 - INQ000146001]*** respectively.

18. My role as a member of NERVTAG was to provide input based on my research around the clinical epidemiology of avian flu, my clinical exposure to patients with emerging viral respiratory diseases such as SARS and avian flu and my understanding of treatments of these diseases and my background in public health in relation to any of the topics that NERVTAG was asked to consider.

19. In the period from the first meeting of NERVTAG on 19 December 2014 to the last meeting prior to the emergence of SARS-CoV-2 on 17 December 2019 there was only one meeting of the full NERVTAG committee, on 14 June 2017, that I was unable to attend (because I was in China working with Chinese colleagues and WHO on avian influenza A/H7N9). A summary of the full committee meeting dates and my attendance at those meetings follows:

    (a) 19 December 2014 - I attended as a member.
    (b) 27 November 2015 - I attended as a member.
    (c) 30 June 2016 – I attended as a member.
    (d) 2 December 2016 – I attended as a member.
    (e) 14 June 2017 – I was unable to attend and sent my apologies.
    (f) 23 January 2018 – I attended as a member.
    (g) 21 June 2018 – this was the first meeting I attended as Chair.
    (h) 12 December 2018 – I attended as Chair.
    (i) 17 June 2019 – I attended as Chair.
    (j) 17 December 2019 – I attended as Chair.

20. A copy of the NERVTAG meeting minutes for the meetings listed above that I attended are exhibited at PH13 to PH21 ***[PH/13 - INQ000022719], [PH/14 - INQ000022726], [PH/15 - INQ000022730], [PH/16 - INQ000022739], [PH/17 - INQ000022880], [PH/18 - INQ000022974], [PH/19 - INQ000023035], [PH/20 - INQ000023057] and [PH/21 - INQ000023102].***

21. As well as the full NERVTAG committee meetings, there were specific task and finish subgroups of the main committee that were established as necessary with a view to ensuring adequate consideration of detailed technical aspects of the work of the committee.

22. When required, the Chair would propose that a subgroup be formed and ask for volunteers from the main committee to become members of the subgroup and for a chair to be selected for the subgroup.

23. The subgroups would meet separately to the main NERVTAG committee and the length of the existence of the subgroup was determined by the Chair based on completion of the allocated task. Once the task was finished the subgroup would then be closed. Subgroups could co-opt in expertise that the members considered was needed to help them to fully consider the task that they were concerned with.

24. Following the subgroup meetings, a paper would be prepared by the subgroup members jointly on the relevant topic for consideration and approval by the main NERVTAG committee before submission to DHSC.

25. There were a number of NERVTAG subgroups established from 2014 to 2020 and I have listed them below, indicating the dates of meetings and whether I was a participant or not, for reference:

    a) Joint NERVTAG / JCVI subgroup on pandemic influenza vaccines – met on 20/02/2015, 13/03/2015 and 23/04/2015. I was not a participant.

    b) Antibiotic stockpile for pandemic influenza – met on 04/09/2015 and 25/09/2015. I was not a participant.

c) Personal Protective Equipment (PPE) for pandemic influenza (with a focus on facemasks and respirators) – met on 15/01/2016. I was not a participant.

d) H7N9 risk assessment meetings – ad hoc meetings on 03/10/2017 and on 17/09/18. I was not a participant at these meetings.

e) Review of Pandemic Influenzas Clinical Guidance – met on 16/10/2018. I was a participant of this group. A copy of the terms of reference for this group, the outcome of the review of the guidance and the letter to the DCMO are exhibited at PH22 TO PH24 ***[PH/22 - INQ000146009], [PH/23 - INQ000145962] [PH/24 - INQ000145963].***

f) Review of influenza risk assessment tool transmissibility domain / 'transmissibility' domain of PHE novel virus risk assessment tool - met on 11/10/2019. I was a participant at this meeting. This was an ad hoc one-off meeting rather than a formal subgroup.

