Witness Name: Jeremy Farrar
Statement No.:
Exhibits:
Dated: 10 March 2023

UK COVID-19 INQUIRY

WITNESS STATEMENT OF JEREMY FARRAR

I, Jeremy Farrar will say as follows: -

1. **A brief overview of your qualifications, career history, professional expertise and major publications. If your response involves reference to any organisations, research centres or other initiatives, please provide a brief, high-level description of their aims and the work they do.**

I trained in Medicine with postgraduate training in London, Chichester, Edinburgh, Melbourne, Oxford, and San Francisco and a DPhil (PhD) from the University of Oxford University. From 1996 to 2013 I was the Director of the Oxford University Clinical Research at the Hospital for Tropical Diseases in Ho Chi Minh City Viet Nam. In 2013 I returned to the UK to become Director of the Wellcome Trust. In May 2023 I will take up the role as Chief Scientist at the World Health Organisation.

My clinical and research interests have been in integrated health research across a range of infectious diseases including Emerging Infections, Influenza, Central Nervous System infections, Dengue, Typhoid, TB, Drug Resistant Infections and Opportunistic Infections related to HIV. The government hospitals where I was based in Ho Chi Minh City is involved in the direct management of hundreds of thousand patients each year with a catchment population of over 40 million people. I have published over 550 articles, have an H-Index of ~130 and mentored many dozens of students and fellows. I have served as Chair on several advisory boards for governments and global organisations.

I was the founding chair of the WHO R&D Blueprint and the founding director of the International Severe Acute Respiratory and Emerging Infection Consortium ISARIC that led on to the RECOVERY Trial and the UK COVID Host and Pathogen Genomic Consortium. In 2015 I published with Adel Mahmood and Stanley Plotkin an article "Establishing a Global Vaccine Development Fund" in the NEJM (https://www.nejm.org/doi/full/10.1056/nejmp1506820). **INQ000183292 JF/01**

This led in 2017 to the Coalition for Epidemic Preparedness and Innovation CEPI (https://en.wikipedia.org/wiki/Coalition_for_Epidemic_Preparedness_Innovations). **INQ000183270 JF/02**

In 2011 I established a small family foundation – The Farrar Foundation to support young people into education, science, the arts and sport (www.thefarrarfoundation.org) **INQ000183280 JF/03**

I have been elected to the Academy of Medical Sciences UK, the Royal Society, the European Molecular Biology Organisation and the National Academy of Medicine USA. I serve on numerous national and international advisory boards. I was named 12th in the Fortune list of 50 World's Greatest Leaders in 2015 and was awarded the Memorial Medal and Ho Chi Minh City Medal from the Government of Viet Nam. In 2018 I was awarded the President Jimmy and Rosalynn Carter Humanitarian of the Year Award. I was knighted in the Queen's 2019 New Year Honours for services to global health. In 2020 I was awarded the Order of the Rising Sun, Gold Rays with Neck Ribbon by the Government of Japan in recognition of contribution to global health.

Chairperson and other roles (select list)

Co-Chair of the Global Preparedness and Monitoring Board – World Bank and World Health Organisation
ACT-Accelerator Principles Group
Aga Khan Foundation Board
International Advisory Board on Global Health Federal Government of Germany
Coalition for Epidemic Preparedness and Innovation CEPI
Scientific Advisory Board for Emergencies (SAGE) for UK Government
Geneva Science and Diplomacy Anticipator Board GESDA
Temasek International Panel
WomenLift Global Health

Chair Genome Research Laboratories – Wellcome Trust Sanger Institute and Campus
Chair WHO R&D Blueprint Scientific Advisory Group
Prime Minister of Singapore Research, Innovation and Enterprise Board
European Clinical Trials Programme EDCTP
Institute Pasteur Scientific Advisory Board and Selection Committee for Director
World Health Organization Technical Advisory Group Dengue
Patan Academy of Health Sciences Nepal

Honours and awards:

Politico 28 Class of 2022 most influential people in Europe	2022
Public Service Medal Government of Singapore	2021
Order of the Rising Sun, Gold Rays with Neck Ribbon Japan.	2020
Knighted Queen Elizabeth II New Year Honours Services Global Health	2019
President Jimmy & Rosalynn Carter Humanitarian of the Year Award	2018
Fortune list of 50 World's Greatest Leaders	2015
Memorial Medal Vietnam National Government of Vietnam	2013
Lumleian Prize Royal College of Physicians UK	2008
Litchfield Prize Oxford University	2008
Chalmers Medal Services to Tropical Medicine and International Health	2007
Frederick Murgatroyd Prize for Tropical Medicine Royal College Physicians	2006
Bailey Ashford Award American Society for Tropical Medicine and Hygiene	
Ho Chi Minh City Medal Viet Nam Contribution to Medicine in Viet Nam	2004
OBE The Queens New Year's Honours List Services to Global Health	2005

Additional information

Work & lived in Singapore (born), Cyprus, New Zealand, Papua New Guinea, Australia, USA, Libya, Viet Nam. Established the Farrar Foundation (www.thefarrarfoundation.org).

INQ000183280
JF/03

Ten selected publications and statements ~575 academic publications in total.
H-Index ~130:

A new twenty-first century science for effective epidemic response.
Nature volume 575, pages 130–136 (2019)

Establishing a Global Vaccine-Development Fund

July 23, 2015 N Engl J Med 2015; 373:297-300 DOI: 10.1056/NEJMp1506820
https://www.nejm.org/doi/full/10.1056/nejmp1506820 **INQ000183292 JF/01**

Stopping the Gaps in Epidemic Preparedness
May 9, 2019 N Engl J Med 2019; 380:1788-1789 DOI: 10.1056/NEJMp1902683
https://www.nejm.org/doi/full/10.1056/NEJMp1902683 **INQ000187464 JF/04**

The Ebola Emergency — Immediate Action, Ongoing Strategy
October 16, 2014 N Engl J Med 2014; 371:1545-1546 DOI: 10.1056/NEJMe1411471
https://www.nejm.org/doi/full/10.1056/nejme1411471 **INQ000183299 JF/05**

The global distribution and burden of dengue
Nature 2013 Apr;496(7446):504-7. doi: 10.1038/nature12060. Epub 2013 Apr 7

High viral burden and hypercytokinaemia are central to influenza H5N1 pathogenesis in humans.
Nature Medicine 2006 Oct;12(10):1203-7

Wagner, C.E., Saad-Roy, C.M., Morris, S.E., Baker, R.E., Mina, M.J., Farrar, J., Holmes, E.C., Pybus, O.G., Graham, A.L., Emanuel, E.J. and Levin, S.A., 2021. Vaccine nationalism and the dynamics and control of SARS-CoV-2. Science, 373(6562), p.eabj7364.

