Christina Pagel response to the initial Inquiry Letter [REF: M2/ISAGE/01/PCP]

Contents

Preamble

I am keen to help the Inquiry in any way possible. However, given the below paragraph, I have kept my responses relatively (!) short.

> "This is a preliminary request, the purpose of which is to assist us in the early stages of our work. For that reason, I am not asking you to provide a witness statement at this stage but rather to answer the queries in the attached questionnaire, as far as you are able. At this stage, you do not need to provide detailed answers to each question. A summary of your views to answer each question, as far as you are able, will be sufficient."

As a member of Independent SAGE, particularly in my role in providing regular data updates, I have collated detailed snapshots of the pandemic almost every week since the end of June 2020 (to the present day). Together with the Independent SAGE reports from May 2020 to February 2022, that represents a rich source of material of what was in the public domain at the time.

Q1 A brief overview of your qualifications, career history, professional expertise and major publications.

Qualifications:

PhD in Space Physics (2002), Imperial College London
MSc in Applied Statistics with Medical Applications (Distinction, Royal Statistical Society Prize, 2014), Birkbeck College, University of London
MSc in Mathematical Physics (Quantum Theory) (Distinction, 1997), King's College London
MA in Medieval History (Distinction, 2008), Birkbeck College, University of London
MA in Classical Civilisation (Merit, 1999), Birkbeck College, University of London
BA in Mathematics (1st Class, 1996), The Queen's College, Oxford University

Career History:

Jan 2022 – current	Vice President of the Operational Research Society	The UK Operational Research Society, Birmingham
Jan 2021 – current	Co-Director of the UCL CHIMERA EPSRC mathematics in health care hub	University College London
Oct 2018 – current	Professor of Operational Research	Clinical Operational Research Unit (CORU), University College London (UCL)
Oct 2017 – July 2022	Director of the Clinical Operational Research Unit, UCL	Clinical Operational Research Unit (CORU), University College London (UCL), London, WC1H 0BT, UK
Sept 2016 – Aug 2017	Harkness Fellow in Health Policy and Practice	Jointly based at the Institute for Healthcare Improvement and Brigham and Women's Hospital, Boston MA, USA
Oct 2015 – Sept 2017	Reader in Operational Research	CORU & Department of Applied Health Research (DAHR), UCL, UK
Oct 2013 – Sept 2015	Lecturer in Operational Research	CORU & DAHR, UCL, UK
Mar 2008 – Sept 2013	Senior Research Fellow	CORU, UCL, UK
Oct 2005 – Mar 2008	Research Fellow	CORU, UCL, UK

Sept 2003 – Sept 2005	SHINE Postdoctoral Fellow (Space Physics)	Boston University, 725 Commonwealth Avenue, Boston, MA 02215, USA
Nov 2002 – Aug 2003	Research Associate (Space Physics)	Boston University, 725 Commonwealth Avenue, Boston, MA 02215, USA
Oct 1997 – July 1999	Computer analyst & account manager for four clients	Rebus Plc, 120 Leman Street, London, UK (NB: now called XUBER).

Professional expertise:

Trained in mathematics and physics, since 2005 I have been working in Operational Research applied to Health Care at University College London. Operational Research is a branch of applied mathematics all about using mathematics, statistics, data analysis and problem structuring methods to support decision makers in the real world. My main strands of work have included working with Dept of Health on national immunisation policy and pandemic preparedness (pre 2016), working internationally on policies to reduce maternal and neonatal deaths in low income settings (2008-2014), working with hospitals, commissioners, national audit bodies, charities and patients to use data to support improvement in services for congenital heart disease (2010 – date), working with local hospitals to use data from intensive care to inform care for patients (2013-current).

In 2016/17 I was a Harkness Fellow in Health Policy and Practice, based in Boston, US. There I worked on two projects: the implementation of IT systems within hospitals & designing, administering and analysing a survey of state legislators (politicians) on their overall priorities for health policy, at a time when the new Trump administration were trying to remove Obamacare (by repealing the Affordable Care Act).

In relation to the pandemic, I have been a member of Independent SAGE since May 2020. In March and April 2020, I worked as a small part of the large team setting up the London Nightingale Hospital. I also supported some local hospitals in their Covid response planning during the spring and summer of 2020.

Publications related to the Covid-19 pandemic & particularly relevant publications from my previous work with Dept of Health or other health policy.