26. Separately there were groups to which NERVTAG were invited to contribute:

a) The Review of National Pandemic Flu Service (NPFS) clinical algorithm group that met on 15 January 2016 and 23 July 2019 at which I was a participant. The letter that led to the creation of this committee from Dr Chloe Sellwood, the Pandemic Influenza Resilience Manager at NHS England, to Jonathan van Tam as Chair of NERVTAG and dated 4 December 2015 is exhibited at PH25 ***[PH/25 - INQ000145998].***

b) The Pandemic Influenza Guidance (Infection Control) Expert Advisory Group commissioned by NHS Scotland on behalf of the four UK nations but with NERVTAG asked to 'sign-off' on the revised guidance. A copy of the terms of reference for this group is exhibited at PH26 ***[PH/26 - INQ000146003].***

NERVTAG – scope, process, and meetings

27. When I was a member of NERVTAG from August 2014 to May 2018, generally an agenda would be circulated prior to every meeting alongside any papers so that the members could consider the agenda for the meeting and the papers in advance. If there was a relevant paper or scientific point that a member of the group would like to table for discussion, they could, at the discretion of the Chair, add this to the agenda in advance of the meeting. As the meetings during the Module 1 time period were mostly non-emergency meetings there was plenty of notice and time to prepare for the meetings.

28. The content of the meetings was very much commissioned by DHSC and, other than an expectation that members would highlight new emerging viral respiratory threats, there was no expectation or explicit encouragement to consider issues beyond the specific commissions. Specifically with respect to Module 1 of the Inquiry, NERVTAG was not expected or asked to consider overall pandemic preparedness.

29. The meetings prior to 21 May 2018 were chaired by Jonathan Van Tam and the group would discuss the specific issues that they had been asked about by DHSC.

30. At the meetings, the relevant papers would often be presented to the committee for discussion, often by a person from DHSC or PHE who had been involved in preparation of the paper. The NERVTAG subgroups would also present papers at the main committee meetings that they had been compiling as part of their separate tasks.

31. All meetings were minuted and the minutes were reviewed and agreed by the Chair and the wider group before submission to DHSC. The minutes would contain NERVTAG's position on the matters it was asked to consider and any recommendations to DHSC. For example, we would sometimes recommend that DHSC commission some research if we felt there was an evidence gap in relation to the topics we were asked to consider and this recommendation would be referred to within the minutes.

32. The minutes of all NERVTAG meetings are publicly available and can be found online and the minutes of those meetings I attended are exhibited above at paragraph 20.

33. In relation to formal policies that the committee had to follow, NERVTAG committee members followed the code of practice for UK government scientific advisory committees, exhibited at PH27 ***[PH/27 - INQ000146015]***, and the NERVTAG terms of reference as contained within the annual reports and the information pack for NERVTAG applicants (exhibited above at paragraph 17). In addition, a NERVTAG code of practice was produced in November 2015. A copy is exhibited at PH28 ***[PH/28 - INQ000145958].***

34. In terms of governance structure, NERVTAG reported into DHSC. Other than time-limited 'task and finish' subgroups, NERVTAG did not, in practice, have any other standing committees or standing groups that reported into it.

NERVTAG – My role as Chair

35. A vacancy for the position of Chair of NERVTAG arose in 2018 after the Chair at the time, Jonathan Van Tam, was appointed to the position of Deputy Chief Medical Officer (DCMO). Jonathan stepped down as Chair of NERVTAG due to his appointment to DCMO, as was necessary since the Chair of NERVTAG reported to the DCMO.

36. I applied for the position of Chair of NERVTAG and was appointed following a competitive interview process. The information pack for applicants and confirmation of my appointment are exhibited at PH29 ***[PH/29 - INQ000145997]*** and PH30 ***[PH/30 - INQ000146002]*** respectively.

37. As Chair, it was part of my role to discuss the agenda for NERVTAG meetings with DHSC and attend pre-meetings with the DCMO and the secretariat. These meetings were informal and were not minuted.

38. I was also responsible for the practical running of the committee including ensuring that any conflicts of interests were declared, the right people were represented at the meeting, that diverse views were solicited and heard, the terms of reference around the papers the committee was considering were clear, that the discussions at the meetings were respectful and productive, and that any recommendations were clear. It is part of my role to review the first draft of the minutes prepared by the secretariat before they are sent out for review and approval by the rest of the committee.

39. My role as Chair also includes the preparation of the annual reports, which contain a summary of the activities of the committee and are prepared in conjunction with the secretariat and DHSC. The annual reports for 2018 and 2019, which were produced while I was Chair, are exhibited at PH8 ***[PH/8 - INQ000146019]*** and PH9 ***[PH/9 - INQ000146017***].

40. One of the broad themes that was discussed at NERVTAG meetings during my time as Chair up to January 2020 was the PHE's risk assessments for new and emerging viruses. NERVTAG would be asked to review the PHE's risk assessments regarding ongoing and emerging respiratory virus threats. NERVTAG would then either endorse the PHE's risk assessment or recommend changes to it. Seasonal influenza was specifically excluded from the scope of this work and the risk assessment mainly related to novel flu viruses or coronaviruses.