Human cases of influenza A (H5N1) in Viet Nam
New England Journal of Medicine March 2004 350;12 1179-1188

INQ000183300 JF/06

Treating Influenza" 2015 https://acmedsci.ac.uk/policy/policy-projects/treating-influenza.
A World at Risk. Global Preparedness Monitoring Board https://www.gpmb.org/annual-reports/annual-report-2019 **INQ000183301 JF/07**

Statements on COVID January 2020 – May 2022
https://wellcome.org/press-release/wellcome-statements-novel-coronavirus-covid-19 **INQ000183303 JF/08**

Opinion - What if we're in the middle — not the end — of the pandemic? Richard Danzig, Jeremy Farrar, and Richard Hatchett
https://www.washingtonpost.com/opinions/2022/01/31/what-if-were-middle-not-end-pandemic/ **INQ000187463 JF/09**

The worst of Covid-19 may still be to come - Its effects are rippling out in circles like a stone thrown into a pond. But they can be stopped. July 2020
https://www.ft.com/content/031b42a7-e2b3-43ae-9139-d31a4cb37498 **INQ000183304 JF/10**

Major Reforms Have Been Driven by Crisis" Jeremy Farrar and Molly Galvin
https://issues.org/jeremy-farrar-interview-wellcome-covid/ **INQ000183271 JF/11**

Spike – The virus vs the People. The inside story of the Pandemic Published by Profile Books
Jeremy Farrar and Anjana Ahuja 2021

Diverting some of Britain's vaccines to the global rollout is a scientific, economic and moral imperative. Keeping our own citizens safe depends on not leaving other countries behind Mark Lowcock and Jeremy Farrar
https://www.telegraph.co.uk/global-health/science-and-disease/diverting-britains-vaccines-global-rollout-scientific-economic/ **INQ000183272 JF/12**

I Fear We Are at the Beginning of an Era of Pandemics – Der Spiegel
https://www.spiegel.de/international/world/epidemiologist-jeremy-farrar-on-the-next-viral-threat-i-fear-we-are-at-the-beginning-of-an-era-of-pandemics-a-564b1dae-1c3d-4eb3-b76f-f3c5da6e8289 **INQ000183273 JF/13**

The only way out of this pandemic is by the world coming together to develop a vaccine – Jeremy Farrar
https://www.telegraph.co.uk/global-health/science-and-disease/way-pandemic-world-coming-together-develop-vaccine/ **INQ000183274 JF/14**

'We can beat Ebola but must prepare for what comes next,' 2019 Jeremy Farrar, a world expert on diseases, tells of the fight against the deadly virus that spread fear this decade – and how to prepare for the health battles to come https://www.theguardian.com/world/2019/dec/22/we-can-beat-ebola-prepare-for-health-battles-to-come-jeremy-farrar-wellcome-trust **INQ000183275 JF/15**

Diseases spread in weeks. Epidemic research takes years. 2014 Jeremy Farrar https://www.theguardian.com/commentisfree/2014/jun/10/diseases-epidemic-research-outbreaks-ebola **INQ000183276 JF/16**

Jeremy Farrar: When disaster strikes
Amy Maxmen *J Exp Med* (2009) 206 (1): 4–5. https://doi.org/10.1084/jem.2061pi **INQ000183302 JF/17**

2. **The Inquiry understands that you had involvement in the SAGEs convened for the Zika outbreak (2016) and the Ebola outbreak (2018). Please confirm a list of the governmental scientific advisory committees and groups across the UK in which you have been a participant over the course of the date range for Module 1 and the relevant time periods of your involvement.**

   International Severe Acute Respiratory and emerging Infection Consortium (ISARIC) set up in 2011 with funding from Foreign, Commonwealth and Development Office (then via DFID), Gates Foundation and Wellcome. ISARIC's conducts and supports clinical and public health research is to prevent illness and deaths from infectious disease outbreaks. ISARIC is a global federation of clinical research networks, providing a proficient, coordinated, and agile research response to outbreak-prone infectious diseases. I was the founding chair/director of ISARIC. https://isaric.org/ **INQ000183277 JF/18**

   SAGE convened for the Zika outbreak 2016

   SAGE convened for the Ebola outbreak 2018

   Wellcome Trust and Academy of Medical Sciences Report 'Treating Influenza" 2015 https://acmedsci.ac.uk/policy/policy-projects/treating-influenza **INQ000183278 JF/19**

   https://wellcome.org/press-release/prepare-conduct-flu-trials-hospitals-now-urge-experts **INQ000183279 JF/20**

   Office for Strategic Coordination of Health Research (OSCHR) 2013 – 2023

The Strategic Coherence of Overseas Development Research Board (SCOR) 2013 – 2023

Life Sciences Council 2018 – 2023

Chair of Genome Research Laboratories Board. This Board governs the Wellcome Genome Campus, Wellcome Sanger Institute and links with partners and other institutions on the Wellcome Genome Campus (European Bioinformatics Institute EMBO-EBI, Genome England and many others).

3. A high-level overview of your involvement with those groups over the course of the date range for Module 1, including:

a. When and how you came to be a participant;

International Severe Acute Respiratory and emerging Infection Consortium (ISARIC) in 2011 as founding chair/director.

SAGE convened for the Zika outbreak 2016 – Invited as an expert in emerging infectious diseases.

SAGE convened for the Ebola outbreak 2018 – Invited as an expert in emerging infectious diseases.

Wellcome Trust and Academy of Medical Sciences Report 'Treating Influenza" 2015. Invited as an expert in emerging infectious diseases.

https://acmedsci.ac.uk/policy/policy-projects/treating-influenza. **INQ000183278 JF/19**

https://wellcome.org/press-release/prepare-conduct-flu-trials-hospitals-now-urge-experts **INQ000183279 JF/20**

Office for Strategic Coordination of Health Research (OSCHR) 2014 – 2023. Applied for, interviewed and appointed as an independent member.