Note: non peer review in italics

1. Lazarus et al, ""A Multinational Delphi consensus to end the COVID-19 public health threat", Nature, in press, 2022
2. Wilde et al, Hospital admissions linked to SARS-CoV-2 infection in children: a cohort study of 3.2 million first ascertained infections in England, BMJ, under review, 2022
3. Pierce et al, COVID-19 and Children, Science, 377:6611, pp 1144-1149, doi:10.1126/science.ade1675, 2022
4. *Pagel, "The Covid waves continue to come", BMJ 377:o1504, doi: 10.1136/bmj.o1504, 2022*
5. Pagel and Yates, "Role of mathematical modelling in future pandemic response policy", BMJ, 378 doi: https://doi.org/10.1136/bmj-2022-070615 , 2022
6. Gurdasani, Pagel, McKee et al, "COVID-19 in the UK: Policy on children and schools", BMJ, 378:e071234, doi: 10.1136/bmj-2022-071234, 2022
7. *Pagel, "Back to normal is not enough", Science, 375: 6585, https://www.science.org/doi/10.1126/science.abp8962 2022*
8. *Williams, Drury, Michie, Pagel, Squires, "The UK is an international outlier in its approach to Covid in children", BMJ Opinion, 2022*
9. McKee, Altmann, Costello et al, "Open science communication: the first year of the UK's Independent Scientific Advisory Group for Emergencies", Health Policy, https://doi.org/10.1016/j.healthpol.2022.01.006 , 2022
10. Thygsen, Tomlinson, Hollings et al, "Understanding COVID-19 trajectories from a nationwide linked electronic health record cohort of 56 million people: phenotypes, severity, waves & vaccination", Lancet Digital Health, doi 10.1016/S2589-7500(22)00091-7, 2022

11. *Greenhalgh, Griffin, Gurdasani et al. "Covid-19: An urgent call for global "vaccines-plus" action", BMJ, 2022;376:o1, doi: https://doi.org/10.1136/bmj.o1, 2022*

12. *Pagel and Squires, "Schools: still a gaping hole in the English covid strategy", BMJ Opinion, 2021;375:n3149, doi: https://doi.org/10.1136/bmj.n3149 , 2021*

13. *McKee, Gurdasani, Pagel, "The NHS is complex, and that's why we should be worried", BMJ Opinion,* 2021;375:n3128, doi: https://doi.org/10.1136/bmj.n3128 *, 2021*

14. Gurdasani, Akrami, Bradley et al, "Long Covid in children", Lancet Adolescent and Child Health, https://doi.org/10.1016/S2352-4642(21)00342-4 , 2022

15. *Bar-Yam, Gurdasani, Baker et al, "The World Health Network: a global citizens' initiative", Lancet, https://doi.org/10.1016/S0140-6736(21)02246-7, 2021*

16. Pagel and Yates, "Interpreting the state of the pandemic through the lens of (biased) data", Science, https://www.science.org/doi/10.1126/science.abi6602 , 2021

17. Gurdasani, Bhatt, Costello et al (Pagel senior author), "Vaccinating adolescents in England: a risk-benefit analysis", Journal of the Royal Society of Medicine, https://doi.org/10.1177/01410768211052589 , 2021

18. *Gurdasani, Bar-Yam, Denaxas et al. "England's schools must be made safe: An open letter to the education secretary", BMJ Opinion 3 September 2021, https://blogs.bmj.com/bmj/2021/09/03/englands-schools-must-be-made-safe-an-open-letter-to-the-education-secretary/*

19. *Pagel, "Schools—a gaping hole in the English covid strategy", BMJ 374:n2115, https://www.bmj.com/content/374/bmj.n2115.full , Aug 2021*

20. *Pagel, Drury, Greenhalgh et al. "Government's plan recklessly exposes millions in the UK to infection when they could be vaccinated", BMJ Opinion,* https://blogs.bmj.com/bmj/2021/07/15/governments-plan-recklessly-exposes-millions-in-the-uk-to-infection-when-they-could-be-vaccinated/ *, July 2021*

21. *Gurdasani, Drury, Greenhalgh et al, "Mass infection is not an option: we must do more to protect our young", The Lancet,* https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01589-0/fulltext *, July 2021*

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23. *Gurdasani, Pagel, McKee, Reicher, Ziaddeen, "The UK's response to new variants: a story of obfuscation and chaos", BMJ Opinion, https://blogs.bmj.com/bmj/2021/05/28/the-uks-response-to-new-variants-a-story-of-obfuscation-and-chaos/ , May 2021*

24. *Reicher, Michie, Pagel, "Covid-19: What should we do about B.1.617.2? A classic case of decision making under uncertainty", BMJ Opinion, https://blogs.bmj.com/bmj/2021/05/17/covid-19-what-should-we-do-about-b-1-617-2-a-classic-case-of-decision-making-under-uncertainty/ , May 2021*

25. *Gurdasani, Pagel, Yates, McKee, Greenhalgh, "Is the government "following the data" on face coverings in schools?", BMJ Opinion, https://blogs.bmj.com/bmj/2021/05/14/is-the-government-following-the-data-on-face-coverings-in-schools/ , May 2021*

26. *Pagel, A very real danger that covid-19 will become entrenched as a disease of poverty, BMJ Opinion, BMJ 2021; 373 :n986 doi:10.1136/bmj.n986, April 2021*