41. From 2018 to January 2020, NERVTAG did quite a lot of work trying to optimise the PHE's risk assessment framework as the NERVTAG committee thought it could be improved. This was an iterative piece of work as it is challenging to create a risk assessment framework that captures all of the necessary elements and uncertainties, operates consistently for different viruses and epidemiology, is intuitive, and clearly communicates the level of risk both now and in the future. The minutes from the main NERVTAG committee meeting on 30 June 2016, exhibited at PH15 ***[PH/15 - INQ000022730],*** at item 6 on page 5, and the minutes from the meeting on 12 December 2018, exhibited at PH19 ***[PH/19 -***

INQ000023035], at item 2.3 and action 8.6 on page 4, refer to discussions and work relating to the PHE risk assessment framework.

42. There were also several subgroups commissioned during the period of time from when I was appointed as Chair of NERVTAG in May 2018 to January 2020 in relation to PPE, stockpiles, reviewing pandemic flu clinical care guidelines, referred to at paragraph 25 above, and the meetings to review the NPFS clinical algorithm referred to at paragraph 26(a) above.

43. In my role as Chair of NERVTAG, I would report back to the CMO about the findings from NERVTAG meetings by way of the minutes. The minutes would contain written recommendations and we would raise specific questions with DHSC in the minutes and the committee may, for example, recommend that DHSC commission some research if we felt there was an evidence gap. On some occasions the minuted action was for NERVTAG to send a formal letter to DHSC, as a mechanism for emphasising an important issue. This was the case in the letter from me to the DCMO indicating that NERVTAG felt more work on influenza point of care tests may be needed and requesting DHSC direction (exhibited at PH31 ***[PH/31 - INQ000146005]***), and the DCMO's written response (exhibited at PH32 ***[PH/32 - INQ000146004]***).

44. Once NERVTAG had made its recommendations, DHSC was the responsible department for implementing any recommendations and PHE would assist with implementation, particularly in relation to the development of guidance.

45. A representative of DHSC and PHE would be present at every NERVTAG committee meeting and would be asked to feedback about the progress of any of NERVTAG's recommendations. DHSC was usually good at responding to NERVTAG recommendations. For example, short written notes of DHSC responses to recommendations from the sub-groups on pandemic influenza antibiotic stockpiles (exhibited at PH33 ***[PH/33 - INQ000146020]***), on pandemic influenza facemask and respirator stockpile (exhibited at PH34 ***[PH/34 - INQ000022731]***), and on pre-pandemic vaccine stockpiles (exhibited at PH35 ***[PH/35 - INQ000146006]***), were helpful and informative. On occasions, the

committee would not have full visibility as to how the committee's recommendations were being taken forward and implemented by DHSC or PHE (see next paragraph).

46. In late 2018, when NERVTAG reviewed the 2007 'Clinical Management Guidelines of patients with an influenza-like illness during a pandemic' NERVTAG provided the committee's recommendations to DHSC in a table with the different action points rated red, amber, and green, a copy of which is exhibited at PH23 ***[PH/23 - INQ000145962].*** NERVTAG followed up with DHSC after our recommendations were sent to them and recommended that the 2007 guidance be updated preferably within the next 6 to 9 months, the relevant letter sent to the DCMO dated 5 April 2019 is exhibited at PH23 ***[PH/24 - INQ000145963]***. The DCMO replied by letter dated 10 April 2019, exhibited at PH36 ***[PH/36 - INQ000146013]***. The matter was discussed at the NERVTAG meeting on 17 June 2019 which can be seen from the minutes (exhibit PH20 ***[PH/20 - INQ000023057***]) at item 1.x and action 9.3 on page 3 and the minutes from the NERVTAG meeting on 17 December 2019 (exhibit PH21 ***[PH/21 - INQ000023102])*** at items 1.8 and 1.9 on page 5. My understanding is that NHS England met in late 2019 to make a start on updating the guidance but the pandemic hit very soon after and so I understand that the guidance was not updated.

47. DHSC, DCMO and PHE were always open and responsive. I could easily raise any concerns or issues that I had with them. In my view, they all took the work and recommendations of the NERVTAG committee seriously. However, it was my impression that their ability to respond to recommendations as quickly as NERVTAG and they would have liked was sometimes hampered by a large workload and urgent competing priorities.

