Witness Name: Professor Dame Anne Johnson DBE PMedSci Dated: Ref: M2/SAGE/01/DAJ

COVID-19 INQUIRY – MODULE 2

Questionnaire Response – Professor Dame Anne Johnson DBE PMedSci

0: Introduction

- 0.1. I am responding to the questionnaire below in a personal capacity, not in my role as President of the Academy of Medical Sciences (AMS), even though I have highlighted its work. Staff from the AMS supported my response with factual information.
- 0.2. I provide this response in good faith and to the best of my knowledge. Any omissions or inaccuracies are unintentional. I would be happy to provide any further detail about the information below, or provide any further information in future.
- 1: Overview of qualifications, career history, professional expertise and major publications:

Qualifications

1.1. The following table outlines my qualification and professional accreditation:

Qualifications:	
1974	BA University of Cambridge Medical Science Tripos Social and Political Science Tripos

Table 1 – Qualification and professional accreditation

1978	MB, BS University of Newcastle-Upon-Tyne
1979	MA University of Cambridge Medical Science Tripos Social and Political Science Tripos
1982	MRCGP, FP Cert; 2002 FRCGP Fellow of Royal College of General Practitioners
1984	MSc Community Medicine, LSHTM, University of London
1987	MFCM of Faculty of Public Health
1992	MD University of Newcastle Upon Tyne
1993	FFPHM Fellow of Faculty of Public Health
1999	MRCP (by distinction) of Royal College of Physicians
2001	FMedSci Fellow of Academy of Medical Science
2005	FRCP of Royal College of Physicians
2018	Hon Doctorate University of York
2022	Hon FFPH Faculty of Public Health
Professional Acc	creditation:
1982	Accredited in General Practice
1987	Accredited in Public Health Medicine. Revalidated 2022

Employment History

1.2. The following table outlines my employment history:

Table 2 – Employment History

Current Appointments:						
1994 – present	Honorary Consultant in Public Health Medicine, Central & North West London NHS Foundation Trust					
1996 – present	Professor of Infectious Disease Epidemiology, Institute for Global Health, University College London (UCL)					
2020 – present	President; AMS					
2020 – present	Co-Director, UCL Health of the Public					

Previous Appoi	Previous Appointment:						
1978 – 1988	Various Clinical House jobs and GP and public health training.						
1988 – 1996	Senior Lecturer, then Reader in Epidemiology, Academic Department of Sexually Transmitted Diseases UCL /Hon Consultant in Public Health						
1989 – 1999	Director, Medical Research Council (MRC) UK Centre for Co-ordinating Epidemiological Studies of HIV and AIDS						
1996	Professor of ID Epidemiology, Academic Department of Sexually Transmitted Diseases, UCL						
2002 – 2007	Head of Department of Primary Care and Population Sciences, UCL Medical School						
2007 – 2010	Director, Division of Population Health, UCL						
2007 – 2012	Co-Director, UCL Institute for Global Health						
2011 – 2018	Wellcome Trust Governor						
2014 – 2020	Chair, UCL Population and Lifelong Health Domain						
2014 – 2018	Vice Dean for External and International Relations, Faculty of Pop Sciences						
2018 – 2020	Vice-President International; AMS						

Professional Expertise:

- 1.3. I am Professor of Infectious Disease Epidemiology at University College London and Co-Director of UCL Health of the Public. I have also been President of the Academy of Medical Sciences since December 2020. After training in medicine in Cambridge and Newcastle, I specialised in Epidemiology and Public Health.
- 1.4. I have worked in research in the epidemiology and prevention of HIV and sexually transmitted infections and other infectious diseases for over 35 years.
 I co-directed the MRC, UK Centre for Co-ordinating Epidemiological Studies of HIV and AIDS from 1985 until 1999. I was principal investigator on the 1990

first National Survey of Sexual Attitudes and Lifestyles (Natsal 1990), Natsal 2000 and on MRC/Wellcome Trust funded Natsal 2010.

- 1.5. My research portfolio includes international HIV cohort studies, behavioural intervention studies and community study of the epidemiological and immunological determinants of seasonal influenza transmission (MRC Fluwatch). I was a co-investigator on the UCL I-Sense project developing novel diagnostics and pathways for infectious disease detection. I am a co-investigator on "Virus watch" a large population study of Covid-19 transmission. My studies have included collaborations with colleagues in Europe and Africa.
- 1.6. I have advised a number of national and international bodies. This includes Deputy Chair of the MRC Infection and Immunity Board from 2004-2007, Member of Department of Trade and Industry Expert Advisory Group, Foresight Detection and Identification of Infectious Diseases Project from 2004-2007, Member of the Department of Health Specialist Advisory Committee on Antimicrobial Resistance from 2001-2007, Member Working Party on Public Health: Ethical Issues (Nuffield Council for Bioethics) in 2007. I was Chair of the MRC Population Health Sciences Group and member of the MRC Strategy Board 2008-2010. I was a member of the Adaptation Sub-committee of the Committee on Climate Change from 2009-2018. From 2011 to December 2019, I was a member of the Board of Governors of the Wellcome Trust. I was Chair of the Academy of Medical Sciences Health of the Public 2040 Working Group and in 2018 became Vice-President International of the UK Academy of Medical Sciences and President in 2020. Since 2017, I have Chaired the UK Committee for Strategic Coordination of Health of the Public Research (SCHOPR). I was a member of the Royal Society's Data Evaluation and Learning for Viral Epidemics Committee addressing responses to the COVID-19 pandemic, a participant in one SAGE meeting and a member of the SAGE Environmental Modelling Group (EMG) subgroup on transmission, and advised funding agencies and others during the Covid-19 pandemic. I was a member of AMS Expert Advisory Groups developing independent advice to inform the GCSA and GO-Science on Covid-19. I am an ex officio member of the Council on Science and Technology (CST). I was awarded the Alwyn Smith Prize by the

Faculty of Public Health in 2016 and the ASPHER Andrea Stampar medal in 2017. I was made Dame Commander of the British Empire in the 2013 Queen's Birthday Honours List.

Covid-19 related activities

1.7. The following table outlines the Covid-19 related activities | participated in during the relevant period:

19/03/2020	SAGE Participant. Attended only one main meeting
01/2021 – present	SAGE Environmental Modelling Group (EMG) Transmission sub-group
04/2020 - 09/2020	Member Royal Society COVID-19 DELVE Steering Group
04/2020 – 2022	Member UKRI COVID-19 research and innovation taskforce
2020 – 2022	Extensive engagement in Covid-19 work for the Academy of Medical Sciences as Vice-President International (until December 2020) and then President (from December 2020-present) and contributor to AMS Expert Advisory Groups and reports
07/2020 - 2022	Member of COVID-19 National Core studies Oversight Group (Chair: Sir Patrick Vallance). In which context: Member Advisory Board, ONS Covid Infection Survey and Chair, Covid-19 and Longitudinal Health and Wellbeing (LHW) National Core Study (NCS) & CONVALESCENCE Project Strategic Advisory Board. Member ONS Schools Scientific Advisory Group from October 2021
03/2021 – 12/2021	Member, Pandemic Preparedness Partnership steering group. Advisory to UK Prime Minister and Chief Scientist for G7 Pandemic Preparedness plan and 100- day mission
2020 – 2022	Co-investigator, Virus Watch study. Funded by NIHR/UKRI and linked study: 'Contributions of different exposures and settings to Covid-19 transmission'

Table 3 – Covid-19 related activities

1.8. I became President of the AMS in December 2020 and was responsible for overseeing all the AMS's activities – including those that aimed to support the

evidence base relating to the response to the pandemic and the activities to capture lessons learned from the pandemic. As an epidemiologist with expertise in infectious diseases and public health, I was able to contribute my academic expertise to these activities. In my capacity of President of the AMS, I attended meetings of the Prime Minister's Council for Science and Technology, where Covid related issues were discussed. Meetings were held quarterly, and I attended on the following dates: 10-11 March 2021, 1-2 July 2021, 22-23 September 2021, 1-2 December 2021, 2-3 March 2022, 15-16 June 2022.

1.9. The AMS also continued to have regular meetings with the GCSA and CMO for England during the pandemic, as well as meetings with key Ministers, Shadow Ministers, Select Committee Chairs and other senior stakeholders in relevant organisations (e.g. NHS England, MRC, NIHR, MHRA, UKHSA, among others). Dates of the meetings that took place during the period examined by the Inquiry can be provided if required.

Publications

1.10. Please see Annex A which provides a selected list of my key exemplar publications.

2: List of groups I participated in and the relevant time period:

- 2.1. I attended SAGE meeting 37, on 19 May 2020. I was present for only part of the meeting to present a paper developed by DELVE.
- 2.2. From January 2021 participant in SAGE Environmental Modelling Group (EMG) Transmission sub-group.

Other groups

2.3. In July 2020 I was invited by the UK's Government Chief Scientific Adviser, Sir Patrick Vallance, to join the oversight group for the new COVID-19 national core studies (NCS). The purpose of these studies is to coordinate COVID-19 research essential to understanding of the SARS-CoV-2 virus and the UK's epidemic at the national level. The role of the oversight group was to coordinate and provide recommendations for the NCS. It responded to requests from HMG and provided advice for SARS-CoV-2 surveillance, epidemiology, immunity and

virology, and made decisions on the direction of the National Core Studies, considering the progression of the epidemic.

- 2.4. In March 2020, UK Research and Innovation (UKRI) <u>launched a rapid call</u> for research and innovation projects aimed at addressing and mitigating the health, social, economic, cultural and environmental impacts of the COVID-19 outbreak.
- 2.5. I was invited by Sir Mark Walport, then Chief Executive of UKRI, to join a multidisciplinary high-level taskforce to assess the portfolio of fundable projects submitted to this call, advising on potential areas of further exploration and identifying further opportunities.
- 2.6. In March 2021, I was invited to join the Pandemic Preparedness Partnership steering group as an expert co-lead for the clinical trials strand with Sir Martin Landray.
- 3: Overview of involvement in groups between January 2020 and February 2022:

SAGE meeting 37

- 3.1. I was invited to attend part of the SAGE committee meeting 37 on 19 May 2020 to present the findings of the Royal Society's Data Evaluation and Learning for Viral Epidemics (DELVE) report on 'Test, Trace, Isolate', which I contributed to as part of the DELVE Steering committee.
- 3.2. This was the only meeting I attended and it was only in part as I did not stay for the whole duration of the meeting. During the meeting I answered questions and contributed to the discussion on the topic with SAGE participants.
- 3.3. The 'Test Trace, Isolate' paper had been developed by the Royal Society's DELVE Initiative, of which I was a steering committee member. I worked closely with the group in preparing and drafting the paper during May 2020, working with epidemiologists, mathematical modellers and others. In summary, the paper concluded that test, trace, isolate (TTI) can contribute to controlling the UK Covid-19 epidemic, but only as part of a wider package of public health interventions. The report showed that TTI was likely to be most effective in breaking chains of transmission and reducing the effective reproduction

number when there was maximum speed of self-isolation and contact tracing, compliance with isolation, and high coverage.

Environmental Modelling Group (EMG)

- 3.4. I joined the newly established EMG Transmission working group at the time of its first meeting on 15 January 2021. The group evolved from a pre-existing Public Health England (PHE) led working group on Transmission, which was restructured and became a formal sub-group of EMG and SAGE. I was invited as an independent advisor based on my experience in infectious disease epidemiology and knowledge of the pandemic through my advisory work on Covid-19 as indicated above.
- 3.5. My records indicate that I attended 10 meetings of the EMG Transmission subgroup during 2021. During that time, the transmission sub-group was commissioned to provide a number of papers for EMG and SAGE. I reviewed some of the papers, where I had expertise in the area, and contributed to discussions during the meetings, providing comments on the papers, general advice and contributions to the discussion, and suggesting areas where further research might be required.
- 3.6. I was not involved in the detailed development of papers or of analysis. My role was based on my broad knowledge of the transmission dynamics of Covid-19, derived from my wider experience in infectious disease epidemiology and my knowledge of some of the key data sets available. This included insights gained through my role on the UK National Core Studies (NCS) Steering group and ONS Covid Survey Advisory Group.
- 3.7. Work presented and developed by the SAGE EMG subgroup included data from research in which I was a co-investigator. This included work led by Andrew Hayward (SAGE participant and NERVTAG member) Virus Watch lead, providing insights into transmission from the Virus Watch study of which I was a co-investigator, and analyses from the Flu watch study carried out before the pandemic, on which I had been a co-investigator.