27. *Pagel and Palmer, "'We are setting ourselves on fire to keep everyone else warm'—what does the recovery look like for NHS staff?", BMJ, 372:n569, doi: https://doi.org/10.1136/bmj.n569 , 2021*

28. *Pagel, "Covid-19: How to break the cycle of lockdowns", BMJ Opinion, https://blogs.bmj.com/bmj/2021/01/27/covid-19-how-to-break-the-cycle-of-lockdowns/ , Jan 2021*

29. *Priesemann et al. "An action plan for pan-European defence against new SARS-CoV-2 variants", Lancet, https://doi.org/10.1016/S0140-6736(21)00150-1 2021 (co-signatory)*

30. *Pimenta, Yates, Pagel, Gurdasani, "Delaying the second dose of covid-19 vaccines", BMJ, 372:n710, 2021*

31. Wilde, Mellan, Hawryluk et al, "The association between mechanical ventilator compatible bed occupancy and mortality risk in intensive care patients with COVID-19: A national retrospective cohort study", BMC Medicine, 19, Article number: 213, 2021

32. *Gurdasani, Bear, Bogaert, Burgess et al. "The UK needs a sustainable strategy for COVID-19", Lancet, https://doi.org/10.1016/S0140-6736(20)32350-3 , 2020*

33. *Alwan et al, "Scientific consensus on the COVID-19 pandemic: we need to act now", Lancet, (co signatory)* https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32153-X/fulltext *, doi:10.1016/S0140-6736 (20)32153-X, October 2020*

34. *Jones and Pagel, "Bipartisan Approaches to Tackling Health Care Costs at the State Level", Milbank Memorial Fund Report, https://www.milbank.org/publications/bipartisan-approaches-to-tackling-health-care-costs-at-the-state-level/ , October 2020*

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36. *Pagel, Rising covid-19 transmission and a broken testing system have left us in a dangerous place, but it's not too late, BMJ Opinion, https://blogs.bmj.com/bmj/2020/09/16/christina-pagel-rising-covid-19-transmission-and-a-broken-testing-system-has-left-us-in-a-dangerous-place-but-its-not-too-late/ , September 16, 2020*

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38. *Pagel, Ray, Utley, "Covid-19: How to triage effectively in a pandemic", BMJ Opinion, https://blogs.bmj.com/bmj/2020/03/09/covid-19-triage-in-a-pandemic-is-even-thornier-than-you-might-think/ , 2020*

39. Jones, Pagel, Koller, "The Future of Health Reform – A View from the States on Where We Go from Here", NEJM, 379:2189-2191, 2018

40. Panovska-Griffiths, Crowe, Pagel, Shiri, Wootton, Grove, Utley. "A method for evaluating immunisation schedule that covers multiple diseases: illustrative application to the UK routine childhood vaccine schedule", Vaccine, doi: 10.1016/j.vaccine.2018.05.083, 2018.

41. Rakow, Blackshaw, Pagel, Spiegelhalter, "Comparing what to what, on what scale? The impact of item comparisons and reference points in communicating risk and uncertainty", Journal of Behavioural Decision Making, DOI: 10.1002/bdm.2073, 2018

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43. Pagel, Jesper, Thomas, Blackshaw, Rakow, Pearson, Spiegelhalter, "Understanding Children's Heart Surgery Data: A Cross-Disciplinary Approach to Codevelop a Website", Annals of Thoracic Surgery, doi:10.1016/j.athoracsur.2016.11.080, 2017

44. Crowe, Utley, Walker, Panovska-Griffiths, Grove, Pagel, "A novel approach to evaluating a national childhood immunisation schedule", BMC Infectious Diseases, doi: 10.1186/s12879-015-1299-8, 2015

45. Skordis-Worral, Utley, Kembhavi, Brikci, Pulkki-Brannstrom, Dutoit, Rosato, Pagel, "Development and formative evaluation of a visual e-tool to help decision makers navigate the evidence around health financing", JMIR Research Protocols, 1(2):e25, 2012

46. Crowe, Utley, Walker, Grove, Barlow, Pagel, "A model to evaluate mass vaccination against pneumococcus as a countermeasure against pandemic influenza", Vaccine, doi:10.1016/j.vaccine.2011.04.034, 2011.

47. Utley, Pagel, Peters et al., "Does triage at referral to critical care during a pandemic necessarily result in more survivors?", Critical Care Medicine, 39(1): 179-183. 2011

Q2 Role on Independent SAGE

2. An outline of when you participated in Independent SAGE, the role that you performed and any matters that you advised on.