The Strategic Coherence of Overseas Development Research Board (SCOR) 2013 – 2023. Invited as a clinical scientist with experience in global health

Life Sciences Council 2018 – 2023 Invited as a clinical scientist

b. The nature of your participation status (whether as a member, invitee, observer or some other kind of participation status);

International Severe Acute Respiratory and emerging Infection Consortium (ISARIC) in 2011 as founding chair/director and served in that capacity to establish ISARIC until October 2013.

SAGE convened for the Zika outbreak 2016 – Invited as a member and an expert in emerging infectious diseases.

SAGE convened for the Ebola outbreak 2018 – Invited as a member and an expert in emerging infectious diseases.

Wellcome Trust and Academy of Medical Sciences Report 'Treating Influenza" 2015 https://acmedsci.ac.uk/policy/policy-projects/treating-influenza. **INQ000183278 JF/19**

https://wellcome.org/press-release/prepare-conduct-flu-trials-hospitals-now-urge-experts **INQ000183279 JF/20**

Invited as a member and an expert in emerging infectious diseases.

Office for Strategic Coordination of Health Research (OSCHR) 2014 – 2023. Applied for, interviewed and appointed as an independent member.

The Strategic Coherence of Overseas Development Research Board (SCOR) 2013 – 2023. Invited as a member and as a clinical scientist with experience in global health.

Life Sciences Council 2018 – 2023 Invited as a member and as a clinical scientist.

Chair of Genome Research Laboratories Board.

c. The number of meetings you attended, and your contributions to those meetings;

International Severe Acute Respiratory and emerging Infection Consortium (ISARIC) – multiple.

SAGE convened for the Zika outbreak 2016. Attended two meetings on 23 February 2016 and 7 March 2016

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/887890/presage-zika-minutes-160307.pdf **INQ000115541 JF/21**

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/887891/presage-zika-minutes-160223.pdf **INQ000183369 JF/22**

SAGE convened for the Ebola outbreak 2018 – Invited as a member and an expert in emerging infectious diseases.

Attended three meetings – 18 May 2018, 5 October 2018 and 16 May 2019

https://www.gov.uk/government/collections/sage-meetings-ebola-in-the-democratic-republic-of-the-congo-2018-to-2019 **INQ000183281, INQ000183282, INQ000183283 JF/23.1 - JF/23.3**

Wellcome Trust and Academy of Medical Sciences Report 'Treating Influenza" 2015 https://acmedsci.ac.uk/policy/policy-projects/treating-influenza. **INQ000183278 JF/19**

https://wellcome.org/press-release/prepare-conduct-flu-trials-hospitals-now-urge-experts **INQ000183279 JF/20**

Invited as a member and an expert in emerging infectious diseases.

""The failure to conduct research during the last influenza pandemic has contributed to the current weaknesses in the evidence base and the uncertainty facing clinicians.

"Research on the use of antivirals – in hospitalised patients and in high-risk groups in a serious epidemic or pandemic – is a priority. It could help health professionals take the best course of action, which could mean fewer hospitalisations and deaths.

"The research protocols and infrastructure need to be put in place now - in 'peace time' - so we can start collecting new evidence immediately at the start of a new epidemic or pandemic. An assessment of the ability to do this research must be included in any scenario planning exercises for future pandemics."

The report was developed by a steering group of experts after a request from the Department of Health for an evidence-based report to inform future policy decisions.."

Office for Strategic Coordination of Health Research (OSCHR) 2014 – 2023. Applied for, interviewed and appointed as an independent member to help coordinate UK Health Research across government, industry and philanthropy.

The Strategic Coherence of Overseas Development Research Board (SCOR) 2013 – 2023. Invited as a member and as a clinical scientist with experience in global health. To help coordinate UK ODA Research across government, industry and philanthropy.

Life Sciences Council 2018 – 2023 Invited as a member and as a clinical scientist. To help coordinate UK Life Science Research across government, industry and philanthropy.

Chair of Genome Research Laboratories Board. Multiple

d. **Your role in providing research, information and advice.**

As above.

4. **In light of the experience gained from your involvement in the above-mentioned groups, what are your views on the effectiveness of their work and structures? This may include, but is not limited to, your views on:**

Over an almost ten-year involvement with these groups, they have functioned remarkably effectively, ensuing that the Life Science sector has been well coordinated, cohesive and supported in the UK. This played a major role in the contribution this sector made to the pandemic. I would, in particular, highlight the work of OSCHR, SCOR, the Life Sciences Council, Wellcome Genome Campus and Wellcome Sanger Institute and ISARIC in providing robust, diverse and transparent forum for discussions that lead to actions on health research and health impact in the UK and globally that would not otherwise have happened.

The cohesion and network effect in this sector played a major role in the UK's science, research and development response to the pandemic.

ISARIC, under the leadership of Professor Sir Peter Horby went on to lead the RECOVERY Trial and with colleagues around the world the associated clinical, risk factors, host and pathogen genetics and immunological studies that led the world in response to COVID, selected examples below

https://isaric.org/ **INQ000183277 JF/18**

https://isaric4c.net/ **INQ000183284 JF/24**

https://edinburghbioquarter.com/special-recognition-kenneth-baillie-pride-of-scotland/ **INQ000183285 JF/25**

https://genomicc.org/ **INQ000183286 JF/26**

https://isaric.org/wp-content/uploads/2021/01/genetic-mechanisms-of-critical-illness-in-Covid-19.pdf **INQ000183287 JF/27**

https://twitter.com/Jopo_dr/status/1623994256367951874?s=20 **INQ000183288 JF/28**

The Wellcome Genome Campus and the Wellcome Sanger Institute played a key role in national and global pathogen surveillance, before and during the pandemic. https://www.sanger.ac.uk/science/covid-19-science/ INQ000183289 JF/29

The SAGE Committees involved in Zika and Ebola brought together diverse expertise and experience and ensured that the UK's preparation for, response and support for the regions affected was robustly debated, cohesive and impactful.

a. The composition of the groups and/or their diversity in terms of backgrounds, nationalities, views, experience, and expertise in different scientific, technical and other analytical disciplines;

Although there has been a welcome shift over the period 2009 – 2023 in the diversity of the membership of the groups there remains work to be done to ensure this is done from the start as groups are established and as they are refreshed. I would in particular make the case for the contribution and input throughout of individuals from patient and patient groups, communities affected, from social sciences, humanities, ethics, civic society, and behavioural sciences among others.