Covid-19 National Core studies Oversight Group

3.8. My role was to advise particularly on aspects of epidemiology. In this context I was asked to provide ongoing advice to the ONS COVID infection survey (CIS):

Questionnaire Response – Professor Dame Anne Johnson DBE PMedSci

https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/ conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/previo usReleases.

- 3.9. We held regular weekly meetings through 2020 and 2021 with the Senior team from ONS including Sir Ian Diamond, the principal investigator on the study Professor Sarah Walker and with Sir Jeremy Farrar and others, to provide advice on the methodology, design, analysis and interpretation of the CIS.
- 3.10. In addition, I am a Member of the Advisory Board for the ONS Covid Infection Survey.
- 3.11. In the context of my role in advising on Core studies, I provided ad hoc advice on the development of epidemiological studies in schools and became a member of the ONS Schools Scientific Advisory Group from October 2021
- 3.12. I also provided ongoing advice to the NCS COVID-19 longitudinal health and well-being (LHW) NCS. I continue to act as Chair of the Covid-19 and Longitudinal Health and Wellbeing (LHW) National Core Study (NCS) & CONVALESCENCE Project
- 3.13. Data from the national core studies, particularly from the CIS study, were used to inform many aspects of the epidemiology of Covid-19. CIS provided an essential large-scale representative household sample of the population to understand many aspects of incidence, prevalence, risk factors, behaviours and long-term outcomes to inform the pandemic response. CIS data were widely used in papers prepared by the EMG transmission subgroup and other analyses for SAGE.

UKRI Covid-19 research and innovation taskforce

3.14. The role of the UKRI COVID-19 R&I Taskforce (CTF) was to provide advice to and support UKRI in the delivery of its COVID-19 R&I funding call. This included identifying priorities and opportunities for research and innovation projects aimed at addressing and mitigating the health, social, economic, cultural and environmental impacts of the COVID-19 outbreak. The role of the R&I Taskforce was expanded in January 2021 to provide advice on the performance of the three National Core Studies (NCS) adopted by UKRI, and their alignment with the wider UKRI R&I portfolio. 3.15. I participated in meetings of the group in 2020 and 2021, providing advice on funding gaps and priorities, focussing on my expertise in epidemiology and behavioural science, and linking my advice to my role on the NCS Oversight Group (see above).

Pandemic Preparedness Partnership (PPP) steering group

- 3.16. This group was advisory to UK Prime Minister and Chief Scientist for G7 Pandemic Preparedness plan and 100-day mission.
- 3.17. This involved working with the G7 and policy leads in DHSC to discuss the best way to share thinking with G7 partners through the ministerial track. Our role was to prepare and draft proposals to inform the final roadmap that went to G7 Sherpas and Leaders for the G7 Summit in July 2021. We were supported by the PPP secretariat and the relevant ministerial leads.

4: Summary of documents to which I contributed for the purposes of advising the SAGE and its related sub-groups:

4.1. Please note that I have provided below as comprehensive a list as possible within the timeframe for collation. It is possible that some meetings have been unintentionally omitted, although I have endeavoured to be as complete as possible, and to the best of my knowledge.

The Royal Society's DELVE Initiative

- 4.2. As a member of the DELVE Steering Group, I advised and commented on the major outputs from DELVE during regular meetings of the Group. This included papers on Data readiness, Vaccine development, Balancing the risks of pupils returning to school, and Face masks for the general public, in addition to the specific papers mentioned at 4.3. The DELVE Initiative ran from 3 April 2020 23 September 2020.
- 4.3. I made significant contributions to the development and drafting of the two following DELVE reports:
 - (1) Test, Trace, Isolate (27 May 2020)

(https://assets.publishing.service.gov.uk/government/uploads/system/u ploads/attachment_data/file/893312/S0412_DELVE_Report_on_Test Trace__lsolate_and_Support.pdf.)

As mentioned at paragraph 3.1, I was invited to the SAGE meeting 37 on 19 May 2020 to present the findings of this report, as summarised above.

 (2) Scoping Report on Hospital and Health Care Acquisition of COVID-19 and its Control (6 July 2020):

(https://rs-delve.github.io/reports/2020/07/06/nosocomial-scopingreport.html)

This report used data from April 2020 to June 2020 to assess the proportion of COVID-19 infections in England occurring amongst patient facing healthcare workers and resident facing social workers. It estimated the proportion of infections in the period acquired by in patients in hospitals and care home residences. It drew attention to gaps in the availability of surveillance data on hospital acquired infections, amongst healthcare workers and in nursing homes. It considered actions for improving surveillance and infection control systems. Insights from this DELVE report was included in the Academy of Medical Sciences' paper on 'Preparing for challenging winter 2020/21' (see paragraphs 4.11-4.12).

(3) An earlier draft of this paper was submitted to SAGE

DELVE: Technical Document 1 – Estimates concerning nosocomial COVID-19 infections in England, for the period between 26 April and 7 June, 30 June 2020 – prepared for SAGE meeting 45 on 2 July 2020

(https://www.gov.uk/government/publications/delve-technicaldocument-1-estimates-concerning-nosocomial-covid-19-infections-inengland-for-the-period-between-26-april-and-7-june-30-june-2020)

- 4.4. There was one other DELVE report that went to SAGE that I was involved in reviewing as part of my role as a Steering Committee member:
 - (1) DELVE report on face masks. This was presented at SAGE meeting
 27 on 21 April 2020

EMG Transmission sub-group

- 4.5. The EMG transmission sub-group developed a number of papers which were submitted to SAGE. These were developed by small working groups, who contributed and analysed data, and were commented on in meetings and by email. I was not involved in detailed analysis or drafting of any of the key outputs, but provided commentary and advice primarily in meetings.
- 4.6. Key outputs from the transmission group on which I commented are set out below:
 - (1) Transmission in hospitality retail and leisure.

(https://assets.publishing.service.gov.uk/government/uploads/system/u ploads/attachment_data/file/982865/S1194_Transmission_in_hospitalit y_retail_leisure.pdf)

(2) EMG – Transmission Group: COVID-19 risk by occupation and workplace – 11 February 2021.

(https://www.gov.uk/government/publications/emg-covid-19-risk-byoccupation-and-workplace-11-february-2021)

(3) EMG: COVID-19 Transmission in Hotels and Managed Quarantine Facilities (MQFs), 9 September 2021

(https://www.gov.uk/government/publications/emg-covid-19transmission-in-hotels-and-managed-quarantine-facilities-mqfs-9september-2021) Questionnaire Response – Professor Dame Anne Johnson DBE PMedSci

(4) EMG Transmission Group: Insights on transmission of COVID-19 with a focus on the hospitality, retail and leisure sector, 8 April 2021

(https://www.gov.uk/government/publications/emg-transmission-groupinsights-on-transmission-of-covid-19-with-a-focus-on-the-hospitalityretail-and-leisure-sector-8-april-2021)

(5) SAGE EMG SPI-B, SPI-M and EMG paper: Considerations for potential impact of Plan B measures, 13 October 2021.

(https://www.gov.uk/government/publications/spi-b-spi-m-and-emgconsiderations-for-potential-impact-of-plan-b-measures-13-october-2021)

This paper included data from the "Virus Watch" study, on which I was a co-investigator, showing the higher risk of infection in those who left home for work or education

(https://wellcomeopenresearch.org/articles/7-199)

- 4.7. In addition, data and analysis from the "Virus Watch" study were used in the following paper submitted to SAGE:
 - (1) Relative importance of different non-household activities for COVID-19 transmission during period of intense restrictions compared to period of no restrictions. Findings from the Virus Watch Community Cohort Study. Andrew Hayward and Susan Hoskins on Behalf of the Virus Watch Study – 20/12/2021EMG

Academy of Medical Sciences (AMS)

4.8. In my capacity as Vice President (International) of the AMS (until December 2020), I was part of the Officers' group that approved the final report on <u>'COVID-19 immunology research'</u>, which was sent to SAGE on 16 April 2020. I also supported the development of a letter sent by the AMS's former President, Professor Sir Robert Lechler FMedSci, to the GCSA (copied to the CMO for

England) setting out initial priorities for the pandemic and where the AMS could contribute, as well as <u>a letter to the Secretary of State for Health and Social</u> <u>Care</u> about the reorganisation of public health provision during the pandemic.

- 4.9. During my time as Vice President and then President of the AMS, the AMS has been involved in a number of different activities to support the Covid-19 pandemic response, including the following (I can submit further details on these activities if requested):
 - (1) Mental health sciences research priorities to COVID-19 pandemic
 - (2) Two international meetings on COVID-19: <u>'Addressing the challenge of</u> <u>the COVID-19 pandemic in Low-and Middle-Income Countries</u>' and <u>'Efforts to address COVID-19</u>'
 - (3) Input into the new public health structures in England
 - (4) <u>Antimicrobial resistance research: learning lessons from the COVID-19</u> pandemic
- 4.10. I was part of the Expert Advisory Group for the AMS's rapid reviews on 'Preparing for a challenging winter 2020/21' and 'COVID-19: Preparing for the future', both commissioned by the Government Chief Scientific Adviser (GCSA) with the support from the Government Office for Science (GO-Science).
- 4.11. The 'Preparing for a challenging winter 2020/21' report aimed to define the extent of the challenges that might be faced in winter 2020/21 in terms of health, and health and social care delivery, as well as potential options to mitigate these. The findings of this report were presented to SAGE by the Chair of the Expert Advisory Group, Professor Sir Stephen Holgate CBE FMedSci, on 9 July 2020.
- 4.12. The report (with the exception of the reasonable worst-case scenario) was endorsed by SAGE subject to minor amendments. Following the meeting, the GCSA and CMO for England wrote to Heads of Departments with a copy of the report, which was also circulated to the Department for Health and Social Care; Department for Transport; Ministry of Housing, Communities & Local Government; COVID-19 Taskforce; and Crown Commercial Service by the SAGE secretariat. The AMS sent this report directly to the GCSA, the Chief

Questionnaire Response – Professor Dame Anne Johnson DBE PMedSci

Medical Officers in all UK nations, key ministers and shadow ministers, among others.

- 4.13. The 'COVID-19: Preparing for the future' report aimed to identify key challenges that were likely to exert additional pressures on the health and social care system over winter 2021/22, and outlined a series of options to mitigate their impact. The AMS sent this report directly to the GCSA, the Chief Medical Officers and the Chief Scientific Advisers in all UK nations, key ministers and shadow ministers, among others. It was circulated to Heads of Departments and Government department Chief Scientific Advisers by GO-Science, and included in papers for information at SAGE meeting 94 that took place on 22 July 2021. SAGE welcomed the publication of the report noting that the report has findings that should be considered by a number of government departments.
- 4.14. I also oversaw, in conjunction with Professor Sir Stephen Holgate CBE FMedSci, the development of the AMS's position paper, 'COVID-19: what next?'. This position paper outlines the AMS's views on what should be considered, both for COVID-19 and more broadly, as we proceed into winter 2022/23 and beyond: https://acmedsci.ac.uk/file-download/8423999. This paper was sent directly to the GCSA and the Chief Medical Officers in England and Northern Ireland, among others. GO-Science also indicated that they would circulate the paper to Government department Chief Scientific Advisers.
- 4.15. Please note that although the 'Preparing for a challenging winter 2020/21' and 'COVID-19: Preparing for the future' reports were commissioned by the GCSA and GO-Science, the AMS ensured that they were carried out independently and ensured objectivity and trustworthiness by: shaping the terms of reference to ensure that the right questions were being addressed; choosing the experts and wider stakeholders that participated in these projects; and having full editorial control over the final content and publication date.