I was invited to join Independent SAGE at the end of April 2020, just before its first meeting in May 2020 and have been a member ever since. Although originally invited on (I think) because I have developed various mathematical models as part of my job over the years, I soon moved away from that (because why try to replicate as an individual in my spare time what some of the best modelling teams in the country (and indeed the world) were already doing for Spi-M-O!), to concentrate more on analysing the publicly available Covid-19 data, understanding what it was telling us about the current state of the pandemic (both in the UK and elsewhere) and then a) supporting the production of Independent SAGE policy reports/recommendations and b) communicating it to the public. In June 2020, when the government ended its daily press briefings and data presentations, I was asked whether I would put together a weekly summary of the numbers instead as part of a new weekly Independent SAGE public briefing on a Friday. I agreed and have been doing that ever since (albeit at times alternating with of one or two other Independent SAGE members since September 2020).

As the briefings evolved, my data presentations tended to be between 15 and 30 minutes. I tried (and still try) to cover the most important aspects both of the pandemic and related to any special topics we might be covering in that session (e.g. schools, long covid, variants etc). I tried to give data on all home nations each week, but often the focus was English policy and data.

Data sources I would draw on each week (since mid 2021, many of these have slowly dropped off as they become less relevant or have stopped being published):

Office of National Statistics: social survey, employment survey, infection survey, long covid survey, registered deaths, excess death reports, deaths by age, deaths within care homes.

UKHSA: Weekly flu & covid surveillance report, national Covid daily dashboard (now weekly) for case data (inc by region and age), positivity rates, vaccine data, hospital occupancy (by region, country and age), testing data, deaths within 28 and 60 days of a positive test (across all nations where possible). Weekly vaccination surveillance report (and vaccine efficacy details). Regular Technical Briefings on Variants of Concern.

Home Nation dashboards: the daily dashboards for Wales, N Ireland and Scotland where needed for daily case data by age, hospital admissions by age (where available), contact tracing information (where available) and deaths.

NHS Test and Trace: Weekly data of new positive cases referred to the service, testing data, contact rates, contact timings.

NHS England: daily and weekly hospital admissions with Covid (including for and with covid), hospital capacity information, key performance indicators

Imperial REACT Study: monthly data on prevalence, broken down by age, region, deprivation, employment status, ethnicity, vaccination.

SAGE minutes and reports: I often referred to relevant SAGE minutes or reports on latest evidence, modelling or policy options.

JCVI statements: If discussing vaccines, I would often refer to JCVI public statements on vaccine recommendations.

ICNARC (national adult intensive care audit): regular reports on the demographics and outcomes of adults in intensive care with Covid.

COG-UK: variant tracking in the home nations.

Sanger Institute: Variant tracking by region in England using COG-UK sequencing data (weekly).

Dept for Education: weekly school absences for Covid among staff and pupils and by reason.

International data: As needed, I would use European Centre for Disease Control (ECDC) and the US Centers for Disease Control (UC CDC) data on international cases, hospitalisation, vaccination. Both were also useful for summarising respective policy advice and evidence. I also used John Hopkins World in Data site to make broader international comparisons.

Research papers: Where useful, I would try to summarise the latest research for the public. For instance, latest information on vaccine efficacy, new variants, new treatments, evaluation of public health measures.

Since the summer of 2020, I have been asked to participate in policy round table discussions, contribute to consensus papers, contribute or write academic pandemic policy articles (3,5,6,7 and 16), provide evidence to parliamentary select committees and provide a UK perspective to international decision makers.

Q3 Reports, articles, evidence, interviews

3. A summary of any reports and/or articles you have written, interviews and/or evidence you have given regarding the work of SAGE and/or its subcommittees and/or the UK's response to the Covid-19 pandemic. Please include links to those documents where possible.

Independent SAGE reports and briefings

All of the Independent SAGE reports are publicly available from our website https://www.independentsage.org/ , indexed by topic (ranging from schools, to mitigation measures, test and trace to inequalities, vaccines and variants) or by date published.

A handy interactive timeline to our reports for 2020 are available here: https://www.independentsage.org/wp-content/uploads/2021/02/Timeline_IndieSAGE_v3-2.pdf .

Another handy timeline of SAGE advice and Independent SAGE reports from January 2020 to July 2021 is available here: https://www.independentsage.org/wp-content/uploads/2021/08/IS-Timeline-Complete-1.pdf . This latter timeline is particularly useful for highlighting the common ground between Independent SAGE and SAGE and where the government did or did not follow SAGE advice.