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

This varies across these groups, some are commissioned, some advertised and interviewed prior to appointment. I would be in favour of adverts and interviews when possible whilst ensuring the appropriate range of diverse skills and experience and a commitment to inclusion and equity.

Ensuring that patients, patient groups, communities affected (including those most marginalized and those who may lack agency) must be central to these groups from the start.

c. The ability for the groups to commence work at short notice in emergency situations or in circumstances where in person meetings and discussions are impracticable;

Within disciplines and within existing formal and informal structures work can commence very quickly. The challenge is when an issue crosses boundaries and borders, affects multiple sectors or the whole of society with groups are not used to working across disciplines or across institutions and organisations. This is compounded when the issue is happening at great speed, there is great uncertainty and it is in your midst. In these circumstances it is the functional foundations you have before a crisis that matter and that can be built on. Establishing these sorts of

partnerships, collaborations, understanding and functionality during a crisis that also affects everyone involved directly is extraordinarily difficult. From personal experience of being involved very directly in multiple fast moving epidemics in Asia and Africa and the influenza pandemic of 2009 it is always frightening, invariably chaotic and exposes fault lines that you may have known existed before the crisis but either ignored or were able to cope with as part of day-2-day work and life, but when a pressure is put on the system, these fault lines are exposed.

I believe we underestimate how fragmented and siloed most systems are, within governments, across borders, in academia, among funders and in society. Individuals and teams become very used to working within their own discipline, understanding the language, culture and approach to an issue, but struggle, especially when having to work under stress and at speed across disciplinary boundaries, across ministries, across borders and countries.

This fragmentation is also exposed when basic principles and understanding within a discipline are not understood or appreciated when that research, data and evidence are collated and shared with policy makers tasked with making complex decisions amid inevitable trade-offs. I don't have answers to these issues, other than to suggest much greater porosity between disciplines, encouragement of polymaths who can cross disciplinary boundaries, more scientists becoming involved in policy work and vice versa. All of this must be worked on in non-crisis times in the anticipation that if and when a crisis hits cross boundary working is always going to be essential.

I believe all these groups adapted well to virtual and hybrid meetings when needed.

d. The length of each period over which the groups remained activated and the number and frequency of meetings of the groups during each period of activation;

The length of each period and frequency of meetings varied depending on the issue. OSCHR, SCOR, Life Science Council, Wellcome Genome Campus and Wellcome Sanger Institute and ISARIC are all standing Committees, Institutes and initiatives and have met for many years on a regular cycle. The SAGE meetings were set up and the frequency determined by the need.

e. The process by which members of the groups are recruited and engaged by the UK Government;

For OSCHR and SCOR these were by adverts, interview, and appointment. As far as I am aware the others were based on expertise and experience with members approached by or on behalf of the Chairs.

f. The resources and support that were available;

The Civil Service who supported each of these groups deserve the highest praise and all our thanks. Dedicated, selfless, under-appreciated and totally committed public servants. In each of the groups I have been part of the group were superbly supported. There needs to be a mechanism for immediate increase in capacity when a situation deteriorates or more support is needed.

g. The advice given and/or recommendations that were made;

I would support the approach and recommendations made by these diverse groups. But they are not comparable to the approach, discussions and recommendations that need to be made in the context of a crisis as experienced in 2020-2023. The context being – Speed, a Dynamic Changing Situation, Uncertainty, Lack of or Conflicting Data, Whole of Society impact, Direct Impact on Individuals within the Group, Scrutiny occasionally accompanied by threats and abuse, Clarity on how Advice and/or Recommendations was linked to Policy Decisions or Actions.

h. The extent to which the groups worked effectively together;

Good, but much easier outside a crisis such as experienced in 2020-2023

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

Applicable structures and policies were utilized in the period 2009-2020. The question is whether those structures were right for the sort of crisis of 2020-2023 and beyond the Life Science sector.

j. The sustainability of the groups, and the sustainability of participation in them by their members, during long-term emergency situations;

These groups were not set up to function during long-term emergency situations.

k. The extent to which individuals participate in the groups in a voluntary capacity as opposed to being remunerated.

All voluntary, public service, non-remunerated

5. The Inquiry is aware that you have written the following book with Anjana Ahuja: *Spike: The Virus vs the People - The Inside Story* (Profile Books, 2022). In light of the experience gained from your involvement in the above-mentioned groups, the opinions you have expressed in this book, as well as your professional experience and opinions more generally, please give your views on the following matters. The Inquiry is particularly, but not exclusively, interested in responses relating to the work and structures of

the above-mentioned groups, as well as the scientific, technical and medical capabilities of the UK Government, the Scottish Government, the Welsh Government and the Northern Ireland Executive:

I will not repeat here what I wrote in the book, with Anjana Ahuja: *Spike: The Virus vs the People - The Inside Story,* as a lot of my thoughts then and now are in the book.

I have also added here a link to all the statements I made (along with colleagues at Wellcome) between January 2020 and May 2022

https://wellcome.org/press-release/wellcome-statements-novel-coronavirus-covid-19 **INQ000183290 JF/30**

a. What are your views in relation to the general state of the UK's pandemic planning, preparedness and resilience at the time the Covid-19 pandemic struck and why?