COVID-19 National Core studies Oversight Group

4.16. A quarterly impact report on NCS was provided to SAGE in February 2022: (https://www.gov.uk/government/publications/covid-19-national-core-studiesimpact-report-October-to-december-2021-10-february-2022)

Pandemic Preparedness Partnership steering group

- 4.17. The work by the steering group culminated in the publication of the report to G7 '100 days mission to respond to future pandemic threats'. (<u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/</u> <u>attachment_data/file/992762/100_Days_Mission_to_respond_to_future_pand</u> emic_threats_3_.pdf.)
- 4.18. In summary, the Pandemic Preparedness Partnership set out the 100 Days Mission for developing safe, effective diagnostics, therapeutics and vaccines at scale and ready to be deployed equitably. This independent report set out a roadmap for making the 100 Days Mission achievable, through recommendations for governments, international organisations, and industry partners to take forward, working collectively and collaboratively to achieve this ambitious target for the global good.
- 4.19. (<u>https://www.gov.uk/government/publications/100-days-mission-to-respond-to-</u> <u>future-pandemic-threats</u>)
- 5: Summary of articles, interviews and/or evidence:

DELVE Steering Committee member

- 5.1. The following reports were published by the Royal Society's DELVE Initiative, of which I was a Steering Committee member. I made significant contributions to the development and drafting of the 'Test, Trace, Isolate' and the 'Scoping Report on Hospital and Health Care Acquisition of COVID-19 and its Control' reports (see summaries at paragraph 4.3):
 - (1) 4 May 2020, Face Masks for the General Public (presented at SAGE 27 on 21 April 2020)

(https://rs-delve.github.io/reports/2020/05/04/face-masks-for-thegeneral-public.html)

(2) 27 May 2020, Test, Trace, Isolate (major contribution to drafting – I presented this report to SAGE at meeting 37 on 19 May 2020)
 (https://rs-delve.github.io/reports/2020/05/27/test-trace-isolate.html)

 6 Jul 2020, Scoping Report on Hospital and Health Care Acquisition of COVID-19 and its Control (major contribution to drafting – prepared for SAGE meeting 45 on 2 July 2020)

(https://rs-delve.github.io/reports/2020/07/06/nosocomial-scopingreport.html)

5.2. I undertook a range of media activities as a member of the Royal Society's DELVE Committee:

This included a Science media Centre briefing on the Test, Trace and Isolate paper and a range of interviews with broadcast and print media which are summarised at Annex B.

Research publications on Covid-19

- 5.3. The list below provides the publication I co-authored on the Covid-19 pandemic:
 - (1) Hayward A, Beale S, Johnson A, Fragaszy E, Flu Watch Group. Public activities preceding the onset of acute respiratory infection syndromes in adults in England - implications for the use of social distancing to control pandemic respiratory infections Wellcome Open Research 30 Mar 2020 https://doi.org/10.12688/wellcomeopenres.15795.1.
 - (2) Rachel A McKendry, Geraint Rees, Ingemar J Cox, Anne Johnson, Michael Edelstein, Andrew Eland, Molly M Stevens, David Heymann. Share mobile and social-media data to curb COVID-19. Nature 2020 Apr; 580(7801):29. doi: 10.1038/d41586-020-00908-6
 - (3) Jobie Budd, Benjamin S. Miller, Erin M. Manning, Vasileios Lampos, Mengdie Zhuang, Michael Edelstein, Geraint Rees, Vincent C. Emery, Molly M. Stevens, Neil Keegan, Michael J. Short, Deenan Pillay, Ed Manley, Ingemar J. Cox, David Heymann, Anne M. Johnson and Rachel A. McKendry, Digital technologies in the public-health response to COVID-19. <u>Nature Medicine</u> volume 26, pages 1183–1192(2020). https://www.nature.com/articles/s41591-020-1011-4.
 - Robert W. Aldridge, Dan Lewer, Srinivasa Vittal Katikireddi,
 Rohini Mathur, Neha Pathak, Rachel Burns, Ellen B. Fragaszy,
 Anne M. Johnson, Delan Devakumar, Ibrahim Abubakar

Andrew Hayward. ED Black, Asian and Minority Ethnic groups in England are at increased risk of death from COVID-19: indirect standardisation of NHS mortality data. Wellcome Open Research 6 May 2020. DOI: <u>10.12688/wellcomeopenres.15922.1</u>

- (5) Robert W. Aldridge, Dan Lewer, Sarah Beale, Anne M. Johnson, Maria Zambon, Andrew C. Hayward, Ellen B. Fragaszy, Flu Watch Group. Seasonality and immunity to laboratory-confirmed seasonal coronaviruses (HCoV-NL63, HCoV-OC43, and HCoV-229E): results from the Flu Watch cohort study. Wellcome Open Research 5:52-52 10 Dec 2020. DOI: 10.12688/wellcomeopenres.15812.2.
- (6) Bobby He, Sheheryar Zaidi, Bryn Elesedy, Michael Hutchinson, Andrei Paleyes, Guy Harling, Anne M. Johnson, Yee Whye Teh and on behalf of the Royal Society's DELVE group. Effectiveness and resource requirements of test, trace and isolate strategies for COVID in the UK. Royal Society Open Sci. 8: 201491. 24 March 2021. https://doi.org/10.1098/rsos.201491
- (7)Sarah Beale, Anne M Johnson, Maria Zambon, Flu Watch Group; Andrew C Hayward, Ellen B Fragaszy. Hand Hygiene Practices and the Risk of Human Coronavirus Infections in a UK Community Cohort. Wellcome Open Res. 2021 Jun 22;5:98. DOI: 10.12688/wellcomeopenres.15796.2
- (8) Andrew Hayward, Ellen Fragaszy, Jana Kovar, Vincent Nguyen, Sarah Beale, Thomas Byrne, Anna Aryee, Pia Hardelid, Linda Wijlaars, Wing Lam Erica Fong, Cyril Geismar, Parth Patel, Madhumita Shrotri, Annalan M D Navaratnam, Eleni Nastouli, Moira Spyer, Ben Killingley, Ingemar Cox,10 Vasileios Lampos, Rachel A McKendry, Yunzhe Liu, Tao Cheng, Anne M Johnson, Susan Michie, Jo Gibbs, Richard Gilson, Alison Rodger, Robert W Aldridge. Risk factors, symptom reporting, healthcare-seeking behaviour and adherence to public health guidance: protocol for Virus Watch, a prospective community cohort study. BMJ Open June 2021. <u>http://dx.doi.org/10.1136/bmjopen-2020-048042</u>.

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Other activities

- 5.4. On 21 September 2020 and 5 October 2020, the National Academies held panel events at the Labour and Conservative party conferences (respectively) to showcase the value of research and innovation in responding to the COVID-19 pandemic, giving attendees the opportunity to ask questions of experts involved in this response, and space for a broader conversation about the importance of research and innovation and how we can best use and support it in future. I joined the panel for both events.
- 5.5. On 10 November 2021, I participated in a roundtable held jointly by the British Academy and the AMS on <u>Historic and geographic patterns of health</u> <u>inequalities</u>. This project was commissioned by SAGE and the report was sent directly to the GCSA and CMO for England by the British Academy.
- 5.6. I also gave oral evidence on behalf of the AMS to the House of Lords Science and Technology Select Committee Inquiry into 'Science of COVID-19' on 21 July 2020, and the House of Commons Science and Technology and Health and Social Care Select Committees Inquiry into 'Coronavirus: lessons learnt' on 10 November 2020.

5.7 Media appearances

- 5.7. During the pandemic I participated in a wide range of media: broadcast, television and comments to print journalists. I also participated in a number of Science Media Centre briefings on Academy of Medical Sciences reports (2020 and 2021), and funding for science.
- 5.8. The output from these interviews is summarised by topic in the spreadsheet at Annex B. Some of the pieces of media were direct interviews I gave to journalists, others used quotes they picked up, either from our press releases, statements on our website, or from my broadcast interviews. Some journalists took quotes from attending briefings. Further information is in the 'generated by' column.
- 5.9. From my records, I have provided details of:
- 5.10. My comments on "Test Trace and Isolate' picked up in 6 pieces of media.

- 5.11. My comments on the Academy of Medical Sciences Preparing for a challenging winter 2020-21 picked up in 29 pieces of media.
- 5.12. My comments on the Academy of Medical Sciences COVID-19: Preparing for the future report picked up in 17 pieces of media.
- 5.13. I also participated in a range of other interviews, commenting on the epidemic at different points in its evolution and intensity.
- 5.14. Detailed information including links is provided in the spreadsheet, Annex 2.
- 6: Views as to whether the work of the EMG transmission sub-group in responding to the Covid-19 pandemic succeeded in its aims.

The composition of the groups and/or their diversity of expertise

- 6.1. As I was only invited to attend part of one SAGE meeting to discuss the Royal Society's DELVE report on 'Test, Trace, Isolate', I am not well placed to comment on items a-e with respect to the main SAGE committee. Therefore, my comments refer largely to the work of the EMG transmission sub-group and the work undertaken by the UK National Academies (the AMS, the British Academy, the Royal Society and the Royal Academy of Engineering) in which I was involved, and which was presented to SAGE.
- 6.2. More generally however, I would like to commend the many scientists that via SAGE, its subgroups or the independent reports that were commissioned by GO-Science provided many hours of their time to help support efforts to combat the pandemic often under immense pressure of time, and rapidly changing scientific understanding of the nature of the pandemic threat. I witnessed this first hand while contributing, alongside many leading experts, to the rapid response projects both within SAGE EMG Transmission sub-group and that GO-Science, SAGE or the GCSA commissioned the National Academies to undertake. These were often commissioned at short notice with short timescales, and scientists from across a wide range of disciplines (public health, modelling, epidemiology, infectious diseases, behavioural science, virology, etc.) generously contributed their time and expertise to ensure high-quality, independent advice could feed into Government policies.

- 6.3. Where projects were commissioned by Government departments, the National Academies had in place rigorous mechanisms to ensure that the independence, objectivity and trustworthiness of their work was not compromised. These included shaping the terms of reference to ensure the projects address the most relevant questions; choosing the experts and stakeholders that contributed to ensure all the relevant expert views were considered; and having full editorial control over the final content and publication date.
- 6.4. The SAGE Environmental Modelling Group (EMG) Transmission working group (TWG) was formed in January 2021. It was established in response to the need to utilise developing data sources to inform discussions on transmission of SARS -CoV-2, and the risk/level of transmission in different settings and how these might be effectively mitigated. It was a working group of the SAGE EMG subgroup and chaired by Isabel Oliver (PHE) and Paul Monks (BEIS). Papers prepared by TWG were provided to EMG, which retained ownership of advice consensus and outputs generated by the working group. Its work involved bringing together studies and data sources on routes of transmission, identifying research questions and how to deliver them with appropriate data resources, and advise on studies that could monitor transmission risks.
- 6.5. The group had the wide range of expertise that was required for the task. It included members from PHE and ONS, who had access to major data sources to study transmission, and were actively engaged in the public health response. It included both empirical epidemiologists with experience in studying respiratory virus transmission, social and behavioural scientists, mathematical modellers, and those with experience in environmental science and who were members of the parent EMG SAGE sub-group.

The way in which the groups were commissioned to work on the relevant issues

6.6. Given the centrality of understanding Covid-19 transmission in controlling the epidemic, it might have been helpful if the EMG transmission sub-group was established at an earlier stage of the epidemic, in order to understand where and how people were becoming infected and thus to guide policy on transmission prevention. The group emerged from a pre-existing Public Health

England led working group on transmission of which I was a member. This was in turn established following an action from SAGE meeting 62 and was not initially a subgroup of SAGE.

- 6.7. The PHE group first met in November 2020, and undertook several pieces of work in the area before it became a formal SAGE EMG sub-group. The work of the TWG was largely determined by particular requests for work coming to us via SAGE or EMG.
- 6.8. Given the complexity of the SAGE structure and extent of sub-groups and participants, and speed of working, it was sometimes difficult to fully understand how work was commissioned and prioritised. However, the group were able to make suggestions about where there were gaps in the evidence base.