The data presentations (providing a contemporaneous record of main issues of the day) are all available publicly from here: https://www.independentsage.org/category/weeklynumbers/

Academic publications

My relevant journal publications are listed above in Q1. I would particularly like to draw the Inquiry's attention to articles 5 & 6 which are directly about learning from the UK use of mathematical modelling to inform policy and policy around children and schools respectively. These articles are a small part of the British Medical Journal's (BMJ) ongoing series to inform the Inquiry (still being added to). **The whole series might be of use to the Inquiry: https://www.bmj.com/covid-inquiry .**

Media articles

In addition, I have written several newspaper/magazine articles about Covid listed below:

1. Christina Pagel, "Why is the UK seeing near-record Covid cases? We still believe the three big myths about Omicron", The Guardian, March 2022, https://www.theguardian.com/commentisfree/2022/mar/30/uk-near-record-covid-cases-three-myths-omicron-pandemic#comments
2. Christina Pagel, "Eight changes the world needs to make to live with COVID", The Conversation, Feb 2022, https://theconversation.com/eight-changes-the-world-needs-to-make-to-live-with-covid-177678 (republished in The Evening Standard 1 March 2022)
3. Christina Pagel, "Johnson wants us to take personal responsibility for Covid – but England is left exposed", The Guardian, Feb 2022,

https://www.theguardian.com/commentisfree/2022/feb/22/johnson-personal-responsibility-living-with-covid-inequality

4. Adam Squires and Christina Pagel, "Covid is airborne — but preventing airborne spread is perfectly doable. Here's how to do it", The Independent, Jan 2022, https://www.independent.co.uk/life-style/health-and-families/covid-airborne-spread-how-to-prevent-b1993267.html

5. Christina Pagel, Deepti Gurdasani and Martin McKee, "We can't wait for hospitalisations to rise – the UK needs a circuit breaker now", Dec 2021 https://www.theguardian.com/commentisfree/2021/dec/21/hospitalisations-rise-circuit-breaker-omicron-nhs?CMP=Share_iOSApp_Other

6. Christina Pagel, "Why the UK was so vulnerable to another Covid outbreak", Prospect Magazine, October 2021, https://www.prospectmagazine.co.uk/science-and-technology/why-the-uk-was-so-vulnerable-to-another-covid-19-outbreak-coronavirus

7. Christina Pagel, "Government's Covid response shows UK set itself up to fail in containing fatal pandemic", The Daily Mirror, 12 October 2021, https://www.mirror.co.uk/news/politics/governments-covid-response-shows-uk-25197571

8. Christina Pagel and Martin McKee, "Why is England doing worse against Covid than its European neighbours?", The Guardian, 7 October 2021, https://www.theguardian.com/commentisfree/2021/oct/07/england-vaccine-just-plus-europe-covid

9. Christina Pagel, "A Magic Bullet?", Chapter in "Prescription for Fairness", Fabian Society, on tackling health inequalities. Sept 2021. https://fabians.org.uk/wp-content/uploads/2021/09/Prescription-for-fairness-web-file.pdf

10. Christina Pagel, "Delay hard to fathom", The Sun, 3 September 2021, https://www.thesun.co.uk/news/16037847/covid-vaccine-rollout-booster/

11. Letter: World leaders urged to boost vaccine availability, Financial Times, 1 September 2021, Signatory, https://www.ft.com/content/d57927b4-5ac3-4447-b51f-64cdcdd457ce?sharetype=blocked

12. Christina Pagel, Common myths about Covid – debunked, 13 August 2021, https://www.theguardian.com/world/2021/aug/13/common-myths-about-covid-debunked

13. Christina Pagel, Fewer people are dying but we still need to worry about long Covid, 1 August 2021, https://metro.co.uk/2021/08/01/fewer-people-are-dying-but-we-still-need-to-worry-about-long-covid-15004174/

14. Christina Pagel, As England faces a third Covid wave, our most vulnerable may be losing protection, The Guardian, 7 June 2021, https://www.theguardian.com/commentisfree/2021/jun/07/delta-variant-covid-england-vulnerable

15. Christina Pagel, Covid-19: We've come a long way, but we're not out of the woods yet, UCL European Institute Blog, 16 March 2021, https://ucleuropeblog.com/2021/03/16/covid-19-weve-come-a-long-way-but-were-not-out-of-the-woods-yet/

16. Christina Pagel, This is what an 'overwhelmed NHS' looks like. We must not look away, The Guardian, 12 January 2021, https://www.theguardian.com/commentisfree/2021/jan/12/overwhelmed-nhs-covid-britain-hospitals

17. Christina Pagel, England's covid-19 desperation could be your future. How do we do better?, 7 January 2021, https://www.washingtonpost.com/opinions/2021/01/07/england-lockdown-measures-new-variant/

18. Christina Pagel, A circuit break will save thousands of lives, 20 October 2020, https://www.politics.co.uk/comment-analysis/2020/10/20/a-circuit-break-will-save-thousands-of-lives

19. Christina Pagel, Covid: The libertarian population immunity strategy is wrong-headed & dangerous, 29 September 2020, https://www.politics.co.uk/comment-analysis/2020/09/29/covid-the-libertarian-population-immunity-strategy-is-wrong

Expert advice

Expert invited to give evidence to APPG on Coronavirus and the Parliamentary select committee (Home Affairs Select Committee: 14 July 2021, APPG: 14 Dec 2021). Also invited to give evidence to Italian members of Parliament of the Democratic Party (PD) political group (May 2022), the Netherlands Covid policy forum (March 2022), national US schools response (Feb 2022). There may have been other occasions too which I would need more time to dig out.