The functioning of NERVTAG

48. Generally, the committee functioned well within its scope of operation. It was not too large but had a diversity of different expertise. NERVTAG is a committee made up of highly expert and committed volunteers and there were no issues in terms of

being able to convene the committee at short notice and respond to commissions from DHSC in an emergency.

49. The format and structure of NERVTAG, namely a main standing committee and then the task and finish subgroups that were commissioned on an ad hoc basis and remained active until their task was complete, worked well in my opinion.

50. The number and frequency of meetings was appropriate and would often be dictated by the commissioning deadlines from DHSC.

51. In terms of input from DHSC and the secretariat, I was always able to ask for clarification, where needed, to ensure that the commissions from DHSC had sufficient context and to help ensure that I understood what output was required in order to make the advice as useful as possible to DHSC.

52. The workload of the volunteer members of NERVTAG is heavy and while the support from the secretariat was good, in hindsight we probably would have benefited from more junior scientific support so that the tasks were not always falling solely on busy senior academics.

53. The process for appointing members to NERVTAG worked well. Prospective members would apply through an open competitive process and the final recommendation on the appointments would be agreed by the interview panel members and put forward by DHSC for consideration and ratification by the relevant Minister. Awaiting Ministerial sign off could however add significant delay to formal appointments, especially during changeover of Ministers.

54. In terms of the turnover of expertise, the membership has been fairly fixed since 2014. This is because the initial cohort of members were all given a second 3 year term following a positive personal appraisal by the Chair and then the pandemic arose and other priorities took over. Although that consistency of membership has been useful, we have sought to balance the need for consistency and 'institutional memory' with the need to refresh the committee, bring in new perspectives, and ensure it spans the appropriate areas of expertise.

55. In August 2018, shortly after I took over the role of Chair of NERVTAG, we appointed two members of the committee who had specific experience in behavioural and social science (Dr James Rubin and Professor Robert Dingwall) to advise on the behavioural and social science implications of the recommendations that we were making. In October 2019 we refreshed the virology membership by rotating out Dr Matthew Donati and replacing him with Dr Cariad Evans following competitive interview.

56. In terms of identifying individuals to fill those role, the usual process outlined above was followed whereby the role was advertised and there was a competitive interview process.

57. The governance structure that NERVTAG sat within was quite complicated, and I recall having conversations during my time as Chair to try to clarify the governance and reporting structures. I was provided with an organogram, exhibited at PH37 ***[PH/37 - INQ000146021]***, but it wasn't clear to me who was accountable to whom. The reporting structures set out in the organogram did not reflect what I understood to be the situation in reality. For example, in the organogram SPI-M reported into NERVTAG but this was not the case in practice. I raised this with DHSC, and some clarifications were provided but this didn't completely resolve the issue. My understanding is that NERVTAG reported into DHSC and did not have any committees that reported into it. I had a meeting with Jonathan van Tam in April 2019 to discuss objectives for NERVTAG for the forthcoming year and I confirmed that I also wanted to discuss the governance organogram at the meeting. A copy of the document produced following this meeting containing a review of the objectives for 2018/2019 and the objectives set for 2019/2020 is exhibited at PH38 ***[PH/38 - INQ000145999]***. The document does not mention governance structures and although I recall we did have a brief discussion at this meeting about governance, I cannot recall the outcome or any arising actions from this part of the discussion.

58. The organogram suggests that the NERVTAG committee was to be stood down in an emergency situation, but when the COVID-19 crisis began this was not the case

as it was considered that there was value in keeping the committee running. It is my view that this was the right decision.

59. Overall, my view is that NERVTAG delivered well on what it was asked to do within the scope of work that it was set. The committee made clear recommendations to DHSC in response to specific commissions.

NERVTAG and interaction with other groups

60. NERVTAG was a standalone committee set up to be a task-oriented committee responding to specific commissions from DHSC and so it's scope to work with other groups was relatively limited.