In my view it is crucial for the Public Enquiry to focus on four key periods

1. The period January 2010 – December 2020
    a. This was the period after the Influenza pandemic of 2009
    b. There was a complacency after that pandemic, that because it proved to be less severe than when it started in May 2009 there was a general feeling that the warnings about epidemics and pandemics may have been overstated – "the child that cries wolf"
    c. Public Health, Clinical Care, Care Homes, Health Services and the NHS were chronically underfunded for what they were expected to deliver during this period. Efficiency was the singular focus and spare capacity, resilience and support for the staff in the NHS and all allied services neglected. A system that was not really coping in with normal pressures, there was no spare capacity when a crisis hit.
    d. It is during this period that lessons from that pandemic and from the epidemics of Nipah, SARS-1, H5N1, MERS, Zika, Ebola could and should have been learnt, in particular;
        i. That these are not discrete episodes
        ii. The need for functional clinical and public health research capacity prior to an epidemic that can pivot when an event happens. The driving idea behind the setting up of ISARIC, the Wellcome and Academy of Medical Sciences report of 2015 and the article in Nature published in November 2019 .
        iii. The broader approach summarized in the article, "*A new twenty-first century science for effective epidemic response – Juliet*

Bedford, Jeremy Farrar, Chikwe Ihekweazu, Gagandeep Kang, Marion Koopmans, John Nkengasong"

1. https://isaric.org/ **INQ000183277 JF/18**
2. https://wellcome.org/press-release/prepare-conduct-flu-trials-hospitals-now-urge-experts **INQ000183279 JF/20**
3. https://www.nature.com/articles/s41586-019-1717-y **INQ000183291 JF/27**

iv. The warning from the Global Preparedness and Monitoring Board "A World at Risk" *The report outlined the acute risk of a devastating global epidemic or pandemic. It called for seven urgent priority actions leaders must take to prepare for health emergencies across five areas: leadership, building multisectoral country systems, research and development, financing, and robust international coordination.* **INQ000183301 JF/07**

1. https://www.gpmb.org/annual-reports/annual-report-2019

v. That they are the symptoms, the outcomes, not the key drivers. The key drivers are all features of the 21st Century which means we will face more frequent and complex epidemics and pandemics.

vi. The key drivers are.

1. Environment, Climate and Land-use changes
2. Changes in habitats and therefore changes in animal:human interactions
3. Illegal wildlife trade, which is a multi-billion-dollar industry, cross border and continent, highly professional and linked with other illegal activities and corruption.
4. Urbanisation and densely populated cities which allow amplification of known and novel pathogens.
5. National, regional and international travel and trade and movement of people and animals.
6. Public health and clinical systems which have been fragmented, neglected, under-funded, and undermined, with little or no resilience or spare capacity.

2. The period January 2020 – April 2020
   a. There were delays in China in appreciating and then sharing that a major epidemic was starting in mid-December 2019 to early-January 2020.
   b. By 10 January 2020 the sequence of the virus was in the public domain and the following information available in the public domain by the 24 January 2020
      i. A novel coronavirus spread predominately by the respiratory route but which also caused a systemic illness in those who were admitted to clinics and hospitals
      ii. A novel coronavirus to which humanity had little or no immunity.
      iii. A wide range of clinical outcomes from asymptomatic infection through to severe disease and death.

iv. Asymptomatic transmission and human-2-human transmission was clear.
v. All ages could be infected and/or become ill
vi. We had no rapid diagnostic tests, no known specific treatment and no vaccines for any coronavirus.

c. This constellation of features raises every red flag of an impending crisis, and a collection of features much worse than in any of the earlier epidemics or pandemics 1999-2020.
d. In my view there was not enough urgency or clarity of decision making and accountability in this period, critically from early-January 2020 until mid-March 2020.
e. Even when it was clear that cases had spread beyond China to Asia, Europe and North America with hospitals and intensive care units in Italy in February 2020 lacking the capacity to respond to demand with clinical decisions having to be made on who to treat and who not to treat.
f. There was a sense of British exceptionalism, this could not happen here and almost a fear of over-reacting, perhaps scarred by the experience of the influenza pandemic of 2009.
g. SAGE was convened under the (superb) Co-Chairs, the CSO (PV) and CMO (CM) but the ability of that group to galvanise the system was limited.
    i. There was little or no apparent political appetite to engage or clarity on which central structure would coordinate actions across government. It was quickly clear that everyone and their families, every sector of society would be affected from health to education, jobs, borders, transport, energy, security, economy, international coordination and much more.
    ii. There was no spare clinical, care facilities, or public health capacity or resilience after many years of neglect and under-investment. Compounded by the fragmentation within and between these services.
    iii. Little appreciation of the impact of the pandemic on existing inequality and the physical and mental health of the nation
    iv. What was remarkable was the strength of the UK's scientific and research community and their international links. The scientific strengths in Epidemiology, Public Health, Discovery Science, Vaccinology, Social Science, Humanities, Ethics, Genomics and Genetics, Modelling, Data, Clinical, Trials (ISARIC and the RECOVERY Trial), Ethics, Regulation and much more across academia, industry and philanthropy was extraordinary (see above in comments on OSCHR, SCOR, Life Science Council, Wellcome Genome Campus and Wellcome Sanger Institute and ISARIC). A tribute to the investment and cohesion from the public, private and philanthropic sectors over decades.

v. But too often there were barriers to collaboration between government agencies, academia, between public health agencies and clinical and research organisations and institutions. This is a perennial issue and a global problem. Structures, interests, organizational constraints, incentives, career paths, cultures, salaries, jealousies and more make collaborations more difficult than they should be all the time, they can make it much harder in a crisis.

3. The period May 2020 – August 2020
    a. This period was tragically largely wasted on an overly optimistic sense that the worse was behind us - https://www.ft.com/content/031b42a7-e2b3-43ae-9139-d31a4cb37498 **INQ000183304 JF/10**
    b. Between May and August 2020, the assumption had to be that the lull after the first wave was only temporary and that the pandemic would return later in the year. Public health measures, non-pharmacological interventions, restrictions and lockdowns can and did reduce transmission and save lives, they buy time, they do not change the fundamentals of the virus, the infection or the illness. When lifted transmission was bound to return.
        i. https://committees.parliament.uk/oralevidence/747/pdf/ **INQ000183293 JF/31**
        ii. https://www.bbc.co.uk/programmes/p08j8587 **INQ000183294 JF/32**
        iii. From 20 July 2020 - "*They've (restrictions) done nothing to change the fundamentals of the virus – it remains as infectious as at the end of December, it has the same clinical syndrome, it kills the same number of people and as soon as the lockdown is eased, if we don't have mechanisms to change the fundamentals - diagnostics, treatments and vaccine – this will come back. June, July and August are absolutely critical and if we don't have things in place by the beginning of September when schools restart we will face a very, very difficult winter.*"
            1. https://parliamentlive.tv/Event/Index/4b2dfc60-0c0e-47fe-8b78-1db2f135a004 **INQ000183295 JF/33**
    c. These blunt warnings were not taken seriously enough, despite being clearly articulated by SAGE; capacity and resilience among staff and the systems (all sectors) was not strengthened, Test and Trace was not fully functional, primary care-hospital-care home links not enhanced, infection control within hospitals and clinical facilities not adequate, provision of PPE and infection control in clinical facilities, improved ventilation, provision in schools and for vulnerable individuals and communities, support for health care workers. It was very difficult for SAGE to influence the levers and ensure these fundamentals were implemented.
    d. It was frustrating that over that summer the narrative became too optimistic and despite warnings from SAGE decisions were taken which

helped fuel the return of transmission, inevitably to be followed by illness and deaths.

