

Witness Name: James Rubin

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UK COVID-19 INQUIRY

WITNESS STATEMENT OF PROFESSOR JAMES RUBIN

I, James Rubin, will say as follows: -

1: Introduction:

- 1.1. I make this statement pursuant to the Covid-19 Inquiry's Rule 9 request of 20 January 2023.
- 1.2. The matters I set out within this statement are within my own knowledge save where I state otherwise. Where I refer to facts that are not within my own knowledge, I will give the source of my knowledge of those facts.

Background

- 1.3. I have a BSc in psychology (University of Bristol, 1998), an MSc in psychological research methods (University of Exeter, 1999) and a PhD in psychology as applied to medicine (University of London, 2003).
- 1.4. My area of professional expertise is in understanding how people think about, and respond to, major incidents and public health crises. I have worked in this area since 2005. As part of this I have studied how members of the public respond to infectious disease outbreaks. I had published around 30 papers prior to the COVID-19 pandemic relating specifically to psychological aspects of infectious disease transmission and have published nearly 60 papers relating to COVID-19.

1.5. My most important papers, based on the number of times they have been cited in other academic papers, are:

- (1) Brooks SK, Webster R, Smith LE, Woodland L, Wessely S, Greenberg N, Rubin GJ. The psychological impact of quarantine and how to reduce it: Rapid evidence review. *Lancet* 2020;395:912-920.
- (2) Rubin GJ, Amlôt R, Page L, Wessely S. Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: Cross sectional telephone survey. *BMJ (Online)*. 2009;339(7713):156 doi:10.1136/bmj.b2651.
- (3) Rubin GJ, Wessely S. The psychological effects of quarantining a city. *BMJ* 2020; 368. doi: 10.1136/bmj.m311
- (4) Rubin GJ, Potts HWW, Michie S. The impact of communications about swine flu (influenza A H1N1v) on public responses to the outbreak: Results from 36 national telephone surveys in the UK. *Health Technology Assessment*. 2010;14(34):183-266 doi:10.3310/hta14340-03.
- (5) Brooks SK, Dunn R, Amlôt R, Rubin GJ, Greenberg N. A Systematic, thematic review of social and occupational factors associated with psychological questionnaire response outcomes in healthcare employees during an infectious disease outbreak. *Journal of Occupational and Environmental Medicine*. 2018;60(3):248-57 doi:10.1097/JOM.0000000000001235.
- (6) Jarvis CI, Van Zadvort K, Gimma A, Prem K, MHHID Covid-19 Working Group, Klepac P, Rubin GJ, Edmunds WJ. Quantifying the impact of physical distance measures on the transmission of COVID-19 in the UK. *BMC Medicine* 2020; 18:124. Doi: 10.1186/s12916-020-01597-8
- (7) West R, Michie S, Rubin GJ, Amlôt R. Applying principles of behaviour change to reduce SARS-CoV-2 transmission. *Nature Human Behaviour* 2020 doi: 10.1038/s41562-020-0887-9
- (8) Sherman SM, Smith LE, Sim J, Amlôt R, Cutts M, Dasch H, Rubin GJ, Sevdalis N. COVID-19 vaccination intention in the UK: Results from the 'COVID-19 Vaccination Acceptability Study' (CoVAccS), a nationally representative cross-sectional survey. *Human Vaccination and Immunotherapy* 2021: DOI: 10.1080/21645515.2020.1846397
- (9) Allington D, Duffy B, Wessely S, Dhavan N, Rubin J. Health protective behaviour, social media usage, and conspiracy belief during the COVID-19 public health emergency. *Psychological Medicine* 2021; 51: 1763-9

- (10) Smith LE, Amlot R, Weinman J, Yiend J, Rubin GJ. A systematic review of factors affecting vaccine uptake in young children. *Vaccine* 2017; 35: 6059-6069 doi: 10.1016/j.puhe.2020.03.007

2: Governmental Scientific Advisory Committees and groups

2.1. Between 11 June 2009 and 21 January 2020, I participated in the following governmental scientific advisory committees or groups that were pandemic-related:

- (1) The Scientific Pandemic Influenza, Behaviour & Communications group (SPI-B&C, ex officio member: 2009-2010);
- (2) The Health Protection Agency / Public Health England Psychosocial and Behavioural Issues expert advisory subgroup (Emergency Response Development Group. Member 2011 to around 2013);
- (3) Cabinet Office Behavioural Science Expert Group for the National Risk Assessment (BSEG, member: 2012 to now);
- (4) Public Health England Scientific and Technical Subgroup preparing Exercise Cygnus (participant; 2013-14);
- (5) A short series of workshops on Planning Assumptions Relating to Workplace Absenteeism (2017);
- (6) NERVTAG (member: 2018 to now);
- (7) I also received some ad hoc requests for comment or advice during this period.