Media interviews

Since the summer of 2020, I have given hundreds of interviews to broadcast media (including the BBC, ITV, Channel 4, Channel 5, Sky, Radio 4, LBC radio, Times radio, BBC local radio, several international news outlets), quotes and interviews to print media, and been a guest on several podcasts discussing Covid. Most of these have been for a few minutes only and I am assuming you don't want details of each one (which I also don't have). Note that these interviews are almost entirely about Covid policy and the current Covid situation and *not* about the workings of SAGE in particular.

Twitter

Since the summer of 2020, I have written regular, detailed, Twitter Threads outlining the latest situation and/or evidence about Covid. These have proved very popular (regularly gaining thousands of likes) and, as of time of writing, I have 210,000 Twitter followers, including several journalists. I mention this because I believe Twitter has been an important medium for communicating about Covid to the public and to journalists. All my Tweets (from @chrischirp) are in the public domain (https://twitter.com/chrischirp)

Talks

I have also given over 30 invited talks since 2020 reflecting on UK response to the pandemic, particularly the role of data and data science and where things went right or not. I'd be happy to talk the Inquiry through these. Relevant titles of the talks include "An overview of the Covid-19 pandemic and a reflection of the interconnectedness of systems ";"Living with Covid"; "Covid data – the good, the bad, the ugly"; "Does Omicron signal the end of the pandemic?"; "Data, science and Covid: what went right and what went wrong"; "Childhood vaccination for Covid-19"; "The Intersection of Operational Research and Public Communication during the Covid-19 Pandemic"; "Reflections on the responses to the COVID-19 Pandemic".

FOR REDACTION/NON-DISCLOSURE TO CORE PARTICIPANTS

I have a research volunteer working for me at the moment (Oct 2022), reading through all the Joint Committee for Vaccination and Immunisation (JCVI) minutes relating to Covid-19 vaccination. The aim is to is to collate for publication a detailed understanding and characterisation of the controversial decisions JCVI made to delay recommending vaccination for children.

From my read of the minutes, I believe there are important failures and discrepancies revealed in the minutes as relates to the vaccination of children, especially in light of subsequent large waves of infections & hospitalisation rates in children since the summer of 2021. My plan is to write an academic peer-reviewed paper on the JCVI decision making process, **but I cannot promise that I will have time to do so (nor that the paper will be accepted). If** it is published, I am of course happy to make it available to core participants but at the moment it is in the **very preliminary stages** and **not ready for sharing**. I also would prefer Core Participants not know I am planning this, since whenever I have discussed JCVI decisions in public I have received a lot of criticism and abuse and I am keen to minimise this until I have to (especially if I do not end up writing the paper).

If I do not have time to write this work up, I would be happy to share the notes to date on the JCVI minutes in some mutually agreed form with the Inquiry but not necessarily to be identified as the source. The material would largely be in the form of indexed & categorised quotes from the minutes under various themed headings. I will likely know the status of any paper by the end of the year (2022). Unfortunately, it would not be sooner, because I have a full time job and this paper would be outside of that! I do however believe it is a very important aspect of UK response for the Inquiry to consider.

REDACTION END

Q4 views on SAGE and policy extent

4. Your views as to whether the work of SAGE and/or its subcommittees in responding to the Covid-19 pandemic (or the UK's response more generally) succeeded in its aims. We have previously invited independent members of SAGE and its subcommittees to address this issue by reference to the matters set out below. You may find them of assistance, although we recognise that some are likely to be beyond your knowledge. Please address this issue as you see fit.

a. The composition of the groups and/or their diversity of expertise;
b. The way in which the groups were commissioned to work on the relevant issues;
c. The resources and support that were available;
d. The advice given and/or recommendations that were made;
e. The extent to which the groups worked effectively together;
f. The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness.

I cannot comment on questions 4b,4c and 4e as I have no personal knowledge of these aspects. My BMJ paper "Role of mathematical modelling in future pandemic response policy" (number 5 in Q1) addresses points 4a,4d and 4f in relation to the SAGE subcommittee on modelling (SPI-M-O).

My Independent SAGE colleagues are better placed than I to comment on points 4a, 4d and 4f more broadly. However, my impression is that there was a lack of public health expertise within SAGE, that the process of quite directed modelling and/or policy considerations provided by government constrained the usefulness of SAGE, and that there was a silo-ing of expertise. However, I want to emphasise that Independent SAGE reports and policy recommendations were on the whole in line with SAGE. Often we amplified their observations and suggestions, and took the step they were unable to (because of remit) of converting the observations into more concrete policy proposals.

On 4f, certainly it seems to me that government more often than not did not take the advice/recommendations of SAGE from the summer of 2021 onwards. There was also a noted failure to respond to SAGE recommendations in the autumn and winter of 2020, which resulted in very large – and deadly – waves of infection.