61. To the extent that it was within NERVTAG's remit to do so, it worked well with other groups. If we needed to see any documents from other groups or DHSC we asked for them and they were freely shared. For example, NERVTAG worked well with the Scientific Pandemic Influenza Group on Modelling (SPI-M) in that we would communicate with them if we needed modelling to be undertaken to assist us in responding to a specific commission from DHSC. We were able to challenge their findings and work with them to ensure that the modelling they provided met our requirements. For example, in 2015 NERVTAG were asked by DHSC which and what volume of anti-viral drugs the UK should stockpile for an influenza pandemic, and SPI-M provided us with some modelling. Upon review, it was the committee's view that an element of the scenario provided was not realistic because it assumed that everyone would be provided with an anti-viral within 24 hours of symptom onset and so SPI-M were asked to reconsider the model using more realistic parameters, which they did. This process worked well and provided valuable support to the work of NERVTAG.

62. Members of NERVTAG were sometimes asked to contribute their expertise to other groups such as the Joint subgroup on the strategy for pandemic vaccines, which was led by JCVI (Joint Committee on Vaccination and Immunisation), and the Pandemic Influenza Guidance (Infection Control) Expert Advisory Group, which was commissioned by NHS Scotland.

63. In retrospect an annual meeting of the chairs of JCVI, ACDP (Advisory Committee on Dangerous Pathogens), NERVTAG and SPI-M with the CMO, Pandemic Influenza Preparedness Programme (PIPP), Board, and PHE may have been useful to review the activities of each committee, assess the overall preparedness landscape and to make sure all the bases with respect to science advice on pandemic preparedness were covered by the work of the committees.

Sustainability of groups

64. The sustainability of NERVTAG and the associated subgroups was mostly fine outside of an emergency. Generally, the workload on NERVTAG committee members in non-emergency situations was quite burdensome for members who were volunteers and had limited resource available to them. It was a significant commitment to be on the committee but, in my view, it was sustainable.

65. The term for a committee member was three years and a member's term would only be renewed following appraisal by the Chair, which added to my workload as Chair. In my experience as Chair of NERVTAG more administrative support in carrying out the appraisals would have been beneficial.

66. The NERVTAG committee members were very committed and made great efforts to attend meetings alongside their day-to-day work. The burden on subgroup Chairs was significant but the individuals on the committee were willing to act as Chair of these subgroups when invited to do so.

67. One of the limiting factors affecting the operations of the committee is the secretariat capacity. The secretariat have been excellent but the current secretariat supports both NERVTAG and JCVI, so they have a significant workload, which includes preparing all meeting papers and the minutes. In my view the secretariat requires a greater level of resource. There have been a number of secretaries to NERVTAG since its creation and the turnover of the secretaries has been challenging at times, although this has been stable since August 2020.

68. All members of NERVTAG are volunteers and are not remunerated for their participation. I understand that legal liability for the committee members and Chair is underwritten by DHSC.

69. The fact that members participate in the expert scientific advisory committees on a voluntary basis is, to my mind, beneficial because it increases actual and perceived independence. However, there is a balance to be struck between ensuring independence and incentivizing high quality candidates to volunteer significant time to the groups. Providing additional junior scientific support and increased secretariat support could be a good way of ensuring that membership of NERVTAG is not too burdensome on those participating.

NERVTAG meetings in early January 2020

70. There were meetings of the NERVTAG main committee that took place in early January 2020, on 13 and 21 January 2020, prior to the Scientific Advisory Group for Emergencies (SAGE) being convened. The minutes in relation to the 13 January 2020 meeting are exhibited at PH39 ***[PH/39 - INQ000023107].*** The minutes relating to the 21 January 2020 meeting are exhibited at PH40 ***[PH/40 - INQ000023119]***. I believe these meetings will be covered in Module 2 since the Rule 9 request I have received from the Inquiry for Module 2 contains specific questions relating to these meetings.

71. These meetings were more of an emergency response than the NERVTAG committee meetings would otherwise have been. We were being asked to provide risk assessment and risk mitigation advice about the emerging situation in China. We did not have the same lead in time to these meetings as we did for the NERVTAG committee meetings taking place prior to January 2020.

72. It was a fast-moving situation, but we generally followed the same format as our previous meetings including clarifying the commission from DHSC, if needed, and trying to obtain the best information available at the time to answer the commission.

Pandemic Preparedness

73. The scope of NERVTAG's remit was reactive and task related with some proactive discussion around emerging pathogen risk. The extent of NERVTAG's scope did not extend to the overall state of the UK's pandemic preparedness.

74. Personally, I did not return to the UK from my work in southeast Asia until August 2014, but at that time my general view was that pandemic preparedness was likely to be good as the UK had a fairly strong public health function and a good scientific base in virology, mathematical modelling, epidemiology and public health. When I was directly involved in the UK public health service in the late 1990's and early 2000's public health services were reasonably well-resourced and those working in the service were well motivated. Whilst I was not directly involved in UK public health services provision after the early 2000's, I understand that the morale had declined significantly over time, particularly due to reduced funding and frequent reorganisations.