2.2. I provide summaries of my involvement below at paragraphs 2.5 to 2.88. Given that the period being discussed stretches back more than 13 years, my recollection of some events and how things operated may be limited. In some instances, I can see from my records that a meeting occurred, but I have no memory of it. In other instances, my records are incomplete.

2.3. Secondly, because I am a psychologist, I have therefore throughout this statement largely restricted myself to issues that relate to psychology or behavioural science.

2.4. Thirdly, during the period covered by Module 1 of the Inquiry (11 June 2009 to 21 January 2020), work relating to pandemics constituted a relatively minor part of my role. As an example, from 2009 to 2020 I co-authored 108 papers (excluding papers about COVID-19 which lie outside the Module 1 time frame). Only 12 of these directly related to pandemics and half of those were specific to the swine flu pandemic. Over

the same period, I published on, among other things: humanitarian relief efforts; flooding; Ebola; malaria; power outages; nuclear terrorism; mass casualty decontamination; terrorist shootings; cholera vaccination; dirty bombs; chemical spills; hurricanes; pneumonic plague and anthrax. I did not have a specific focus on the UK's preparedness for any one of these topics. This is not unusual. In writing this statement, I have found a 'lessons learned' document written in 2009 by members of SPI-B&C (and which I contributed to) {JR/1 – INQ000146414}. This makes the point, correctly in my view, that behavioural scientists are different to many other disciplines who find themselves caught up in advisory groups relating to pandemics. As the group explained:

"For most members of SAGE, the business of SAGE has considerable overlap with their day jobs. For behavioural and social scientists with relevant expertise, pandemic flu is only a small part of their everyday jobs."

- 2.5. To the extent that I engaged with planning for a pandemic, it was when asked to consider a specific, narrowly-defined issue.

SPI-B&C

- 2.6. In 2009, when the swine flu pandemic began, I was in the first year of a three-year post-doctoral Career Development Fellowship funded by the National Institute of Health Research (NIHR). The broad aim of my fellowship was to develop a new, generic questionnaire that could be used in a future incident to assess the beliefs people had about the agent, substance or pathogen in question. When the swine flu pandemic broke out, I thought that it would be useful to test the questionnaire by using it to look at understandings of the virus. I contacted the Chair of SPI-B&C, Professor Susan Michie, on 29 April 2009 to ask if my work might be helpful for the group. I also hoped to get the group's advice on my ideas. The main output from this work was published in the British Medical Journal {JR/2 – INQ000146415}. This paper noted that, in the early stages of the swine flu pandemic, only 37.8% of our sample of members of the public reported performing any of the behaviours that were being recommended by the Department of Health (DH).
- 2.7. After discussing possible research ideas (for example, exploring why people from specific ethnic minority groups were more likely to change their behaviour), I was subsequently seconded by King's College London to University College London to work as the post-doctoral researcher on a project with DH that Professor Michie was the principal investigator for. At the time, DH were conducting regular telephone

surveys with members of the public to assess their perceptions and behaviours about swine flu. The aim of the project was to add value to these data by conducting a further analysis of them to identify any trends within the data that might inform communications. My role was to analyse the data under the supervision of Professor Michie and another colleague, Dr (now Professor) Henry Potts, and to report back to DH and to SPI-B&C on the findings. The final report for this work concluded that uptake rates for protective behaviours, and likely acceptance rates for vaccination, were low and that more media and advertising coverage might have increased uptake {JR/3 – INQ000146416}. Several other academic papers also resulted from our work on the DH data:

- (1) A paper on likely uptake of swine and seasonal flu vaccines among healthcare workers, concluding that reasons for non-acceptance were similar in both groups (low perceived personal benefit together with safety and efficacy concerns) {JR/4 – INQ000146417};
- (2) A paper on predictors of influenza vaccine uptake, concluding that the main reasons for someone declining vaccination were concerns over safety and being generally healthy (this paper was produced after the pandemic, as part of the INFLUENCE project, which is described later) {JR/5 – INQ000146418};
- (3) A paper assessing levels of scepticism about emerging public health threats, which concluded that factual information alone is unlikely to engage people who are sceptical about the need to take action (this paper was produced after the pandemic, as part of the INFLUENCE project, which is described later) {JR/6 – INQ000146419}.