Q5 your views on lessons learned from UK Covid-19 response

5. Your views as to any lessons that can be learned from the UK's response to the Covid-19 pandemic, in particular relating to the work of SAGE and/or its subcommittees. Please describe any changes that have already been made, and set out any recommendations for further changes that you think the Inquiry should consider making.

Changes relating to SAGE

I cannot comment on any recent changes relating to the work of SAGE and/or its subcommittees since I don't know what they are. It is true that the minutes and membership of SAGE were made public shortly after the formation of Independent SAGE in May 2020.

I also note that there was no single UK response, with each home nation having different mitigations in place at different times.

Lessons not learned in overall England policy response

With **respect to the response in England in general**, I worry that important lessons on overall response to the pandemic have *not* been learned by government. Note that these are my opinion only and are not necessarily the considered view of Independent SAGE as a group.

In particular:

1. Rapid exponential growth in cases, particularly in the pre-vaccination period, required a rapid and determined effort to reduce transmission otherwise it would be too late to prevent downstream growth in hospital admissions and deaths. England (and many other countries) acted too late time and time again, particularly during the growth of new variants where we had weeks of warning that they

would cause problems. For instance, if cases are doubling every 4 days, waiting 2 weeks makes things about 8 times worse.

2. Effective, clear and consistent communication to the public about what was happening, what needed doing and why it needed doing (the SAGE SPI-B committee wrote many excellent reports on this which did not seem to be heeded)
3. Willingness to change tack in response to new evidence: for instance, early in the pandemic it was not thought that asymptomatic spread was important, we believed the disease was mostly transmitted via close contact or surfaces and we thought children didn't really get infected or spread Covid. All of these were wrong, and known to be wrong by the summer of 2020 but England never really got to grips with the realities of airborne spread (especially in supporting improvements in ventilation in public and private infrastructure), the importance of preventing transmission early (in pre-symptomatic or asymptomatic people) or the importance of effective mitigations in school setting for children. Another very important aspect here is Long Covid: as evidence of its prevalence and impact mounted, it was not included in mathematical models of the impact of spread and mitigation nor was it often mentioned by government in discussing its policy response. Ignoring Long Covid gives a much rosier view of the consequences of high community prevalence.
4. An over-reliance on technical or biomedical solutions while ignoring some basic public health measures needed for them to work. For instance, the early attempts for a contact tracing app and then a centralised contact tracing framework & then mass rollout of self testing while not putting in place adequate support to actually enable people to isolate if required (e..g proper sick pay, separate housing if needed, logistical support if needed (e.g. food deliveries, caring responsibilities, medicine deliveries); another example is an over reliance on the vaccines or treatments for Covid while not supporting them with other measures to reduce spread (and hence evolution of new variants for instance) such as home working, effective messaging on masks (and mask quality) and ventilation.
5. The importance of addressing fundamental drivers of health inequalities which exacerbate the impact of the pandemic. For instance, over exposure of certain groups (who are unable to work from home (key workers) and often work in unsafe environments (e.g. public transport/factories)); poor or overcrowded housing and unequal access to green spaces worsening exposure risks; poor existing health in deprived communities, increasing vulnerability; lack of sick pay for many, especially in the gig economy, worsening ability to isolate if sick or a contact.
6. Not supporting children learning in deprived communities so that educational gaps widened significantly during the pandemic. (Independent SAGE has covered some of the evidence around this in several briefings).
7. Learning from other country responses, particular SE Asia, where lockdowns were avoided and overall deaths have been far lower than in the UK (and much of Europe).
8. Building more spare capacity within the NHS – we went into the pandemic with a very lean and already overburdened and under-resourced health service and while the NHS response to the pandemic was in many ways heroic, it left behind a weakened, burnt out and traumatised service that has seen an ever worsening crisis since the summer of 2021. (e.g. see publications 13 and 27). The Independent SAGE briefings contain many examples of worsening and dangerous NHS pressures in 2022.
9. Treating a highly infectious disease as a problem of individual responsibility (particularly post 2021). We can only control our own risk to some extent – it also depends on the actions of others (e.g. people knowingly (or unknowingly) mixing when positive). Infectious diseases are a communal problem and so need a communal response including national level policy (improved sick pay; similar to e.g smoking bans or drink driving legislation) and infrastructure (to support cleaner indoor air). Note that this can and should still encompasses individual responsibility both to oneself and others. Additionally, advocating for personal responsibility but then removing the means for people to exercise that responsibility (through lack of testing and up to date information) is a little perverse.
10. The first lockdown was perhaps unavoidable (even if delayed), but the second and third ones were not and might well have been avoided with more effective public health infrastructure in place. We have not attempted to institute such infrastructure (or the mechanisms to rapidly scale up such infrastructure) since.
11. The UK instituted some of the very best surveillance in the world throughout the pandemic, from the various trials, the hospital data collection, to the UKHSA reports and dashboards, the ONS work and the genomics surveillance. However, often the implications of this surveillance seemed to be ignored (e.g. disregarding SAGE advice which was based on the use & interpretation of this data). Why?