e. SAGE was never an operational entity, rightly so, and the Co-Chairs regularly reminded SAGE of that – but it was frustrating that when a recommendation was made and a lever had to be pulled to achieve an outcome, too often the impact was delayed or not adequate.
f. The UK started the pandemic with limited public health, clinical and care home capacity, the summer of 2020 was not used well enough to enhance that and prepare for the return of transmission, illness and deaths in Q4 2020.

4. The period September 2020 – January 2021

During the unprecedented events of Q1 2020 amid great uncertainty and a paucity of data, recommendations and decisions were inevitably very difficult. But by Q4 2020 the UK had incredible data (ONS Infection Survey, REACT Study, Genetic Surveillance, Clinical data), and analytic capacity, the impressive Joint Biosecurity Centre (JBC) had been set up and was providing the much needed central function to bring together the diverse cross sector data, there was less uncertainty on COVID itself and it was becoming increasingly clear that safe and effective vaccines would be available in the UK in limited amount by the end of 2020 and for national roll out in early 2021. The UK only had to analyse its own incredible real time data, apply lessons from Q1 2020, act early with non-pharmacological interventions to reduce community transmission (and prevent need for more draconian measures (lockdowns) later) for another five or six months and then with a nationwide vaccine roll out the worst of the pandemic in the UK could be behind us. Sadly, the lessons of Q1 2020 were not learnt and through August, and September it was clear from a variety of data sets that community transmission was increasing and would be followed a later by increasing illness, hospital admissions and deaths. SAGE recommended a short series of 'circuit breakers' in September and October to help reduce transmission, limit the need for more draconian measures later and buy time until the vaccines were available in just a few months' time. Unfortunately, those recommendations were not acted upon ('a decision not to act, is a decision with consequences), or the lesson that earlier interventions can reduce the need for more draconian (lockdowns) and less effective measures later. As a result, the UK watched the increasing community transmission through September and October of 2020, inevitably followed by hospitalisations and deaths leading to extreme pressure on the NHS. The UK was then forced into a more severe lockdown in November 2020 than might have been needed if actions had been taken earlier, but one which was also inconsistently communicated and implemented. This was lifted in early December, but had to be reimposed later in early January 2021 when the NHS came under intolerable pressure.

Exerts from Spike

13 September 2020

"June–August was not used well enough to put in place what was needed, too much optimism that the worst was over and it could not be so bad again, continued focus on short term tactics, defending the indefensible, confirmation bias, and the lack of any central leadership or strategy... Time has been wasted with distractions of 'moonshots', blaming the young or travellers/borders, the public enquiry, getting rid of PHE damaging morale of the very people who will be needed over the last [next?] 6 months, not preparing the NHS, TTI is very close to collapse at the moment .... If it can be prevented what needs to happen? (What should have happened June–August)

Get the 'boring' basics right and ready for autumn/winter, implementing what we know works and just do it well. Value competence above rhetoric. Be honest and transparent about the situation and what is needed. Narrow the gap between the advice, what we know needs to happen and the capacity to implement it. Strengthen the Cabinet Office, No10, or a new grouping to oversee this, not driven by political announcements but by making a real difference. Does this need a cross party, national emergency crisis approach? Admit not everything is working, conduct an immediate review, within a week reset a real, joined up strategy. Stop trying to pretend 'it's all world beating' – it is not and everyone knows it, repeating that only loses more trust..."

22 October 2020 –

(After the regular Thursday evening call to review the UK Surveillance Data)

"Does this summary make crystal clear that the data is unequivocal, consistent, has been since mid-July, predictable and very very worrying. We are watching an epidemic unfold in front of us and simply spread from local to regional to national, slower than in February and March ...but on a clear path to a winter disaster. It feels like we are sleep walking towards it, but worse, because we can see it, document it, we are watching the data unfold in front of us. And worse than sleep walking because it is so obvious, and because we have been here before. Every so often we grasp what we think is a chink of light, a minor downturn in one region, in one piece of data and think we are turning a corner. We are not. That is confirmation bias at its worst. We are ignoring the elephant in the room – all ages, all regions, are increasing, the tiers are not effective... and we are watching tier one become tier 2, tier 2 becoming tier 3 and tier 3 getting worse. We are also seeing worrying signs of increasing hospital transmission and of infections in the care home sector. This is the most worrying period since the 10–23rd March.... We cannot continue to just watch it, delay decisions, or hope for the best and keep our fingers crossed. I am not sure if others share my concerns – but I found the Pillar 4 [national surveillance] data review today, the latest

ONS and React data and then SAGE profoundly depressing and a major concern. Jeremy"

SAGE recommendations through this period September – October 2020 were equally unequivocal.

The UK failed to learn the lessons from Q1 2020, failed to use the lull in transmission between May-August 2020 to prepare for the winter, enhance resilience and failed to use the incredibly high-quality data to iterate and make wise decisions in Q4 2020.

b. To the extent applicable, what are your views as to whether the work of the above-mentioned groups in contributing to the UK's pandemic planning, preparedness and resilience up to the time the Covid-19 pandemic struck succeeded in their aims and why?

These groups were not set up or designed to deal with an event on the scale, the impact on the whole of society or length of the COVID-19 pandemic. But the network, cohesion and coordination across the Life Science Sector, achieved through these groups over many years undoubtedly had a role in the truly world leading scientific and research response of this sector during the pandemic.