2.8. I believe we also provided reports on these data to DH. These were based on the drafts for papers referred to at paragraphs 2.7 and 2.7(1).

2.9. On 5 October 2009 I was invited to join SPI-B&C as an 'ex officio' participant, given my work on the DH survey data. I believe I participated in several SPI-B&C meetings in this role, I am not sure exactly how many.

2.10. Most SPI-B&C work focussed on responding to the ongoing swine flu pandemic, as opposed to preparing for a future outbreak. However, I did contribute to a SPI-B&C report produced in February 2010 on principles of effective communication that I believe was intended to be more forward-looking {JR/7 – INQ000146420}. This concluded that:

“Effective communication is important as it can influence how people react during a pandemic. Communication should be open and transparent, clear and simple and acknowledge the uncertainty inherent to a pandemic outbreak. When communicating the risk of developing the disease or complications it is important to give absolute as well as relative risk, use natural frequencies, frame ambiguous messages negatively and use visual representations where possible. Pre-event pandemic communication should be carried out with the public particularly where controversial options need to be raised and discussed.”

- 2.11. I am not clear what happened with this document after it was written, it may have subsequently been sent to SAGE for review.
- 2.12. As a result of my involvement with SPI-B&C, I was subsequently invited to deputise for Professor Michie at meetings organised by the DH's Pandemic Influenza Preparedness Programme to discuss the use and communication of data in a future pandemic. These took place in May and June 2010. I do not recall any details from these meetings, and my only recollection of the meeting comes from my notes {JR/8 – INQ000146421}.
- 2.13. I am conscious that Dame Deirdre Hine was asked by the Cabinet Office to produce an authoritative independent review of the UK response to the swine flu pandemic and that this was published in 2010 {JR/9 – INQ000146422}. I accompanied Professor Michie to a meeting with Dame Deirdre, where I provided oral evidence concerning the links between behavioural scientists and DH at the time of the response to the swine flu pandemic and discussed the idea of “sleeping” research protocols that could be developed in advance of the next pandemic and activated when required. I subsequently provided Dame Deirdre's secretariat with copies of reports at paragraph 2.7 and 2.7(1).
- 2.14. Members of SPI-B&C produced a lessons learned document towards the end of the swine flu pandemic which documented some of their experiences and I contributed to this {JR/1 – INQ000146414}. I believe this was sent to SAGE and also to Dame Deirdre. This highlighted lessons from things that had gone well as well as lessons from things that had not gone well. Among the things that gone well were the commitment of members and the Chair, funding provided for a part-time researcher embedded in the group, the excellent secretariat and the ability to respond to questions from SAGE and CCS. Among thing that had not gone well were time wasted in attempting to establish contact with DH Communications, the under-

- utilisation of SPI-B&C by DH Communications, lack of communication with the CMO, and lack of engagement by SAGE itself.
- 2.15. I would caveat the following opinions about the operation of SPI-B&C with a reminder that I joined the group part way through the pandemic as a junior ex officio member. As such I was not privy to all the ins and outs of its functioning or involved in much of the work.
- 2.16. In looking back on it now, I am struck that the group was heavily weighted towards psychology. Out of 15 full members, I believe there was one anthropologist, one sociologist, a general practitioner, two modellers and 10 psychologists. As an ex officio member, I was the 11th psychologist. This feels unbalanced. A broader view of behaviour could have been achieved from a wider disciplinary pool.
- 2.17. I did not have any real insight at the time, or now, into how the group received commissions.
- 2.18. I believe the group had intense periods of work at certain stages of the pandemic, which I think was to be expected. I don't recall any particular issues being raised about this in the meetings that I attended, but I suspect activity was highest in the early stages of the pandemic before I became a member. Teleconferences were a common format for meetings given the geographic spread of members. My recollection is that these could be difficult, but I was unfamiliar with having formal meetings in this way at the time, and I recall being nervous at presenting to high level figures in my discipline when I could not see them and get any non-verbal cues as to how what I was saying was landing. I suspect other, more senior members of the group found the set-up more amenable. I remember that a lot of work also took place by email during the swine flu pandemic. This has always been a default option for academics and it is a familiar way of working.
- 2.19. The group was active for about seven months, but I think was only very busy at the start. I don't recall the intensity of work being very substantial by the time I joined in October 2009, certainly not compared with more recent experiences during the COVID-19 pandemic. If anything, judging by the 'lessons learned' document, I think members felt they had the capacity to take on more work and would have been happy to do so. In fact, they felt underused and side-lined. For example, the paper notes that "*there were many questions that B&C was not asked by DH Comms or SAGE,*" "*there was very little time given by SAGE to considering issues discussed by B&C*" and "*none of the five research projects prioritised by B&C were funded by NIHR, leading to low morale and annoyance.*" Partly, I think that such complaints are