The resources and support that were available

- 6.9. In my experience on the EMG transmission sub-group, meetings were well organised, and papers produced and shared in a timely fashion. However, the preparation of papers as in other areas of SAGE was often required over very short timescales given the rapidly evolving epidemic. This put significant demands on those who were undertaking analysis and preparing papers in different research groups.
- 6.10. Nonetheless, the EMG Transmission sub-group, was greatly helped by the significant investment that had been made in data collection and research through both the National Core Studies (NCS) and the wider programme of research funded by UKRI and others. The availability of the data from ONS CIS, and other large community studies, as well as surveillance data from PHE and test and trace, were all essential to the group's work.
- 6.11. The group also gave advice as to where and how data collection might be improved. The rapid funding, and establishment and availability of these key resources through a range of funding mechanisms, were extremely important to the work of the group. Others working closely with the data are better able to comment on the complexities of data linkage and access in different areas.
- 6.12. With respect to AMS work, AMS did not receive any additional funding from Government to carry out the 'Preparing for a challenging winter 2020/21' project. However, during the period that the 'Preparing for a challenging winter

2020/21', 'COVID-19: Preparing for the future' and 'COVID-19: what next?' reports were being prepared, it did receive core grants from BEIS that supported some of its policy work. The AMS also received an additional grant of £25,000 to support AMS public engagement activities that fed into the 'COVID-19: Preparing for the future' report. Throughout these projects, the many experts the AMS engaged to contribute to these projects, as well as AMS staff that supported them, put in many additional hours to advise on the content of the report and prepare materials in a timely way.

The advice given and the recommendations that were made

- 6.13. The primary role of SAGE sub-groups was to provide independent scientific evidence to inform policy. It was difficult to fully understand the processes by which papers from the sub-group lead to policy or to specific changes in practice.
- 6.14. More generally, during the pandemic it could be difficult to understand the flow of action through independent scientific advice to policy, and subsequently to intervention and operationalization.
- 6.15. In retrospect, the limited scientific understanding of the mechanisms and location of transmission of SARS-CoV-2, at the start of the pandemic could be considered as a factor which may have impeded the effectiveness of the early public health response.
- 6.16. Understanding the fundamental transmission dynamics also relied on the availability of testing which was in very short supply at the outset of the pandemic. This, in part, led to an underestimate of the extent of transmission at an early stage and a lack of understanding, for example, of the high risk of transmission in health and social care settings, including both staff and patients. Transmission was driven by the interaction between behaviour of the population and biology of the virus understanding both is critical to advice for policy and the development of mathematical models of the likely trajectory of the pandemic.
- 6.17. With respect to the specific work of the EMG transmission subgroup, we were able to address some of these deficits in scientific understanding, but at a relatively late stage. It would have been helpful to see more earlier work in this

area underpinned by better empirical epidemiological and environmental data on key risks and locations for transmission, including in households, a range of indoor and outdoor community settings and in high risk environments such as health and social care

- 6.18. More broadly with respect to my work with the National Academies and elsewhere, there was commitment from the GCSA and CMO to seek independent scientific advice to inform policy and to disseminate the findings of these independent reports by ensuring they were shared across government (as described above). For example, GO-Science was instrumental in supporting the organisation of a series of lively and well attended 'teach in' sessions, where civil servants across Government departments got the opportunity to discuss the findings of the AMS's winter reports with a small panel of experts. Teach in sessions were held on the following topics:
 - (1) The findings of our 'COVID-19: preparing for the future' report with representatives from Cabinet Office and across UK Government on 29 July 2021.
 - (2) Winter respiratory infections with representatives from Cabinet Office and across UK Government on 11 November 2021.
 - (3) Non-Covid infections in winter 2022/23 with representatives from Cabinet Office on 2 February 2022 (please note that I was not present at this meeting).
 - (4) 'COVID-19: what next?' with representatives from the Cabinet Office on
 18 August 2022 (please note that I was not present at this meeting).
- 6.19. The advisory groups supporting the response of the devolved administrations showed a similar commitment to independent, evidence-based input and, and the Chair of the Expert Advisory Group, Professor Sir Stephen Holgate CBE FMedSci, discussed the AMS winter reports at the following meetings (please note that I was not present at any of these meetings):
 - The Welsh Technical Advisory Group about each of the three reports on 20 July 2020, 16 July 2021, and 22 July 2022.

- (2) Representatives from Welsh, Northern Irish and Scottish Governments and their COVID-19 advisory groups about the 'COVID-19: preparing for the future' report on 20 September 2021. Please note that the Chair also attended meetings of the Welsh, Northern Irish and Scottish COVID-19 advisory groups (on 27 April 2021, 10 May 2021 and 13 May 2021 respectively) to present the aims of the report and understand the perspectives and challenges facing the devolved administrations so these could be adequately addressed in the report.
- Representatives from Scottish Government about the 'COVID-19: preparing for the future' report on 2 December 2021.
- 6.20. I also presented the findings of the 'COVID-19: preparing for the future' report to the National Core Studies Leads on 30 July 2021 and presented my reflections on Covid-19 policy and research priorities to the Covid-19 Taskforce on 24 March 2022.
- 6.21. As noted above, in my role as President of the AMS, I had regular meetings with the Government Chief Scientific Adviser and the Chief Medical Officer for England. These meetings were constructive and provided an opportunity to explore areas where the AMS could further support the pandemic response by providing independent, evidence-based advice, and to discuss the progress of the work that the AMS had been commissioned to do.
- 6.22. In my role as President, I also sat on the Prime Minister's Council for Science and Technology, where matters related to COVID-19 were discussed, and had meetings with key Ministers, Shadow Ministers, Select Committee Chairs and other senior stakeholders in relevant organisations (e.g. NHS England, MRC, NIHR, MHRA, UKHSA, among others). Further information can be provided if required.

The extent to which the groups worked effectively together

6.23. I would reiterate the immense commitment of SAGE participants and the scientific community more broadly, to working under great pressure to provide independent and up to date evidence often under significant time pressure, and

often in the face of significant uncertainty as scientific evidence emerged and the epidemic evolved.

6.24. On EMG transmission sub-group, in my experience, participants worked effectively together, and valued one another's opinions, working efficiently and at speed and sharing resources and data. As noted above, the complexity of SAGE and its sub-groups meant that it could on occasion be difficult to fully understand where different issues were being considered but within the group, we were able to effectively complete the work requested.

The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness

6.25. Please see paragraphs 6.9 to 6.22.

7: Lessons that can be learned

- 7.1. As set out above, I participated in a range of activities both as an independent scientist with a background in epidemiology and public health, and in my role as Vice President (international) and subsequently as President of the Academy of Medical Sciences. I suggest below areas for further changes that the inquiry might like to consider in its deliberations. In this I am drawing on observations from the full range of activities that I was involved in.
- 7.2. The AMS produced a number of reports and papers offering advice to Government. Assisted by GO-Science, we had the opportunity to share our findings widely across Government through our work being disseminated to Head of Departments and Chief Scientific Advisers, and through 'teach in' sessions with civil servants across Government departments.
- 7.3. The advice we offered was based on the evidence available at the time brought together, analysed and synthesised by experts from a wide-range of disciplines and provided independently from Government in good faith and to the best of our knowledge. Elements of AMS advice and evidence presented from my other activities, including DELVE and the SAGE and EMG transmission group, were used to inform policy, but in my view further attention could have been paid to the following activities, which the UK Covid-19 Inquiry may wish to explore further:

Questionnaire Response - Professor Dame Anne Johnson DBE PMedSci

(1) Infection prevention and control in health and care settings – The AMS's winter reports highlighted that minimising the infections acquired in health and care settings should be a priority. It was however difficult to understand the extent and nature of transmission at the outset of the epidemic when availability of diagnostic testing was extremely limited. The AMS reports called for better hospital infection control practices, as set out in the DELVE scoping report that I contributed to on 'Hospital and healthcare acquisition of COVID-19 and its control' (https://rs-delve.github.io/reports/2020/07/06/nosocomial-scoping-report.html). Since that time, scientific understanding has improved, and significant efforts have been made to reduce health and social care acquired infection.

I think the inquiry could examine the efforts made to improve infection control and prevention measures to reduce hospital, health and social care-acquired infections, and their effectiveness. This might include how control of health and social care associated infections might be better identified and prevented in the future in patients, clients, and the large associated workforce. This includes better understanding of behaviours, organisation of health care, availability and use of protective equipment and the quality of the physical environment, including ventilation. The inquiry might want to focus on monitoring and evaluation of measures put in place.

(2) Engaging the public – The public had a major role in mitigating the impact of the pandemic by rapid changes in behaviour and compliance with Government interventions, including lockdown. However, the pandemic also highlighted wide inequalities in health and in the degree to which individuals could be protected from infection – for example, in relation to ability to work from home, to isolate within households, etc.

At the start of the epidemic, little was understood about the likely compliance of the public with containment measures (e.g., lockdown measures). The inquiry might like to consider whether sufficient attention was given to behavioural and the wider social sciences, and to the use of communication science, in providing clear, practical, and easily accessible advice to the public on risk mitigation – for example, providing clear advice on how to prevent transmission in household settings, which was one of the most common risks of transmission.

The AMS winter reports discussed the importance of engaging the public and relevant communities in the development and production of guidelines to help improve people's understanding and ability to minimise COVID-19 transmission, as well as maximise their engagement in control measures. I think the inquiry could look at whether more could have been done to meaningfully engage different communities in the production of guidelines and other policies, and whether this might increase the effectiveness of such measures.

I suggest the inquiry could also examine how views of patients and the public are considered alongside scientific advice in Government decisions in future national emergencies, such as another pandemic. The AMS reports greatly benefitted from patient and public involvement and engagement, with the reality of people's experiences complementing the scientific evidence.

The Patient and Carer Reference Group that contributed to the AMS <u>'COVID-19: Preparing for the future</u>' report felt strongly that patients and carers should be better involved, with its report proposing that public members should be better represented as members of SAGE and its subgroups (and their equivalents in the devolved administrations).

(3) Engaging local public health communities – The AMS winter reports highlighted the key role of local public health structures in: managing local outbreaks of COVID-19 and other infectious diseases such as influenza and respiratory syncytial virus (RSV); disease surveillance; and coordinating initiatives locally (e.g. vaccination programmes, test and trace systems, and implementation of local behavioural and environmental interventions). The reports emphasised that there needs to be a collaborative partnership between central government, which provides standards and consistency, and local authorities, which can use their extensive local knowledge to coordinate initiatives locally within a national framework.

I think the inquiry should explore whether there was sufficient investment and deployment of capacity and expertise in local public health systems during the pandemic, as well as coordination, collaboration and data sharing between central and local initiatives. It should also consider whether lessons can be learnt to empower and appropriately resource local public health capacity so that they can make fast and effective decisions, and take local action, which are essential to epidemic control.

(4) Investing in public health – There has been a disinvestment in public health structures since the Health and Social Care Act 2012, which saw responsibility for public health transferred from the NHS to local authorities themselves subject to highly constrained budgets. The reduced resources available to national and local public health structures prior to the pandemic may have impacted the effectiveness and resilience of both local and national public health responses.

One element, for example, was the early lack of diagnostic testing capability, which hampered our ability to understand the extent and transmission dynamics of the pandemic. This in turn limited the availability of high-quality surveillance data required to inform the response. The COVID-19 pandemic brought to the fore the importance of a strong, efficient and appropriately resourced public health system.

The Secretary of State for Health and Social Care recognised that the public health system needed more capacity to deal with health threats, which led to a reconfiguration of public health systems in the midst of the pandemic, and the establishment of the UK Health Security Agency and subsequently the Office for Health Improvement and Disparities. This led to the Public Health workforce, who were heavily involved in the national response, having in addition to deal with a major reorganisation when already under significant pressure.

I think the inquiry should examine whether there has been appropriate investment in public health capability and capacity, and whether lessons can be learnt to ensure preparedness and help build a system that is resilient to future health shocks. The inquiry might also like to consider whether there was sufficient participation in SAGE of practising public health experts with experience of operationalising public health responses at national and local levels.

(5) Reducing health inequalities – The pandemic highlighted significant inequality in health outcomes during the pandemic and identified key risk factors associated with high mortality which included for example prior health conditions, obesity, and ethnicity.

The AMS 'COVID-19: Preparing for the future' report highlighted that the pandemic had a disproportionate impact on certain groups, including individuals from poorer and disadvantaged backgrounds, ethnic minority groups and deprived regions, who showed higher COVID-19 mortality rate, and poorer outcomes.