What was and is very impressive in the UK was the permanent presence pre-COVID of a Scientific Advisor (drawn from very diverse scientific and research backgrounds – including the commercial sector) in every ministry, networked through the Chief Scientist. I have made the case since in countless other countries for such a permanent structure as a way to ensure every ministry of government has embedded within it scientific advice and that those individuals or teams are not isolated but networked and supported through a Chief Scientist reporting to the Cabinet Office or No10.

I would strengthen this network, ensure there is a breadth of scientific disciplines and advice, career opportunities, opportunity for rotation, the individuals retain active links with science, are senior and respected roles and that the Chief Scientist plays a crucial and permanent role at the heart of government as an independent, senior non-political voice. The work of these individuals and the network is transparent, functions all the time, not just in a crisis and communicates directly with the public.

c. What do you consider was done adequately in relation to the UK's pandemic planning, preparedness and resilience and why?

The Government Scientists in every ministry as above.

The Clinical Trials infrastructure and clinical trials expertise supported through NIHR, NHS and the philanthropic sector (ISARIC, Wellcome, CRUK, BHF and many others) that ensured the RECOVERY trial could provide the best global evidence on what drugs worked and what drugs did not work.

The very strong academic (universities and institutions) and industrial research base in the UK that ensured the world leading work on; real time genetic surveillance, epidemiology, modelling, immunology, virology, host and pathogen genetics, structural biology, social and behavioural sciences, diagnostics, vaccinology, clinical, ethics, and many others. These were not established in a crisis, they were there following decades of sustained investment from government, industry and philanthropy.

Pre-pandemic the UK had one of the highest levels of trust and uptake from the community in public health and in vaccines in particular (data from the Wellcome Global Monitor https://wellcome.org/reports/wellcome-global-monitor/2018). This trust in science, public health and vaccines was tested to the limits during the pandemic but you do not build trust in a crisis, it is what you have before a crisis that is so important and in the UK that was strong.

INQ000183296
JF/34

The public release in as close to real time as was practical of the summaries, background documents and workings of SAGE and the SAGE Sub-Committees was unprecedented and a tribute to the Co-Chairs of SAGE who made and won the case for this to happen. The UK was unique (as far as I am aware) in this level of transparency and I believe it to have been critical in how SAGE worked.

The taskforces and initiatives that worked well in my experience – Vaccine Taskforce, ONS Infection Survey and the REACT Study of Community Transmission and the integrated Genomic Surveillance (COG-UK, Lighthouse Laboratories and the Wellcome Sanger Institute and others) and the Thursday evening Data Calls, the linked Discovery Science research (Immunology, Virology, Genetics, Protein Chemistry etc), SPI-B Behavioural Science, SPI-M, NERVTAG, Ethics Group and others.

The Science Media Centre played a critical role throughout the pandemic and has been under appreciated as a trusted convenor of communication between the public, the media, advisors, agencies and researchers.

d. What do you consider could have been done better in relation to the UK's pandemic planning, preparedness and resilience and why?

Much greater and sustained investment in public health, clinical and care services bringing utility and value all the time, improving the nations health and reducing inequality, but also providing much greater capacity in a crisis. Interesting to

compare any number of health and social metrics between UK and other OECD countries pre-pandemic; availability of modern diagnostics centres in UK, capacity and resilience in Public Health or Clinical facilities, number of nurses, care workers and care homes, doctors per 100,000 population, intensive care beds per 100,000 population, health access and inequality, peri-natal mortality, multi-morbidity, ethnic and geographic inequality, access and trust between communities.

As with so much in pandemic planning, preparedness and resilience, what you have before a crisis largely determines your capacity to prevent and respond when a crisis hits. You cannot invent, or stand-up capacity immediately in a fast moving, dynamic pandemic or other crisis, you will always be too slow. And the most important capacity are always trained people. You can build buildings, manufacture equipment, but its well-trained, committed, well looked after people that make the difference.

The UK was very poorly prepared with manufacturing capacity for essential products; PPE, Vaccines, Diagnostics including molecular tools and many others. The efficiency of next day delivery from complex international supply chains and logistics broke very quickly when every country was chasing the same products. The continued uncertainty over the future of the Vaccine Manufacturing and Innovation Centre is a major concern.

Better horizontal links between ministries, agencies, organisations, public health bodies, research communities and the public. It was a lesson from the 2009 pandemic that it was often not the obvious constraints that prevented agencies and organisations working together in a crisis, it was issues like funding and employment contracts, networks, procurement, incentives mutual understanding and respect. Much of these issues can be sorted out in the periods between a crisis, and in doing so bring their own utility but will also hugely help when a crisis strikes.

Crisis like COVID are national, regional and global issues, they are not just a health issues, they are all of society issues but it is local communities where epidemics start and end. The UK did not get the balance right between the national and the local. Local knowledge and expertise are crucial in addressing complex issues that affect diverse communities. Working out what is the responsibility of the centre and what is better led and owned by local authorities and communities is crucial and has been in every epidemic and pandemic, including the influenza pandemic of 1918 and the ebola epidemic of 2014-2016.

The UK could and should have taken the warnings of epidemics and pandemic over the last 20 years more seriously and not just had table top often tick box exercises, but used every epidemic in the UK and around the world as a chance to learn what works and what does not, to network, test systems and make sure they are fit for purpose.

The UK must reengage and re-energise its place in global science and health. It is enlightened self-interest as well as being the right thing to do. I have a sense that over the last few years the UK's role in the global health agencies (UN and its technical agencies and other organisations including but not limited to the WHO, the World Bank, Global Fund, CEPI, GAVI etc has diminished. Not just in funding (there is no doubt the UK should return to 0.7% to ODA), but also in influence. The UK has a proud tradition of constructive, evidence-based influence on these institutions and a review of the UK's strategic approach to global science and global health would be worthwhile.

There are many immediate opportunities to do this building on the work of the UK Presidency of the G7 in 2021 and the launch of the Pandemic Radar, the 100Day Mission which the UK has also played a leadership role in through the G7 Presidencies of German and Japan and the Pandemic Fund developed and supported by the UK through the G20 Presidencies of Italy and Indonesia

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/990314/Pathogen_Surveillance_report_to_the_UK_G7_Presidency_2021.pdf **INQ000183296 JF/35**

https://www.gov.uk/government/publications/100-days-mission-to-respond-to-future-pandemic-threats **INQ000183297 JF/36**

https://www.worldbank.org/en/news/press-release/2022/11/12/g20-hosts-official-launch-of-the-pandemic-fund **INQ000183298 JF/37**

In preparing for such a crisis there could be lessons learnt from the security and military approaches and how they maintain readiness and functionality all the time. Such an approach in the health system can and must provide utility and be used all the time, the people within it valued and in a system which rebalances efficiency and resilience.