probably inevitable. It is rare to find an academic who does *not* feel that what any given problem needs is more input from their discipline. But with the benefit of hindsight, I do wonder what else underlay this feeling of not being sufficiently involved. My hunch is that there were two other factors at play. First, if DH Comms did not ask many questions of the group, it may have been because they could not see how academic principles at a relatively high-level of abstraction applied to the specific campaigns they were working on; specific suggestions, rather than general theories may have been what they were after. Second, perhaps they felt that they already had the academic advice that they needed and were happy to simply go ahead and apply it. In that latter case, I would count this as a win for an emergency advisory group. To be no longer needed in such situations is a sign of success.

- 2.20. I am not sure how members for SPI-B&C were initially recruited. In around June 2009, existing members were asked for suggestions for new members. I was proposed and, in July 2009, I was invited to submit my CV. I was then rejected. This implies there was a degree of quality control going on, because in fairness I was quite junior at the time. Whether there were other methods of choosing members also in operation, I do not know. When I was finally admitted onto the group in October 2009, this was at the direct request of the Chair on the basis that the data I was working on would be useful for the group to hear about, and care was taken not to badge me as a full member.
- 2.21. In terms of the resources and support that were available, the group had a three-person secretariat and funding was made available for an embedded researcher to work on reviews and help organise meetings, which I know the Chair found invaluable. Among other things, the researcher helped to develop some of the papers that were written by SPI-B&C into formal peer-reviewed publications. This includes a key paper that reviewed the academic literature on attitudinal and demographic factors associated with behaviour change during an infectious diseases outbreak that was submitted to SAGE as a report {JR/10 – INQ000146423} and then published in the peer reviewed literature {JR/11 – INQ000146424}. I think this is an important lesson that needs to be learned in general; because this paper was published in this way, it became indexed in medical databases, and it was therefore easy to find for future academics and policy makers. In 2020, one of the earliest papers I wrote for policy makers on behavioural science principles that might apply to the forthcoming COVID-19 pandemic was partly based on this evidence. By way of contrast, it was not until I was writing this statement that I came across the SPI-B&C paper on principles of effective communication {JR/7 – INQ000146420} which, as far as I

know, did not lead to a peer reviewed paper. I had completely forgotten that we wrote this until now. Had it been formally published, either I or someone else within SPI-B would likely have re-discovered it in 2020 and been able to make use of it. In my view, Government should actively encourage advisory groups to publish their work in the standard academic manner wherever possible, not just because peer review increases rigour (though this is important) but also because it makes the work discoverable.