The report called for all measures implemented to address the pandemic and the UK's recovery to try to halt and reverse the unequal impact of the pandemic on health and wellbeing. This should include prioritising those with the greatest need, ensuring that communication is appropriate and that access to prevention of infection and expert care is available to all. The inquiry might consider the role of social determinants in health outcomes during the pandemic and how future health and public health systems can work to reduce inequity and build population resilience for the future through wider public health policies.

The AMS 'Preparing for a challenging winter 2020/21' report also called for more to be done to support people in enabling them to adhere to COVID-19 advice and guidance. The report indicated that removing the many practical and financial disincentives/barriers (e.g., loss of income/employment) that impeded people's ability to protect themselves and their families from infection, could improve adherence to infection control measures, and mitigate wider health effects. Providing alternative accommodation, essential amenities, and financial support were likely to be important for socio-economically disadvantaged communities to help them adhere to isolation and quarantine requirements. I suggest the inquiry might consider whether such support could help mitigate the more severe impacts seen in disadvantaged communities and how such support might be provided in the face of future health threats.

(6) Effectiveness of the Test and Trace System – The Royal Society DELVE report on 'Test, trace, isolate' highlighted the potential benefits of such a programme but also its limitations arising from the inability to detect asymptomatic infections, and the difficulties and timeliness of reaching contacts and varying levels of ability of individuals to isolate.

The TTI programme was set up as a national enterprise with significant investment, but uncertainty remains about, its cost effectiveness, and the extent to which it limited transmission. A further consideration was whether there was sufficient linkage with existing public health capability in local authorities and use of existing knowledge and expertise in contact tracing etc.

The inquiry might consider the cost effectiveness of the TTI programme, its impact on transmission, the utility of the data collected by the programme for epidemiology, surveillance, and prevention, and how initial detection and contact tracing capability should be maintained and delivered in the face of future outbreaks.

(7) Innovations in research and service delivery – UKRI, NIHR and other funding agencies made large investments in research for COVID-19 in many different areas and responded early in the pandemic with rapid funding calls for research. The world-leading research carried out in the UK, particularly on vaccine development and clinical trials was able to build on significant prior investment in the UK research system over previous decades, notably in clinical trial capability in the NHS. It enabled the UK to lead internationally in key areas of research as a result of prior investment in these areas.

The epidemic also resulted in investment in core epidemiological resources, notably the ONS Covid-19 Infection Survey (https://www.ons.gov.uk/surveys/informationforhouseholdsandindividual

<u>s/householdandindividualsurveys/covid19infectionsurvey</u>), and novel approaches to surveillance, such as the Zoe Health Study (<u>https://healthstudy.joinzoe.com/data</u>). The urgency of the of the pandemic response also led to innovations in governance, regulation, licencing and diagnostics, etc. I think it also led to significant developments in data sharing across different sectors. This enabled a number of key insights into the epidemic through initiatives such as the National Core Studies (<u>https://www.gov.uk/guidance/national-core-studies-programme</u>) and OpenSAFELY (<u>https://www.opensafely.org/</u>).

The inquiry might like to consider the lessons from these developments and from research investment, and how they can be built on in the future to develop and secure sustainable, multi-disciplinary capability in clinical, public health and socio-economic and behavioural research to benefit health more widely and to build resilience for future outbreaks. The Inquiry might also consider the overall balance of research investment and whether with hindsight, there could have been greater investment in research and experimentation to assess the effectiveness of a range of behavioural, social, and nonpharmaceutical interventions, as well clinical trials of treatment in community settings and primary care in less severe disease or at an earlier stage in infection.

Similar observations can be made about innovation within the health service. Despite the major concerns about the development of a significant backlog in access to health services, there were significant innovations in digital health, remote services, etc. These can bring benefits to the health system, patients and the public but require appropriate investment in evaluation and future implementation. The inquiry might like to consider what we have learned from these innovations and how these can be built on in the future

8: Documents that I hold

8.1. Electronic copies of the various reports discussed above are publicly available (links provided in question 4). I also have email exchanges with the relevant

groups with whom I worked, GO-Science, the GCSA, and others about meetings outlined in this document, as well as notes of some meetings.

8.2. The AMS will have information on how the AMS winter projects were commissioned and correspondence with GO-Science, other Government departments, and the devolved administrations. They will also have further details of meetings (dates for example) identified above that I attended on behalf of the AMS.

ANNEX A: SELECTED PUBLICATIONS

Selected exemplar key publications from a range of activities from over 400 publications in peer-reviewed journals

 Carne CA, Weller IVD, Johnson AM, Loveday C, Pearce F, Hawkins A, Smith A, Williams P, Tedder RS, Adler MW. Prevalence of antibodies to human immunodeficiency virus, gonorrhoea rates and changed sexual behaviour in homosexual men in London. Lancet. 1987 Mar 21;1(8534):656-8. https://doi.org/10.1016/S0140-6736(87)90415-6

This paper demonstrated the rapid rise in HIV prevalence at the start of the HIV pandemic in men who have sex with men in London and the impact of behaviour change on the rise of prevalence and on falling gonorrhoea rates.

Johnson AM, Petherick A, Davidson S, Brettle R, Hooker M, Howard L, McLean KA, Osborne LEM, Robertson R, Sonnex C, Tchamouroff S, Shergold C, Adler MW. Transmission of HIV to the heterosexual partners of infected men and women. AIDS 1989; 3: 367-372. DOI: <u>10.1097/00002030-198906000-00005</u>

This paper provided estimates of the risk of heterosexual transmission between partners, and the behavioural risk factors at an early stage of the HIV pandemic

3. Johnson AM, Wadsworth J, Wellings K, Field J, Bradshaw S. Sexual lifestyles and HIV risk. Nature 1992; 360: 410-412. DOI: <u>https://doi.org/10.1038/360410a0</u>.

This paper provided the first results of a large scale random sample survey of 18,876 individuals in Britain, providing estimates of the prevalence of a range of HIV risk factors and was used to inform early models of the HIV epidemic

 Dodds J, Nardone A, Mercey DE, Johnson AM. Increase in high risk sexual behaviour amongst homosexual men in London 1996-1998: BMJ 2000; 320: 1510. <u>https://doi.org/10.1136/bmj.320.7248.1510</u>

This paper describes a large scale community survey of homosexual men in London after the first phase of the HIV epidemic and demonstrates increases in risk behaviour contributing to the continued transmission of HIV

 Stephenson JM, Strange V, Forrest S, Oakley A, Copas A, Allen E, Babiker A, Black S, Ali M, Monteiro H, Johnson AM. PuPil-Led sex education in England (RIPPLE study): cluster-randomised intervention trial. Lancet 2004; 364: 338-346. <u>https://doi.org/10.1016/S0140-6736(04)16722-6</u>

This paper reports on a large scale randomised controlled trial of sex education in English schools and demonstrates the impact on a range of sexual health outcomes

6. Bhaskaran K, Hamouda O, Sannes M, Boufassa F, **Johnson AM**, Lambert PC, Porter K: CASCADE Collaboration. Changes in the risk of death after HIV seroconversion compared with mortality in the general population. JAMA 2008; 300(1): 51-9. DOI: <u>10.1001/jama.300.1.51</u>

This large scale pan European cohort of people infected with HIV, demonstrated the impact of the introduction of anti retroviral therapy on improved survival overtime.

 Brown AE, Gifford RJ, Clewley JP, Kucherer C, Masquelier B, Porter K, Balotta C, Back NKT, Jorgensen LB, De Mendoza C, Bhaskaran K, Gill ON, Johnson AM, Pillay D. Phylogenetic reconstruction of transmission events from individuals with acute HIV infection: toward more rigorous epidemiological definitions. Journal of Infectious Diseases 2009; 199: 427-31. DOI: <u>10.1086/596049</u>

This is an early study demonstrating the use of HIV sequencing and phylogenetic analysis to understand patterns of transmission of HIV

 Mercer C, Tanton C, Prah P, Erens B, Sonnenberg P, Clifton S, Macdowall W, Lewis R, Field N, Datta J, Copas AJ, Phelps A, Wellings K, Johnson AM. Changes in sexual attitudes and lifestyles through the lifecourse and trends over time: Findings from the British National Surveys of Sexual Attitudes and Lifestyles (Natsal). Lancet 2013; 382: 1781-94. DOI: <u>10.1016/S0140-6736(13)62035-8</u>

This paper is the first of a series of papers reporting on the third national survey of sexual attitudes and lifestyles and compares changes in sexual behaviours overtime over the course of the HIV epidemic

- Sonnenberg P, Clifton S, Beddows S, Field N, Soldan K, Tanton C, Mercer CH, da Silva Filomeno C, Alexander S, Copas AJ, Phelps A, Erens B, Prah P, Macdowall W, Wellings K, Ison CA, Johnson AM. Prevalence, risk factors and uptake of interventions for sexually transmitted infections: Findings from the British National Surveys of Sexual Attitudes and Lifestyles (Natsal). Lancet 2013; 382: 1795-806.Co. DOI: <u>10.1016/S0140-6736(13)61947-9</u>.
- Colltart CEM, Johnson AM, Whitty CJM. (2015). Role of healthcare workers in early epidemic spread of Ebola: policy implications of prophylactic compared to reactive vaccination policy in outbreak prevention and control. BMC Medicine <u>BMC</u> <u>Med.</u> 2015 Oct 19; 13:271. DOI: <u>10.1186/s12916-015-0477-2</u>

This paper examines the potential role of different vaccination policies on control of Ebola and was written during the epidemic in Sierra Leone

11. Hayward AC, Fragaszy EB, Bermingham A, Wang L, Copas A, Edmunds WJ, Ferguson N, Goonetilleke N, Harvey G, Kovar J, Lim MS, McMichael A, Millett ER, Nguyen-Van Tam JS, Nazareth I, Pebody R, Tabassum F, Watson JM, Wurie FB, Johnson AM (joint senior author), Zambon M; on behalf of the Flu Watch Group. Comparative community burden and severity of seasonal and pandemic influenza: results of the Flu Watch cohort study. Lancet Respir Med 2014 Epub (10.1016/S2213-2600(14)70034-7). DOI: 10.1016/S2213-2600(14)70034-7

This paper provides the key results from a large scale community study prior to and during the 2009 influenza pandemic. It examined patterns of infection and symptoms during seasonal and pandemic years, comparing attack rates.

12. Hayward AC, Wang L, Goonetilleke N, Fragaszy EB, Bermingham A, Copas A, Dukes O, Millett ER, Nazareth I, Nguyen-Van-Tam JS, Watson JM, Zambon M, Johnson AM, (joint senior author) McMichael AJ. (2015). Natural T Cell-mediated protection against seasonal and pandemic influenza. Results of the Flu Watch cohort study. American Journal of Respiratory and Critical Care Medicine, 191 (12), 1422-1431. DOI: 10.1164/rccm.201411-1988OC

This paper, was a large scale study of T cell and B cell responses in a community cohort studied prior to enduring the 2009 influenza pandemic and demonstrated the role of T cell immunity in modifying symptoms and infection rates

13. Aghaizu A, Wayal S, Nardone A, Parsons V, Copas A, Mercey D, Hart G, Gilson R, Johnson AM. Sexual behaviours, HIV testing, and the proportion of men at risk of transmitting and acquiring HIV in London, UK, 2000-13: a serial cross-sectional study. <u>Lancet HIV.</u> 2016 Sep; 3(9):e431-40. Epub 2016 Jul 14. https://doi.org/10.1016/S2352-3018(16)30037-6.