75. My understanding was that the UK had a fairly active emergency preparedness group that ran regular simulations. I was not directly involved in any of these simulations, but I was aware that they took place. The note from one of these simulations, Exercise Cygnus in 2016, was shared with the NERVTAG committee and the committee was invited to comment at the meeting in June 2017. I was absent from this meeting but I note from the minutes (exhibited at PH41 ***[PH/41 - INQ000022790]***) that the lessons learned were primarily operational rather than scientific. I also understand that members of the NERVTAG committee were not invited to be involved in the simulations in a substantive way.

76. I understand that the UK Government interacted well with the WHO and with the International Health Regulations (IHR) country focal points and therefore was likely to have reasonably good situational awareness of pandemic risks. Access to information from some countries can, however, be challenging.

77. I can only view pandemic preparedness through the scope of my scientific advisory work with NERVTAG and within the scope of what that committee was asked to do.

78. In terms of what was done adequately in relation to the UK's pandemic planning, preparedness, and resilience prior to 2020, I do not have an overview of the whole approach taken by the UK Government, so I feel unable comment in a meaningful way.

79. At NERVTAG level, we established a formal risk assessment process for emerging viruses, routinely assessed such risks and gave feedback on that process. The risk assessment framework proved challenging to optimise as it is difficult to systemize the assessment of risk and there can be a lack of common understanding of risk. The risk assessment process used by PHE, which NERVTAG were asked to review, assessed risk at a particular moment in time but not future risk, which is sometimes difficult to convey and communicate. NERVTAG were asked to assess risks that had been identified and were considered current, not future or unknown threats.

80. Whilst I believe other existing structures were tasked to take a holistic view of UK pandemic preparedness, e.g. the DHSC PIPP Board, there may have been a benefit to NERVTAG having a mandate to think more broadly and strategically about scientific needs related to pandemic preparedness rather than just responding to limited commissions (noting that the composition of NERVTAG is as an independent scientific advisory committee and therefore expertise is limited to providing science advice).

81. The question of what could have been done better in relation to the UK's pandemic planning, preparedness and resilience can only really be answered with the benefit of hindsight. With that in mind, in my view there was perhaps insufficient granularity of thinking about what would actually be needed to respond to a pandemic, for example considering the testing capacity that might be needed in the first three weeks of a pandemic to provide sufficient situational awareness to inform key early decision making and to support implementation of policies such as active case finding and isolation.

82. In hindsight, it's also clear that the UK had not invested sufficiently in research and development of diagnostics, treatments, and vaccines. My understanding is that

the USA invested heavily into health security including product development and medical countermeasures (diagnostics, treatments and vaccines) to plan a response in the event of bio-warfare and this work had collateral benefits outside of the intended application, including for the pandemic (e.g. the antiviral drug remdesivir). However, even the significant investments in the USA had not been translated into readily available interventions that could be rapidly deployed in the event of a pandemic. Looking ahead, it is important that the UK considers the investments and actions required to develop products to a stage that they have utility in an emerging pandemic situation.

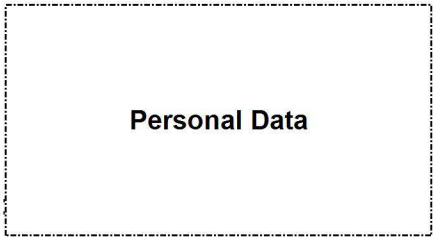
83. In addition, the UK, and others, would have benefited from a more systematic approach to assessing and, more importantly, addressing gaps and weaknesses in the evidence base for various non-pharmaceutical interventions, such as the utility of face masks in the community setting. Whilst there will always be uncertainty as new infectious diseases emerge, there is likely considerable scope for reducing some of the uncertainty in advance.

Professional publications and parliamentary select committees between 11 June 2009 and 21 January 2020

84. I have compiled a list of the professional publications and parliamentary select committees to which I have contributed between 11 June 2009 and 21 January 2020, which are exhibited at PH42 ***[PH/42 - INQ000146000]***. Those appearing with an asterisk within the list are those, in my view, of most relevance to Module 1 of the Inquiry.

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.

Signed: 

Dated: 9 May 2023