- 2.22. My role on SPI-B&C was mainly to report on the DH polling data and to take away ideas for further analyses of it. I did not play a large role in pulling together advice papers. However, I would say that the published paper on demographic and attitudinal determinants of behaviour change in a pandemic that I referred to in paragraph 2.21 was particularly thorough and helpful in laying out the existing academic evidence base in the area. A standard metric within academia for whether a paper is seen as useful by others is how many times it is cited in other peer-reviewed papers. According to the scientific database 'Scopus,' that paper has been cited 700 times by other people, putting it in the top 2% of papers in its field.
- 2.23. I cannot really comment on the extent to which SPI-B&C worked effectively together with other groups, or the extent to which applicable structures and policies were utilised and/or complied with and their effectiveness. I do not have very much insight into these areas other than to refer back to comments made by the group at the time in the lessons learned document {JR/1 – INQ000146414}. I can see in that document that there is a particular frustration around interactions with SAGE, partly because discussions in SAGE rarely touched on issues of behavioural science and also because only a single behavioural scientist (the Chair of SPI-B&C) was allowed to attend.
- 2.24. I did not attend SAGE, but I do recall this latter point seemed particularly challenging for Professor Michie. From personal experience on other groups, I do sympathise with the point made in the document that "*it was therefore very difficult to justify such large amounts of time to sit through meetings, only a small part of which is relevant to their expertise and potential contribution.*" My personal view on this, however, is that sitting through complex technical discussions of genomics / modelling / immunology etc. is part of the job. It can indeed be challenging to sit through lengthy and detailed technical conversations that lie far outside your expertise, but occasionally an unexpected point will arise in such conversations where a behavioural science comment is useful.

- 2.25. Another point in the lessons learned document that *“The proposal of a deputy on SAGE was not accepted, leading to a large additional workload for the one behavioural scientist who was a member”* is also something I can sympathise with. This was one of the reasons why I found it very challenging to be sole chair of SPI-B in 2020 and why a system of three co-chairs was set up, with two people attending SAGE while one took a week off to try to catch-up with their day job. This also allowed us to deal with another issue from the lessons learned document, that *“a lone voice is not a reasonable representation of an important area of work (the other SPI sub-groups have more than one member on SAGE).”* Having two behavioural scientists present does allow a degree of cross-checking with each other and support for important points that would not have been possible with a lone voice.
- 2.26. In terms of the sustainability of SPI-B&C, I have noted that the group’s activity was diminishing by the time I joined and that there is a sense of frustration in the lessons learned document about this. Of course, the crisis phase of the 2009 swine flu pandemic was much shorter than for the COVID-19 pandemic, which meant that the necessity for the group to be sustained was also less pressing. Nonetheless, I do note that the document says that *“One member of B&C resigned considering that the work was not good use of his time, given the questionable impact, and time had to be spent dissuading a second member from resigning for the same reasons.”* This strikes me as an important point. Academics give up their time during a crisis because they are trying to be useful. If they are not being useful in a specific context, it is fine to simply say this. But if their work is helping, they need to have some kind of insight into how it is being used. The worst scenario is the uncertainty as to whether you are neglecting your students and your research grants, and burdening your colleagues who are having to shoulder your day-to-day work, all the while having little idea if your work is actually being read or influencing anything. This continues to be a challenge; a common complaint within SPI-B during the COVID-19 pandemic was the lack of feedback from Government on papers.
- 2.27. Academics attended SPI-B&C in a voluntary capacity and were not remunerated. I do not believe that directly remunerating the members would have been necessary; they were motivated to help, and an honorarium is unlikely to have changed this. However, I do believe that there is case to be made that the employers of the academic members should have been reimbursed.
- 2.28. While taking part in official committees, working groups, and so forth is an expected part of academic life, in normal situations this can be planned, and time commitments managed. Where a request suddenly arrives for an academic to ‘down tools’ in order

to work intensively on a Government-led initiative, this is a qualitatively different matter. Unless funding for backfill is provided, the implicit message is either that the academic is expected to work two jobs at once in order to fulfil all of the expectations that are placed on them, or that the University is expected to subsidise the work of Government by asking other members of staff to take over the academic's normal duties. I believe that in such situations, arrangements should be made, early on, for funding to be provided to the University for back-fill in order to relieve some of the pressure that the academic finds themselves under.

The Health Protection Agency (“HPA”) / Public Health England (“PHE”) Psychosocial and Behavioural Issues expert advisory subgroup (Emergency Response Development Group).

2.29. I have very little recollection of these meetings. I believe I attended five meetings – three in 2011, one in 2012 and one in 2013. I can see from a draft copy of the Terms of Reference that I hold that the group was supposed to:

- (1) assess the extent to which existing response plans incorporate a consideration of the likely psychological and behavioural consequences of incidents and outbreaks and advise on likely future development;
- (2) carry out periodic reviews to identify good practice and lessons identified from the management of the psychosocial and behavioural consequences of previous incidents (such as the vH1N1(A) pandemic or flooding);
- (3) inform and co-ordinate the preparedness and response processes of the HPA as they relate to the psychosocial and behavioural aspects of incidents and outbreaks;
- (4) in the event of a significant incident (IERP 3 or more), the group would form a Science Cell to provide social and behavioural science advice. This Science Cell would also help to co-ordinate access to HPA resources for external researchers in the behavioural and social sciences.