This paper, in a series of cross-sectional studies in men who have sex with men in London, quantified the proportion of men at risk of acquiring and transmitting HIV over time and Relationship to knowledge of HIV status

- 14.
- 15. Wood CS, Thomas MR, Budd J, Mashamba-Thompson TP, Herbst K, Pillay D, Peeling RW, Johnson AM, McKendry RA, Stevens MM. <u>Taking connected mobilehealth diagnostics of infectious diseases to the field</u>. Nature 566(7745):467-474 27 Feb 2019. DOI: <u>10.1038/s41586-019-0956-2</u>

This review paper explores the opportunities for connected mobile diagnostic systems for use in community settings and their linkage to surveillance and treatment capabilities

16. McCormack S, Dunn DT, Desai M, Dolling DI, Gafos M, Gilson R, Sullivan AK, Clarke A, Reeves I, Schembri G, Mackie N, Bowman C, Lacey CJ, Apea V, Brady M, Fox J, Taylor S, Antonucci S, Khoo SH, Rooney J, Nardone A, Fisher M, McOwan A, Phillips AN, Johnson AM, Gazzard B, Gill ON. Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial. Lancet 2016 <u>http://dx.doi.org/10.1016/S0140-6736(15)00056-2</u>

This paper demonstrated the effectiveness of pre exposure prophylaxis for the prevention of HIV transmission.

17. Drolet M, Bénard É, Pérez N, Brisson M; Hammad Ali, Marie-Claude Boily, Vincenzo Baldo, Paul Brassard, Julia M L Brotherton, Denton Callander, Marta Checchi, Eric P F Chow, Silvia Cocchio, Tina Dalianis, Shelley L Deeks, Christian Dehlendorff, Basil Donovan, Christopher K Fairley, Elaine W Flagg, Julia W Gargano, Suzanne M Garland, Nathalie Grün, Bo T Hansen, Christopher Harrison, Eva Herweijer, Teresa M Imburgia, Anne M Johnson et al. HPV Vaccination Impact Study Group. Population-level impact and herd effects following the introduction of human papillomavirus vaccination programmes: updated systematic review and meta-analysis. Lancet. 2019 Aug 10;394(10197):497-509. Epub 2019 Jun 26. https://doi.org/10.1016/S0140-6736(19)30298-3.

This meta analysis review paper demonstrated the international impact of human papilloma vaccination on infection prevalence.

Anne Johnson – Media appearances

			Generated		
Date	Торіс	Title	by	Outlet name	Link
13/03/20	Global Covid	Coronavirus: South	Direct	iNews	https://inews.co.uk/news/coronavirus-south-korea-new-cases-declining-covid-
		Korea's new cases are	interview		19-outbreak-measures-explained-407643
		declining - how the			
		country is tackling the			
		Covid-19 outbreak			
		(inews.co.uk)			
27/05/20	Royal Society	Test, trace and isolate	Direct	Evening	Link
	DELVE report	is crucial but no silver	interview	Standard	
	on 'Test, trace,	bullet, experts say			
	isolate'				
27/05/20	Royal Society	Royal Society data	Direct	Research	Link
	DELVE report	group backs `test,	interview	Fortnight	
	on 'Test, trace,	trace and isolate"			
	isolate'	plans			
27/05/20	Royal Society	Coronavirus: Test and	Quote from	BBC News	https://www.bbc.co.uk/news/health-52820592
	DELVE report	trace system will start	press release		
	on 'Test, trace,	on Thursday			
	isolate'				
28/05/20	Royal Society	Anne Johnson on BBC	Direct	BBC World	
	DELVE report	World Service	Interview	Service	
	on Test, trace,	Newshour to discuss		Newshour	
00/07/20	Isolate Devial Casiatry	test, trace and isolate	Questa francia	Independent	hater (/
06/07/20	Royal Society	Coronavirus: One on	Quote from	Independent	nttps://www.independent.co.uk/news/nealth/coronavirus-covid-nns-nospital-
	on bosnital	infected during peak	press release		Intection-care-nomes-delive-a9605781.fttm
	acquired	of outbreak			
	infection	orodibreak			
06/07/20	Royal Society	10% of coronavirus	Quote from	Evening	https://www.standard.co.uk/news/bealth/coronavirus-infections-10-bealthcare-
00,07,20	DELVE report	infections in England	press release	Standard	social-workers-a4490046.html
	on hospital	among healthcare and	Freese release		
	acquired	social care workers			
	infection				
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06/07/20	Royal Society DELVE report on hospital acquired infection	One in TEN coronavirus cases in England in May were among NHS and care workers, report reveals	Quote from press release	Daily Mail	https://www.dailymail.co.uk/news/article-8494241/One-TEN-coronavirus-cases- England-NHS-care-workers-report-reveals.html
07/07/20	Royal Society DELVE report on hospital acquired infection	Covid-19: One in 10 cases in England occurred in frontline health and social care staff	Quote taken - other	BMJ	link
14/07/20	Preparing for a challenging winter 2020- 21	Anne Johnson on Today Programme	Direct interview	BBC Radio 4 Today Programme	Broadcast
14/07/20	Preparing for a challenging winter 2020- 21	UK warned of winter resurgence in Covid- 19	Quote from press release	Financial Times	https://www.ft.com/content/16faef44-3c62-4827-821e-cb3cf826f977
14/07/20	Preparing for a challenging winter 2020- 21	Cold winter and bad flu could leave 120,000 dead	Quote from press release	The Times	https://www.thetimes.co.uk/article/cold-winter-and-bad-flu-could-leave-120- 000-dead-vp98d57h5
14/07/20	Preparing for a challenging winter 2020- 21	A SECOND wave of coronavirus this winter could be worse than the first and kill 120,000 hospital patients, a report reveals.	Quote from press release	The Sun	https://www.thesun.co.uk/news/12114651/second-coronavirus-winter-wave- cripple-nhs-kill-120k/
14/07/20	Preparing for a challenging winter 2020- 21	Experts fear up to 120,000 Covid deaths over winter	Quote from press release	Guardian	https://www.theguardian.com/world/2020/jul/14/action-to-stop-winter-covid- 19-second-wave-in-uk-must-start-now

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14/07/20	Preparing for a challenging winter 2020- 21	120,000 people could die in second wave, say Government scientists	Quote from press release	LeedsLive - syndicated in 18 other regionals	link
14/07/20	Preparing for a challenging winter 2020- 21	Coronavirus latest: Second wave of Covid- 19 could be worse than the first, and could kill	Quote from press release	iNews	link
14/07/20	Preparing for a challenging winter 2020- 21	Second wave of coronavirus this winter could lead to more than 120,000 extra deaths, scientists warn	Quote from press release	Evening Standard	https://www.standard.co.uk/news/health/worstcase-scenario-could-see-120- 000-coronavirus-deaths-this-winter-top-scientists-warn-a4497266.html
14/07/20	Preparing for a challenging winter 2020- 21	Dr Hilary says 120,000 more Covid-19 deaths due to a second wave "might not happen"	Quote from press release	LancsLive and 3 other regionals	link
14/07/20	Preparing for a challenging winter 2020- 21	UK could face 120,000 hospital deaths this winter from second Covid-19 wave in 'worst-case scenario' as top medics warn the NHS must prepare now	Quote from press release	Daily Mail	https://www.dailymail.co.uk/news/article-8517475/UK-face-120-000-hospital- deaths-winter-second-Covid-19-wave.html
14/07/20	Preparing for a challenging winter 2020- 21	Second Covid wave could see twice as many deaths and would require reorganisation of NHS hospitals	Quote from press release	Telegraph	https://www.telegraph.co.uk/news/2020/07/14/second-covid-wave-could-see- twice-many-deaths-would-require/
14/07/20	Preparing for a challenging	Winter wave of coronavirus 'could be worse than first'	Quote from press release	BBC News	https://www.bbc.co.uk/news/health-53392148

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	winter 2020- 21				
14/07/20	Preparing for a challenging winter 2020- 21	Coronavirus second winter wave could kill 120,000 Brits as scientists issue warning	Quote from press release	Daily Star	https://www.dailystar.co.uk/news/latest-news/coronavirus-second-winter- wave-could-22351305
14/07/20	Preparing for a challenging winter 2020- 21	Scientists warn of 120,000 winter coronavirus deaths in second wave of UK infections	Quote from press release	Manchester Evening News	<u>https://www.manchestereveningnews.co.uk/news/greater-manchester-news/second-wave-death-thousands-winter-18592114</u>
14/07/20	Preparing for a challenging winter 2020- 21	GMB's Dr Hilary says 120,000 deaths in second wave is 'worst case scenario'	Quote from press release	Liverpool Echo	https://www.liverpoolecho.co.uk/news/tv/gmbs-dr-hilary-says-120000- 18592570
14/07/20	Preparing for a challenging winter 2020- 21	A bad UK winter could cause 120,000 hospital deaths linked to covid- 19	Quote from press release	New Scientist	https://www.newscientist.com/article/2248691-a-bad-uk-winter-could-cause- 120000-hospital-deaths-linked-to-covid-19/
14/07/20	Preparing for a challenging winter 2020- 21	Covid-19: UK must prepare now for winter peak or risk many more deaths, scientists warn	Quote from press release	BMJ	https://www.bmj.com/content/370/bmj.m2825
14/07/20	Preparing for a challenging winter 2020- 21	Worst-case' Scenario Outlined for COVID-19 This Winter	Quote from press release	Medscape	https://www.medscape.co.uk/viewarticle/worst-case-scenario-outlined-covid- 19-winter-2020a100106g
14/07/20	Preparing for a challenging winter 2020- 21	Worst-case' UK winter could see 120,000 COVID deaths in second wave	Quote from press release	Reuters	https://www.reuters.com/article/us-health-coronavirus-britain-winter/worst- case-uk-winter-could-see-120000-covid-deaths-in-second-wave-idUSKCN24E30N

Annex B

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24/07/20	Speaking at	Scientists tell Lords	Quote taken	Research	https://www.researchprofessionalnews.com/rr-news-uk-politics-2020-7-
	House of Lords	about failing of Covid-	- other	Professional	scientists-tell-lords-about-failing-of-covid-19-models-and-testing/
	Science and	19 models and testing			
	Technology				
	Select				
10/00/20	Committee		Discret	The Counding	
18/09/20	Preparing for a	Is the UK gov ready for	Direct	The Guardian	nttps://www.tneguardian.com/politics/2020/sep/18/is-tne-uk-government-
	winter 2020	a covid winter :	Interview		ready-ioi-a-covid-winter CoviP=Share_IOSApp_Other
	21				
27/09/20	Preparing for a	Covid's second	Direct	The Guardian	https://www.theguardian.com/politics/2020/sep/27/covid-second-coming-how-
	challenging	coming: how did	interview		did-britain-get-back-in-this-mess
	winter 2020-	Britain get back in this			
	21	mess?			
13/10/20	Test, Trace,	Anne Johnson on BBC	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m000nc17
	Isolate	Radio 4 Today	interview	Today	
		Programme		Programme	
15/10/20	Regional	Anne Johnson on BBC	Direct	The Briefing	https://www.bbc.co.uk/sounds/play/m000ncq0
	differences in	Radio 4 Briefing Room	interview	Room	
	COVID-19				
19/10/20	Backwards	Anne Johnson on BBC	Direct	BBC News	Broadcast
27/10/20	contact tracing	6pm and 10pm News	Interview	The Coundian	
27/10/20	Preparing for a	Top medical advisers	Quote from	The Guardian	https://amp.theguardian.com/world/2020/oct/28/top-medical-advisers-arguing-
	winter 2020-		press release		nard-Ior-lignler-coronavirus-
	21	restrictions in England			
28/10/20	New role as	Anne Johnson on	Direct	Newscast	https://www.bbc.co.uk/sounds/play/p08wmhgd
,,	President Elect	Newscast	interview		
	and about				
	COVID-19				
29/10/20	Preparing for a	Top medical advisers	Direct	The Guardian	https://amp.theguardian.com/world/2020/oct/28/top-medical-advisers-arguing-
	challenging	arguing for tighter	interview		hard-for-tighter-coronavirus-
	winter 2020-	coronavirus			restrictions?utm_source=dlvr.it&utm_medium=twitter&twitter_impression=tr
	21	restrictions in England			<u>ue</u>
04/11/20	Lockdown	Anne Johnson on BBC	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m000p10h
	measures	Radio4 PM	interview	PM	

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10/11/20	Test, Trace,	Ex-PMs Tony Blair,	Quote taken	Daily Mail	https://www.dailymail.co.uk/news/article-8932993/Ex-PMs-including-Blair-
	Isolate	Gordon Brown, John	- other		Brown-Cameron-told-Boris-Johnson-make-test-trace-
		Major and David			priority.html?ns_mchannel=rss&ns_campaign=1490&ito=1490
		Cameron joined			
		together MONTHS ago			
		to tell Boris Johnson to			
		make test and trace			
		his 'number one			
		overwhelming priority'			
		in order to beat			
		coronavirus			
15/11/20	-	Anne Johnson on	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m000pf5h
		Today programme	interview	Today	
				Programme	
17/11/20	Preparing for	Now the world needs	Direct	The Times	https://www.thetimes.co.uk/article/now-the-world-needs-to-prepare-for-the-
	next pandemic	to prepare for the	interview		<u>next-pandemic-gvrxtkcsg</u>
		next pandemic			
19/11/20	Lockdown in	Anne Johnson in New	Direct	New Scientist	
	Europe	Scientist on lockdown	interview		
		in Europe			
23/11/20	Tier system	Anne Johnson on BBC	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m000plw3
		Radio 4 Broadcasting	interview	Broadcasting	
		House		House	
30/11/20	Tier system	Anne Johnson on BBC	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m000pw6t
		Radio 4 Today	interview	Today	
		Programme		Programme	
30/11/20	Christmas	Sage advice for	Direct	Telegraph	https://www.telegraph.co.uk/news/2020/11/27/sage-advice-christmas-covid-
		Christmas: How your	interview		safe-festive-period-could-look/
		Covid-safe festive			
		period could look			
06/12/20	Test, Trace,	Covid test-and-trace:	don't know	BBC News	https://www.bbc.co.uk/news/health-54648734
	Isolate	Is backwards contact			
		tracing the way			
		forward?			