Specific questions that I think the Inquiry could consider

As well as overall lessons, I believe there are important questions that the Inquiry should attempt to come to an answer to. Note that these are my opinion only and are not necessarily the considered view of Independent SAGE as a group. Below is a non-exhaustive list (in no particular order):

1. What was the role, membership and advice of the Joint Biosecurity Centre (JBC)? The JBC was set up in 2020 to provide "additional and complementary analytical capability" but its membership, exact remit, advice and minutes are either vague or not available (as far as I can see). Thresholds for action were never provided and how its work complemented or superseded the advice of SAGE is unclear.
2. Until the end of mandatory isolation in 2022, there were only ever three main symptoms given by the NHS and UKHSA to trigger testing for coronavirus: a fever, a new persistent cough or loss of taste or smell. In fact, as we've known since 2020, there are many more symptoms of coronavirus, particularly in the age of Delta and Omicron (e.g. sore throat, runny nose, nausea). Children in particular often suffer atypical symptoms. Not publicising these are likely to have led to undertesting throughout the pandemic. I note that once mandatory isolation on a positive test was lifted, the list of symptoms expanded (also here: https://www.gov.uk/guidance/people-with-symptoms-of-a-respiratory-infection-including-covid-19#symptoms-of-respiratory-infections-including-covid-19) Why did we not use many more symptoms much earlier to improve case ascertainment?
3. As evidence for airborne (aerosol) transmission became ever clearer during 2020 and early 2021, why was the advice for mask use not updated to recommend higher quality respirator masks (FFP2 or FFP3 grade) that provide better protection both for the wearer and others? Such recommendations were made in many other countries, including Germany, Austria and the US. Similarly, why wasn't it made much clearer through a public messaging campaign that a) surface cleaning was not sufficient and b) plastic face shields or plastic screens were much less effective than previously thought.
4. Why was there no national campaign to upgrade the air quality in schools during the lockdowns of Nov 2020, Jan-Mar 2021 or the summers of 2020 & 2021? Note that the Royal College of Paediatrics and Child Health released a report in January 2020 (pre pandemic!) about the importance of indoor clean air for children's health and learning. The benefits of such upgrades would have gone far beyond reducing Covid transmission.
5. Why did we design and spend billions on a Test and Trace service that a) didn't find enough people because we didn't explain the full symptoms of Covid or provide sufficient support to those needing to isolate (hence disincentivising testing); b) wasn't fast enough (needed to get contacts to isolate within 3 days of exposure to a case); c) never tracked effectively whether people actually isolated or not (*the* KEY performance indicator surely?); d) actually provided the support to enable people to isolate effectively, especially those on low incomes or in overcrowded or multi-generational households.
6. Why the emphasis on intensive care provision via the Nightingale Hospitals without a corresponding emphasis on reducing demand for intensive care by reducing transmission? Especially given that although beds could be built, trained staff could not.
7. How were testing labs accredited and monitored for quality, particularly relating to the Immensa Lab Scandal of September/October 2021?
8. The decision making of the JCVI around the vaccination of children: why was the UK so reluctant to offer children the protection of a vaccine?
9. Why was Long Covid and other long term sequelae of Covid infection (e.g. increased risks of heart attack or stroke) not better incorporated into decision making on pandemic response & mitigations?

Q6 description of documents we hold

6. A brief description of 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.

In the public domain:

- All Independent SAGE reports indexed by topic or date: https://www.independentsage.org/
- All Independent SAGE weekly numbers briefings: https://www.independentsage.org/category/weeklynumbers/ These might be useful for understanding the data context in which some key decisions were made from June 2020 to Feb 2022.

- My Twitter threads: https://twitter.com/chrischirp
- The academic and media articles provided in Q1 and Q3.
- A handy interactive timeline to our reports for 2020: https://www.independentsage.org/wp-content/uploads/2021/02/Timeline_IndieSAGE_v3-2.pdf .
- Another handy timeline of SAGE advice and Independent SAGE reports from January 2020 to July 2021: https://www.independentsage.org/wp-content/uploads/2021/08/IS-Timeline-Complete-1.pdf . This latter timeline is particularly useful for highlighting the common ground between Independent SAGE and SAGE and where the government did or did not follow SAGE advice.

Other documentation (all electronic)

- Slides of public Covid related talks I have given since 2020.
- An indexed Excel spreadsheet of all SAGE committee (and subcommittee) minutes, with link, date of meeting, topics discussed. This spreadsheet is very useful if wanting to search for all SAGE advice on a particular topic or within a particular timeframe.
- Clips of some (but not all) media interviews.