2.30. I believe the remit included discussion of a range of possible chemical, biological, radiological and nuclear risks, rather than having a specific focus on pandemics. I have included it here as I note that identifying lessons from the swine flu pandemic was mentioned in the draft Terms of Reference. If papers are available relating to this group, they can hopefully be obtained from the UK Health Security Agency

("UKHSA"). As far as I know, the group was never 'activated' to form a science cell for a significant incident.

- 2.31. In my opinion, the overall aim of this group was sensible. Providing support to PHE in these areas was sensible and would also have helped to increase their behavioural science capabilities. This would have helped during the COVID-19 pandemic when there was a demand for behavioural science advice on very specific issues. I am not sure why this group ceased meeting or, more likely, evolved into another format. I suspect that an absence of resources would have factored in. There is a limit to what can be achieved in a few two-hour meetings and some of the aims of the terms of reference seem more appropriate to a commissioned research project than an advisory group. For example, "periodic reviews" requires someone able to commit many hours, weeks or months, to conducting the review. Assessing if a response plan considers likely psychological and behavioural consequences also ideally requires a detailed piece of work. I suspect (but cannot remember for sure) that a combination of high ambition and limited resource will have been an impediment to this work. I would also note that research projects on some of these topics were set up during this period, led by members of this group. I mention some projects later in this statement that sought to "identify good practice and lessons identified" from pandemic responses, and I have been involved in others that have done the same for flooding (the other example mentioned in the ToR). This reinforces my view that these matters are best addressed as funded projects in their own right.
- 2.32. In terms of the composition of the group, I can see from the meeting invites that the group was primarily composed of HPA / PHE personnel with an interest in this area (10 members), five members of King's College London (including me) and one external member. This clearly lacks diversity in terms of the range of institutions involved, so much so that I have a feeling that these meetings were really a venue for an ongoing and highly productive collaboration between HPA / PHE / UKHSA and King's College London that began with our joint work on reactions of the public to the terrorist attacks in London on 7 July 2005 and continues now in the formal partnership that underlies the NIHR Health Protection Research Unit in Emergency Preparedness and Response, a unit that is jointly run by PHE / UKHSA and King's College London. It strikes me that formal Terms of Reference for the group may not have been needed (and I note that I only have a copy of them in draft form). I am not sure how much of a formal advisory group this really was in practice. I do not recall any advice or recommendations being given.

2.33. It is worth noting that this group was adept at beginning work at very short notice in an emergency, but that this was in the context of rapid turnaround research projects addressing specific questions that could then be used to inform the ongoing response or to shape the response to a future incident, rather than by meeting as an advisory group. Examples from 2011 to 2013 in which members of this group collaborated to conduct research on emergency responses included assessing the impact of the Fukushima nuclear meltdown on British nationals in Japan and on Foreign and Commonwealth Office staff and exploring the nature of “secondary stressors” following a disaster. This work was resourced through external research grants. For example, our work on Fukushima formed the final part of my post-doctoral research fellowship described in paragraph 2.6. Because studies of this kind are a core part of our research work, they are valued by our employers and actively supported by research funding arrangements, making them sustainable.

Cabinet Office Behavioural Science Expert Group

2.34. I have been a member of the Cabinet Office Behavioural Science Expert Group (BSEG) since 2012. I was invited to join the group due to my interest in public responses to a wide range of disasters and major incidents. The group meets infrequently, but I do not have exact numbers.

2.35. The main role that I have performed is to assist in scoring a range of scenarios given to us by the secretariat that might pose a risk to the UK in terms of their impact on “public perception.” This informs the National Security Risk Assessment, which is summarised in the public-facing National Risk Register.