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11/12/20	Covid	Anne Johnson on BBC	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m000q3ls
	Christmas	Radio 4 PM	interview	PM	
11/10/00	restrictions		D. Martine		
14/12/20	Covid	The new yule rules: a	Direct	Telegraph	https://www.telegraph.co.uk/family/life/new-yule-rules-guide-covid-christmas-
	Christmas	guide to Covid	interview		<u>etiquette/</u>
24/12/20	restrictions	Christmas etiquette.	Discost	DDC Norm	Dura darat
24/12/20	Covid	Anne Jonnson on BBC	Direct	BBC News	Broadcast
	Christmas	News	Interview		
02/01/21	Proporting for a	Anno Johnson on PPC	Direct	PPC Padia 4	Link
05/01/21	challenging	Anne Johnson on BBC	Direct	DDC Radio 4	
	winter 2020	Maakand	Interview	Workend	
	21	Weekenu		Weekenu	
09/01/21	Prenaring for a	Plan for the future	Direct	The Observer	
00,01,21	challenging	now or face major	interview		
	winter 2020-	outbreaks for months			
	21	to come, scientists			
		warn			
10/01/21	Preparing for a	Anne Johnson on BBC	Direct	BBC World	link
	challenging	World Service	interview	Service	
	winter 2020-				
	21				
15/01/21	Anne	Anne Johnson: Dame	Direct	Lancet (Web)	https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32761-
	Johnson's	of public health	interview		<u>6/fulltext</u>
	profile	epidemiology			
22/01/21	Anne	Academy of Medical	Quote taken	Research	https://researchprofessionalnews.com/rr-news-uk-charities-and-societies-2021-
	Johnson's	Sciences" new	- other	(Web)	<u>1-academy-of-medical-sciences-new-president-sets-out-priorities/</u>
	priorities as	president sets out			
	President of	priorities			
	the Academy				
	of Medical				
24/04/04	Sciences		D'		19-1
24/01/21	Preparing for a	Anne Johnson on BBC	Direct	BBC Radio 4	
	challenging	Radio 4 Broadcasting	Interview	Broadcasting	
	winter 2020-	House		House	
	21				

					Annex B
27/01/21	Preparing for a challenging winter 2020- 21	Covid-19 has killed 100,000 people in the UK. Experts say the government is still getting it wrong	Direct interview	CNN	link
02/02/21	Anne Johnson's career and Covid	Anne Johnson on Life Scientific	Direct interview	BBC Radio 4 Life Scientific	link
04/02/21	Anne Johnson's career and covid	Anne Johnson on Foundation for Science and Technology podcast	Direct interview	Foundation for Science and Technology	link
06/02/21	Preparing for a challenging winter 2020- 21	COVID-19: AI Decodes the Research	Direct interview	NHK World	link
11/02/21	International day of women and girls in science	Anne Johnson on Sky News	Direct interview	Sky News	
22/02/21	Easing lockdown	Johnson's moment of lockdown truth looms as announcement on reopening awaited	Direct interview	Guardian	link
22/02/21	Easing lockdown	Anne Johnson on BBC Radio 4 PM	Direct interview	BBC Radio 4 PM	link
22/02/21	Easing lockdown	Spring is on its way' says Boris Johnson as he heralds cautious reopening	Quote taken - other	The Daily Telegraph Online	
02/03/21	Easing lockdown	Anne Johnson on BBC Radio 4 PM	Direct interview	BBC Radio 4 PM	Broadcast

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04/03/21	Anne Johnson spoke about Covid at a panel discussion for a science/arts festival in her capacity as President of the Academy of Medical Sciences	How can we use the past to understand the future	Direct interview	Invisible Dust	Broadcast
11/03/21	The 'new normal' and building resilience for future pandemics	A year on, what lessons have been learned from the pandemic?	Direct interview	Economist Podcast - Babbage	link
12/03/21	Latest Covid cases and r number	Anne Johnson on BBC News	Direct interview	BBC News Syndicated on 15 radio stations	Broadcast
23/03/21	A year on from lockdown	Anne Johnson on Radio 5Live	Direct interview	BBC 5Live Syndicated on 14 others	Broadcast
23/03/21	A year on from lockdown	Anne Johnson on BBC Radio 4 PM - one year on from lockdown	Direct interview	BBC Radio 4 PM	<u>PM - 23/03/2021 - BBC Sounds</u>
29/03/21	Relaxation of rules	Anne Johnson on BBC Radio 4 Today Programme talking about rule of 6	Direct interview	BBC Radio 4 Today Prog Syndicated on 16 others	Broadcast
29/03/21	Relaxation of rules	Are outdoor swimming pools open? How lockdown rules on sport are	Quote taken - other	iNews (Web)	https://inews.co.uk/news/uk/outdoor-swimming-pools-open-lockdown-rules- sport-easing-29-march-when-gyms-indoor-reopen-933731

r	1	I		1	
		easing from 29 March? and when			
		gyms reopen			
29/03/21	Relaxation of	Holidays 2021: Matt	Quote taken	MSN UK	https://www.msn.com/en-gb/travel/news/holidays-2021-matt-hancock-says-
	rules	Hancock says `door is	- other	(Web)	door-is-not-shut-on-overseas-travel-but-scientists-encourage-staycations/ar-
		not shut" on overseas			BB1f5mhY
		travel? but scientists			
		encourage staycations			
29/03/21	Relaxation of	Mixed messages	Quote taken	i (The paper	
	rules	continue on holidays	- other	for today)	
		abroad			
30/03/21	Science Media	Post-Brexit cuts	Quote from	The Times	
	Centre briefing	catastrophic for	briefing	Online	
	on research	scientific research, say			
	funding	experts			
31/03/21	Science Media	UK scientists warn of	Quote from	The	https://www.theguardian.com/science/2021/mar/31/uk-scientists-funding-cuts-
	Centre briefing	"catastrophic" impact	briefing	Guardian.com	grants-foreign-aid
	on research	of funding cuts		(Web)	
	funding				
31/03/21	Science Media	UK scientists warn of	Quote taken	MSN UK	https://www.msn.com/en-gb/news/uknews/uk-scientists-warn-of-catastrophic-
	Centre briefing	"catastrophic" impact	- other	(Web)	impact-of-funding-cuts/ar-BB1f94V4
	on research	of funding cuts			
21/02/21	funding				
31/03/21	Science Wiedia	UK's science	Quote from		
	centre briefing	superpower status	briefing	Online	
	funding	to global boalth		Onine	
	runuing	research			
31/03/21	Science Media	UK science rises up	Quote from	Environmenta	https://sciencebusiness.net/framework-programmes/news/uk-science-rises-
	Centre briefing	against looming multi-	briefing	l Science &	against-looming-multi-billion-pound-cuts-research
	on research	billion-pound cuts to		Technology	
	funding	research		(Web)	
07/04/21	Response to	UK launches new	Quote from	The Lancet	
	the	health security agency	website		
	establishment				
	of the UK				

					Annex B
	Health Security Agency				
06/06/21	Easing of lockdown	Anne Johnson on Sky, Trevor Philips on Sunday	Direct interview	Sky News	Broadcast
06/06/21	Easing of lockdown	JAB HAPPY Brits in their 20s will get their Covid jabs this WEEK, Matt Hancock confirms as race towards June 21 continues	Quote taken - other	The Sun Online	
06/06/21	Easing of lockdown	Eradicating coronavirus from the world is not currently a `reasonable target'', WHO expert says	Quote taken - other	iNews (Web)	https://inews.co.uk/news/world/eradicating-coronavirus-world-not-reasonable- target-1037652
07/06/21	Easing of lockdown	Save June 21: Race to get over-50s double jabbed and beat new variant	Quote taken - other	Daily Express (Web)	https://www.express.co.uk/news/politics/1446359/britain-coronavirus-vaccine- indian-variant-lockdown-restrictions
16/06/21	Living with Covid	The virus is here to stay, say the experts. So how will we actually learn to live with it?	Direct interview	The Guardian	https://www.theguardian.com/world/2021/jun/17/how-do-we-learn-to-live- with-covid
14/07/21	COVID-19: Preparing for the future	Covid and winter illnesses 'could bring NHS to breaking point'	Quote from briefing	The Guardian	https://www.theguardian.com/world/2021/jul/15/act-now-or-nhs-could-be- overwhelmed-this-winter-report-says-covid-flu-rsv
14/07/21	COVID-19: Preparing for the future	Mass testing for flu can help NHS beat winter triple whammy	Quote from briefing	The Times	https://www.thetimes.co.uk/article/delta-variant-mass-testing-for-flu-can-help- nhs-beat-winter-triple-whammy-3mk8s3fxx

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14/07/21	COVID-19: Preparing for the future	'Triple whammy' of viruses could push NHS to brink this winter, report warns	Quote from briefing	The Independent Daily Edition	https://www.independent.co.uk/news/health/coronavirus-nhs-winter-flu-rsv- b1883833.html
15/07/21	COVID-19: Preparing for the future	Seasonal viruses could overwhelm the NHS this winter, say scientists	Direct interview	Financial Times	https://www.ft.com/content/ee7ece2d-c0c1-4c80-bf19-c21f01bab5d3
15/07/21	COVID-19: Preparing for the future	WINTER STORM Fourth Covid wave and up to 60,000 flu deaths could leave NHS facing 'worst winter EVER', experts warn	Quote from briefing	The Sun Online	https://www.thesun.co.uk/news/15590598/covid-wave-waiting-lists-flu-nhs- worst-winter-ever/
15/07/21	COVID-19: Preparing for the future	Medics fear surge in winter viruses plus Covid	Quote from press release	BBC (Web)	https://www.bbc.com/news/health-57837192
15/07/21	COVID-19: Preparing for the future	NHS told to brace for winter as report claims up to 60,000 could die from flu	Quote from press release	Halesowen News (Web)	https://www.halesowennews.co.uk/news/national/19443505.nhs-told-brace- winter-report-claims-60-000-die-flu/
15/07/21	COVID-19: Preparing for the future	Anne Johnson on BBC Radio 4 Today Programme	Direct interview	BBC Radio 4 Today Programme	Broadcast
15/07/21	COVID-19: Preparing for the future	Anne Johnson on Times Radio	Direct interview	Times Radio	Broadcast
15/07/21	COVID-19: Preparing for the future	Anne Johnson on BBC News	Direct interview	BBC News	Broadcast
15/07/21	COVID-19: Preparing for the future	Anne Johnson on BBC News	Direct interview	BBC News (recorded day before)	Broadcast