UK underappreciated the connectedness between sectors and how a crisis such as the pandemic is not just a health issue, it is a whole of society issue. Yet the UK government, was not structured to function well enough across government, I felt there was a lack of a central structure where all the elements were brought together, the inevitable trade-offs surfaced and debated and with the authority and accountability to allocate resources and ensure actions were followed up and implemented. It remained too fragmented for too long. The setting up of the JBC helped (with some very impressive teams) in this but it was and will be needed on Day One of a crisis not some months later. Presumably this can and should be through the Cabinet Office with a view across Government and linked via COBRA to SAGE. I think it would have helped if there had been another group, like SAGE, that

considered the broader implications on jobs, transport, education, the economy, energy, etc and who were equally transparent in their deliberations as SAGE.

e. With the benefit of hindsight into the UK's response to the Covid-19 pandemic, which decisions do you consider that the government should have made differently in relation to the UK's pandemic planning, preparedness and resilience and why?

Answered in sections above.

f. What are your views as to any lessons that can be learned in terms of planning, preparedness and resilience for future high-consequence infectious diseases, epidemics, pandemics, as well as other whole-system civil emergencies and why? Please describe any changes that have already been made (of which you are aware), and set out any recommendations for further changes that you think the Inquiry should consider making.

I refer to the final chapter of Spike – *The virus vs the People. The inside story of the Pandemic* in which I make a few recommendations at a national and an international level.

Take warnings seriously, COVID emergence was not the first warning, it will not be the last. Reform now, before the next crisis, which is why this Public Enquiry is so important.

What you have before a crisis largely determines your ability to prevent and then respond to it.

Ensure that patients, patient groups, communities affected (including those most marginalized and those who may lack agency) are central to all of this work, in the prevent and preparedness phase as well as in the response and recovery phases and from the start and with this an unerring commitment to equity, diversity and inclusion.

Diverse broad scientific expertise and advice has to be a central part of government and the UK has a world leading structure in place through having Scientific Advisors in every ministry and a Chief Scientist. But the political system has to then be able to understand and assimilate that advice and make informed, evidence informed if complex decisions, but also then iterate and learn lessons and adapt.

Trust is critical.

The transparency of SAGE, the public release of summaries, and all the background work was so important and a tribute to the Co-Chairs. A template for other sectors of government?

Is it possible to "depoliticize" public health and crisis response? The polarization of debate and across all actions is very damaging. It is clearly worse in some other countries, but it is a frightening development, the UK is not immune and one we should seek to understand and to try and prevent. If not the country's ability to prevent and prepare for and respond to future 'shocks' will be severely impaired.

The verbal and physical abuse of advisors and civil servants was and still is now very tough and these people need support. Physical threats including death threats which many advisors experienced is not normal and should not be accepted.

Across vital sectors rebalance efficiency and resilience.

Rebalance the 'national' and 'local' prevent, preparedness and response. Needs to be a central coordination mechanism, that I felt was lacking in UKG in the early phase of the pandemic, presumably led through the Cabinet Office, COBRA and SAGE, but that has to then be in trusted partnership and aligned with local authorities and communities.

Have we lost the capacity to address politically and as a society the very real day-2-day challenges whilst also addressing long term structural and hence other challenges we will face?

Inequality matters all the time it will be amplified in a crisis.

Make investments in the health sector to ensure there is sufficient resilience that will bring utility and value all the time to the health and wealth of the nation with sufficient spare capacity when a crisis hits. This is the only way to sustain those investments.

Value your universities, institutes, research, public health and clinical and all allied professionals and invest in them all the time, not just in a crisis.

Break down the barriers between "Public Health", "Clinical" and "Research". This is a global problem and the UK, with great strength in all three could play a leading role in forging a new partnership. The increasing separation of these areas of work, the career structures and incentives are damaging all three areas. Would be good to see if ONS could continue to be integrated into this network.

The MHRA is a superb regulator and hugely important all the time, and during a crisis. It could play a very important role internationally in helping to strengthen other national and regional regulators.

COVID is now a permanent human infection and we do not yet have the tools needed to reduce the risk of potential further impact. Before we all move on an declare 'job done" we should consider the less likely, but non-zero outcomes and be sure we are not leaving ourselves vulnerable to a return to January 2020. "*We are now doing something very human: acting on the premise that what we hope is happening is indeed happening. We need to be more clear-eyed and candid: The virus's persistence and the factors driving its evolution create a substantial chance that another wave of covid-19 will again threaten our societies.*

*The virus is not disappearing. It is adapting. We must do the same."*https://www.washingtonpost.com/opinions/2022/01/31/what-if-were-middle-not-end-pandemic/ **INQ000187463 JF/09**

6. **A summary of any documents to which you contributed for the purpose of advising those groups over the course of the date range for Module 1, relating to the UK's planning and preparedness for high-consequence infectious diseases, epidemics and pandemics and the initial developments of the Covid-19 pandemic (as it became). Please exhibit copies of those documents where possible to your response to this Rule 9 request.**

7. **A summary of any key articles or reports you have written, published or contributed to, interviews and/or evidence you have given (for example to Parliamentary Select Committees), regarding the UK's planning, preparedness and resilience for high-consequence infectious diseases, epidemics, pandemics and the Covid-19 pandemic (as it became), as well as the work of the above-mentioned groups in that context. Please exhibit copies of those documents where possible to your response to this Rule 9 request.**

8. **A summary of any other documentation relating to these matters that you hold (including soft copy material held electronically). Please retain all such material. I am not asking for you to provide us with this material at this stage, but I may request that you do so in due course.**

9. **With reference to the Module 1 Outline of Scope, do you have any other information to provide to the Inquiry which is relevant to the matters being examined in Module 1?**

No

Statement of Truth

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

Signed:

Personal Data

Dated: 10 March 2023