2.36. In 2014 I co-authored a document on how the scoring of public perceptions might be improved in relation to pandemics {JR/12 – INQ000146425}. In reviewing the paper now, and bearing in mind that its specific purpose was to inform scoring for the National Security Risk Assessment, I do not believe there is anything substantive in it that I would change. This paper made the case that:

- (1) Identifying risks to prioritise by taking high public worry and outrage as the only key psychological metrics worth considering missed the fact that how people are likely to behave may be more relevant;
- (2) Pandemics are not all alike – public responses will differ depending on how severe the pandemic is perceived to be;

- (3) Scoring the likely psychological impact by only considering the start of the outbreak (as then envisaged) overlooked the fact that people's responses change over time;
 - (4) Population subgroups needed to be considered – a substantial psychological impact in a relatively small section of society should be considered in the scoring;
 - (5) Using data on how the public responded to the swine flu pandemic might be a useful guide to a 'lowest bound' for public reactions to a pandemic, given the relatively limited reaction by members of the public.
- 2.37. In 2016, I contributed to a document for the group that outlined the wide range of different behaviours that can be observed during a crisis {JR/13 – INQ000146426}. This note made the point that there were many potentially relevant behaviours that could be considered during a disaster, from delayed evacuation during a building fire to discrimination against migrants.
- 2.38. I believe BSEG functioned, and continues to function, effectively as a way to provide psychological input into scoring of the National Security Risk Assessment.
- 2.39. The composition of the group has changed over time and I do not have an up-to-date list of members, but over the time I have served on it, it has included people from academia, industry and the civil service with expertise in health and social psychology, health protection, cyber security, emergency planning, risk management, criminology, community resilience and psychiatry. Given the wide range of risks that can be discussed, a breadth of expertise is important. The group are not London-centric, though we are not particularly diverse in terms of ethnicity, which is a limitation.
- 2.40. The scenarios that the group are asked to review in each meeting are determined by the secretariat. I am not sure how that process works, except that members do not really have a say in what we look at. This is fine from my perspective, I am happy to trust that there is a process at play that I do not need to know the details of. There can be a challenge in this process in that, where the details of a scenario are revealed on the day, there is little chance for academics to search the literature to identify parallels to base their views on. In practice, I doubt this is a particular problem, however. Scoring guidelines are quite straightforward and I personally don't find them too difficult to apply.

- 2.41. Given the limited number of meetings each year, keeping participants engaged in the process seems to be unproblematic. Members do come and go, however, perhaps reflecting the pressures of work in their day jobs. A natural turn-over is probably helpful in ensuring that fresh eyes and perspectives are then brought to bear as new members are recruited to replace them.
- 2.42. I am not clear on how recruitment to the group works and have not been involved in that process. I think I was invited by the Chair, Professor Brooke Rogers, who I work closely with and who is aware of my interest across a broad range of emergency scenarios.
- 2.43. The group does not have a function during an emergency and so issues around its ability to commence work at short notice or the sustainability of the group during a long-duration incident do not apply.
- 2.44. The advice given by the group predominantly consists of our scoring of specific scenarios. I can't remember any occasions where I have been particularly troubled by any decision. The group has previously challenged the scoring criteria themselves, however, and was encouraged to develop alternative recommendations in a series of papers. The paper discussed in paragraph 2.37 was one of these. My understanding is that these suggestions were taken on board by the secretariat.
- 2.45. Members are not remunerated. Indeed, there was an unfortunate decision at one point to decline to reimburse travel expenses to members. Some colleagues understandably drew the line at paying out of their own pocket in order to provide advice to the Government and ceased to attend meetings. I think the lesson here is simply that it is important to remember that academic members are volunteers for such activities and are not Government employees.

PHE's Scientific and Technical Subgroup

- 2.46. On 14 October 2013, I was invited by Vanessa Middlemiss (Exercises Manager, PHE) to be a member of PHE's Scientific and Technical Subgroup preparing the scenario for Exercise Cygnus, a cross-government pandemic simulation exercise.
- 2.47. This group provided advice to PHE's exercises team as they were preparing material for use in Cygnus. I believe I attended three meetings, but I am not certain. My input was limited and involved identifying what communication and behavioural science activity would probably be occurring at given points in the exercise scenario. For example, I suggested that, based on experience from the swine flu pandemic,

Cygnus could describe that DH polling had been initiated and was identifying low levels of public worry in the early stages of the exercise scenario {JR/14 – INQ000146427}. I was not invited to attend the exercise itself, either as a player or an observer and did not give any feedback on the output.