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19/07/21	How to stay safe in the context of Covid	We asked Covid experts how to stay safe after Freedom Day	Direct interview	Wired.co.uk (Web)	https://www.wired.co.uk/article/freedom-day-risks-covid
23/07/21	COVID-19: Preparing for the future	How do we live with covid-19?	Direct interview	New Scientist	
14/09/21	Reflections on Government Autumn/winte r plan	Anne Johnson on BBC Radio4 PM	Direct interview	BBC Radio 4 PM	Broadcast
15/09/21	Reflections on Government Autumn/winte r plan	Covid: Can England avoid ''lockdown lite'' this winter?	Quote taken - other	BBC (Web)	https://www.bbc.com/news/health-58565061
15/09/21	Reflections on Government Autumn/winte r plan	WINTER WAVE Will the UK end up in lockdown AGAIN? The 3 crucial 'pivot points' to watch out for	Quote taken - other	Scottish Sun Online	
15/09/21	Reflections on Government Autumn/winte r plan	Cautious welcome for UK government's winter Covid plan	Quote from website	Research (Web)	https://researchprofessionalnews.com/rr-news-uk-politics-2021-9-cautious- welcome-for-uk-government-s-winter-covid-plan/
24/09/21	COVID-19: Preparing for the future	Northern exposure	Direct interview	The Economist	
01/10/21	Reflections on the Academy of Medical Sciences bid into the Spending Review	R&D sector united in calls for immediate boost in spending	Quote from website	Research (Web)	https://researchprofessionalnews.com/rr-news-uk-politics-2021-10-r-d-sector- united-in-calls-for-immediate-boost-in-spending/

					Annex B
08/10/21	COVID-19: Proporting for	COMMENT (on flu	Direct	Daily Express	
	the future	levels	Interview		
12/10/21	Letter to the	Sunak urged to make	Direct	Financial	
	Chancellor on	good on £22bn R&D	interview	Times	
	the Spending	pledge			
4 - / 4 - / 4 - 4	Review				
15/10/21	Covid over	We asked Covid	Direct	Wired.co.uk	https://www.wired.co.uk/article/covid-winter-2021-lockdown
	winter	winter will be like	Interview	(Web)	
07/11/21	Covid over	Anne Johnson on LBC	Direct	LBC	Broadcast
	winter		interview		
07/11/21	Covid over	Covid plan B `still very	Quote taken	The	https://www.independent.co.uk/news/uk/home-news/coronavirus-plan-b-
	winter	much under	- other	Independent	winter-sage-b1953125.html
		Sage scientist		(web)	
29/11/21	New variant	Anne Johnson on ITV	Direct	ITV	Broadcast
			interview		
18/12/21	Anne Johnson	Patrick Vallance	Direct	BBC Radio 4	Broadcast
	speaking	Profile	interview	Profile	
	about being				
	Patrick Vallanco's				
	colleague				
30/12/21	COVID-19:	Anne Johnson on BBC	Direct	BBC Radio 4	https://www.bbc.co.uk/sounds/play/m0012sb3
and a second second	Preparing for	Radio 4 PM -	interview	PM	
	the future	preparing for covid			
		over winter			
01/01/22	COVID-19:	East Staffordshire had	Quote taken	Staffordshire	https://www.staffordshire-live.co.uk/news/health/east-staffordshire-highest-
	Preparing for	highest number of	- other	Live (Web)	number-deaths-6134667
	the future	deaths from influenza			
		and pneumonia in the			
01/01/22	Self-isolation	What are the current	Direct	Observer	https://www.theguardian.com/world/2022/jan/01/what-are-the-current-rules-
01/01/22	Sen isolation	rules on self-isolation	interview		on-self-isolation-for-covid-in-uk-and-what-does-the-science-sav
		for Covid in UK, and			
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		what does the science say?			
09/01/22	Covid over winter	Anne Johnson on Sky News, Trevor Philips on Sunday	Direct interview	Sky News	Broadcast
09/01/22	COVID-19: Preparing for the future	Flu season may not be bad as feared	Direct interview	Daily Express	
09/01/22	Covid over winter	What does the rest of the winter look like for the NHS?	Quote taken - other	The Global Herald	https://theglobalherald.com/news/what-does-the-rest-of-the-winter-look-like- for-the-nhs/
10/01/22	Covid over winter	GOING GOING CRON!	Quote taken - other	Metro	
10/01/22	Covid over winter	Covid isolation may be cut to just five days to keep schools going	Quote taken - other	Metro.co.uk (Web)	https://metro.co.uk/2022/01/10/covid-isolation-may-be-cut-to-just-five-days-to- keep-schools-going-15891140/
11/01/22	Covid over winter	UK Covid deaths hit highest daily number since February as 120,800 cases recorded	Quote taken - other	Mirror.co.uk (Web)	https://www.mirror.co.uk/news/uk-news/breaking-covid-cases-drop-nearly- 25916682
18/01/22	How will the pandemic end	Living with covid: How can the pandemic end and what will it be like?	Direct interview	New Scientist (Web)	https://www.newscientist.com/article/2305054-living-with-covid-how-can-the- pandemic-end-and-what-will-it-be-like/
19/01/22	Plan B lifting	CASE LOAD UK daily Covid cases fall 16% on last week as Boris scraps Plan B restrictions	Quote from website	The Sun Online	
20/01/22	Plan B lifting	Peak of outbreak over as infections plummet	Quote from website	Daily Express	
11/02/22	International day of women	International day of women and girls in science	Direct interview	Sky News	

					Annex B
	and girls in				
	science				
17/02/22	Covid two	Covid preparedness	Quote from	Research	https://researchprofessionalnews.com/rr-news-uk-charities-and-societies-2022-
	years on	hindered by	website	(Web)	2-covid-preparedness-hindered-by-disinvestment-in-public-health/
		'disinvestment in			
		public health'			

AMS Website

14/07/20

18/08/20

10/09/20

23/09/20

07/01/21

20/01/21

COVID/other

New public

structures

COVID

health

COVID

COVID

Academy

EU

Title	Link
Prepare now for a winter COVID-19	
peak, warns Academy of Medical	https://acmedsci.ac.uk/more/news/prepare-now-for-a-winter-covid-19-peak-warns-academy-of-
Sciences	medical-sciences
New public health body: Academy	
reaction	
	https://acmedsci.ac.uk/more/news/new-public-health-body-academy-reaction
'Hands. Face. Space.' Academy response	
to new public information campaign	https://acmedsci.ac.uk/more/news/hands-face-space-academy-response
Academy response to new COVID-19	
restrictions	https://acmedsci.ac.uk/more/news/academy-response-to-new-covid-19-restrictions-sept-2020
President's response to the	
announcement of a Brexit deal	https://acmedsci.ac.uk/more/news/presidents-response-to-the-announcement-of-a-brexit-deal
Presidential priorities: Dame Anne	https://acmedsci.ac.uk/more/news/presidential-prioritiesdame-anne-johnson-reflects-on-her-
Johnson reflects on her new role	<u>new-role</u>
President responds to Advanced	
Research & Invention Agency	
	https://acmedsci.ac.uk/more/news/president-responds-to-the-creation-of-aria
President's response to the 2021 Budget	

19/02/21	Advanced	President responds to Advanced	
	Research &	Research & Invention Agency	
	Invention		
	Agency		https://acmedsci.ac.uk/more/news/president-responds-to-the-creation-of-aria
03/03/21	Science	President's response to the 2021 Budget	
	Funding		https://acmedsci.ac.uk/more/news/presidents-response-to-the-2021-budget-
12/03/21	Academy	Our President's first 100 days	https://acmedsci.ac.uk/more/news/our-presidents-first-100-days
23/03/21	Science	Superpower status will only come if	
	Funding	backed by investment	https://acmedsci.ac.uk/more/news/superpower-status-will-only-come-if-backed-by-investment
24/03/21	UK clinical	President's response to Government	
	research	review on the future of UK clinical	https://acmedsci.ac.uk/more/news/presidents-response-to-government-review-on-the-future-of-
	delivery	research delivery	<u>uk-clinical-research-delivery</u>
25/03/21	New public	President's response to the UK Health	
	health	Security Agency	
	structures		https://acmedsci.ac.uk/more/news/presidents-response-to-the-uk-health-security-agency
30/03/21	New public	President's response to new Office for	
	health	Health Promotion	
	structures		https://acmedsci.ac.uk/more/news/presidents-response-to-new-office-for-health-promotion

17

Annex B

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31/03/21	Science	President's comments: UK science	
	Funding	funding	https://acmedsci.ac.uk/more/news/presidents-comments-uk-science-funding
19/04/21	Science	UK science funding: Horizon Europe and	
	Funding	beyond	https://acmedsci.ac.uk/more/news/uk-science-funding-horizon-europe-and-beyond
21/04/21	Elections	Purdah – what does it mean for	
		scientists?	https://acmedsci.ac.uk/more/news/purdah-what-does-it-mean-for-scientists
02/06/21	Science	Government R&D funding: what do the	https://acmedsci.ac.uk/more/news/government-rd-funding-what-do-the-new-allocations-mean-
	Funding	new allocations mean for research?	<u>for-research</u>
21/06/21	EU	President's response to data sharing	
		with Europe	https://acmedsci.ac.uk/more/news/presidents-response-to-data-sharing-with-europe
24/06/21	UK as a global	Prime Minister's plans to make the UK a	
	science	global science superpower: Academy	https://acmedsci.ac.uk/more/news/prime-ministers-plans-to-make-the-uk-a-global-science-
	superpower	reaction	superpower-academy-reaction
15/07/21	COVID	Winter viruses and COVID-19 could push	https://acmedsci.ac.uk/more/news/winter-viruses-and-covid-19-could-push-nhs-to-breaking-
		NHS to breaking point	point-warns-new-report
14/09/21	COVID	President's response to Government's	https://acmedsci.ac.uk/more/news/presidents-response-to-governments-covid-19-response-
		COVID-19 Autumn & Winter Plan	autumn-and-winter-plan
30/09/21	Science	Invest now to reach science superpower	
	Funding	status	https://acmedsci.ac.uk/more/news/invest-now-to-reach-science-superpower-status
12/10/21	Science	Academy President writes open letter to	https://acmedsci.ac.uk/more/news/president-writes-open-letter-to-the-chancellor-on-rd-
	Funding	the Chancellor on R&D investment	investment
14/10/21	Climate	Climate change action will improve	
		health and save lives now and in the	https://acmedsci.ac.uk/more/news/climate-change-action-will-improve-health-and-save-lives-
		future	now-and-in-the-future
27/10/21	Science	President's response: 2021 Spending	https://acmedsci.ac.uk/more/news/presidents-response-2021-spending-review-and-autumn-
	Funding	Review and Autumn Budget	budget
02/11/21	Science	What does the Spending Review mean	https://acmedsci.ac.uk/more/news/what-does-the-spending-review-really-mean-for-the-future-
	Funding	for biomedical research?	<u>of-biomedical-research</u>
03/12/21	COVID	Review of the Academy through the	
		pandemic	https://acmedsci.ac.uk/more/news/review-of-the-academy-through-the-pandemic-2019-to-2021
19/01/22	COVID	President's response to ending Plan B	
		COVID-19 restrictions	https://acmedsci.ac.uk/more/news/presidents-response-to-ending-plan-b-covid-19-restrictions
02/02/22	Levelling up	President's response to the Levelling Up	
		White Paper	https://acmedsci.ac.uk/more/news/presidents-response-to-the-levelling-up-white-paper

			Annex B
15/02/22	COVID	Q&A with our President: COVID-19 two	
		years on	https://acmedsci.ac.uk/more/news/qa-with-our-president-covid-19-two-years-on
21/02/22	COVID	President's response to the	
		Government's Living with COVID-19 plan	https://acmedsci.ac.uk/more/news/presidents-response-to-living-with-covid-19-plan

Royal Society Website

Date	COVID/other	Title	Link
27/05/20	COVID	Success of test, trace and isolate	
		programmes depends on speed,	https://royalsociety.org/news/2020/05/success-of-test-trace-and-isolate-programmes-depends-
		compliance and monitoring	on-speed-compliance-and-monitoring/
07/12/20	COVID	Online event: The what, the how and	
		the why of the pandemic	https://royalsociety.org/science-events-and-lectures/2020/12/what-how-why-pandemic/