- 2.48. My impression of the technical subgroup was that it was predominantly focused on getting the modelling correct; there was relatively little call for my input. I recall being surprised at just how much detail the modelling seemed to require. However, if issues such as the procurement of countermeasures hinged on this, then it might well make sense, and if several meetings are required to check this then so be it. I cannot really comment on whether the group met its aims of helping PHE produce a realistic scenario for Cygnus overall, but from my perspective, I seem to recall thinking that the commentary in the scenario around public responses seemed realistic.
- 2.49. I believe some members of the technical subgroup met in person with additional teleconference facilities being provided, which I made use of. Teleconferencing can be tiring over a long meeting, particularly one involving in-depth modelling discussions, and it might have been better not to have this option and to require people to attend in person.
- 2.50. Following on from my involvement in the Scientific and Technical Subgroup, I was asked by a colleague at PHE to assist in reviewing DH's pandemic flu communications plan. This occurred in 2016 and included input from a group of behavioural scientists. Although it had Terms of Reference, this group was a fairly informal arrangement in practice, in which the team working on the INFLUENCE research project (see below) volunteered to provide input to the relevant DH team, with the PHE lead for the INFLUENCE project initiating the idea and acting as the go-between.
- 2.51. It was mainly run remotely, with individuals feeding comments directly back to the organiser, Professor Richard Amlôt. The communications plan involved a core document and various proposed template messages that could be used. As a group, everyone was invited to comment on the core document and on one template. I have exhibited a note prepared by Professor Amlôt regarding the first (and possibly the only) teleconference for this group {JR/15 – INQ000146428}. This recorded our conversation about the Terms of Reference, initial comments from the group, a proposal that a short guide to effective communication would be a good idea, and conversation about a future meeting that I do not think ever happened.

- 2.52. I was unable to provide comments on the plan and did not see the individual comments provided by others. However, I was later asked by Professor Amlôt if I had any comments on some notes he was planning to send to DHSC relating to communication objectives and methods for obtaining relevant data.
- 2.53. Professor Amlôt has kindly re-sent to me the email of 3 October 2016 containing my brief comments {JR/16 – INQ000146429}. I suggested he: reorder two points in order to place “*promote hygiene and infection control measures to the public*” ahead of “*provide information and reassurance to maintain public confidence*” in terms of importance; include objective measures of the impact of communications (e.g. monitor the number of in-person visits to GPs, vaccine uptake data etc); and measure the number of visits to the National Pandemic Flu Service website and the rate of collection of authorised antivirals as further metrics.
- 2.54. My point about deprioritising reassurance in relation to promoting behaviours to protect health stemmed from a concern that the response of Government to any disaster is often “we need to reassure the public,” I assume because of worries that the public will not be able to cope with, or will somehow over-react to, bad news.
- 2.55. Specific reassurance can be appropriate when anxiety is disproportionate to the objective level of risk. However, it is often better to simply focus on conveying the genuine level of risk that people face and the actions that they can take to protect themselves and their loved ones, rather than assuming that “reassurance” is always needed or beneficial. Reassuring messages can appear glib during a disaster and affect trust if they play into a stereotype that “the Government just wants to avoid panic in order to protect the economy.”
- 2.56. Attempts to reassure people while simultaneously urging them to take actions that are needed to save lives can also present confusing mixed messages. Where levels of concern are already broadly appropriate or where they are low, reassuring people further will also reduce their motivation to engage in protective behaviour. In short, reassurance *might* be a good idea, but this should not be assumed. A better objective for communications is simply to be clear with people about the genuine risks that they face and what actions they need to take.
- 2.57. The final report for Cygnus places a surprising amount of emphasis on evaluating communications in terms of whether or not they are reassuring {JR/17 – INQ000146430}. For example, Lesson Identified 10 in the report is that “*Pandemic communications plans should be developed to ensure that they provide necessary reassurance, provide adequate levels of information to the public across the UK and*

are tailored for specific policy interventions when required." I note that the brief description in the report of the focus groups that accompanied the exercise is consistent with my concerns; members of the public in those groups saw inconsistencies between reassuring messages about carrying on as normal while hospitals were cancelling planned surgery, and they also assumed that *"the truth is being covered up,"* No mention is made of a desire by participants in those groups for reassuring messages. I also note that the Cygnus report states that *"there was no evidence that the possible reaction of the public was factored into some of the key decisions taken, and communications strategies used, by participants during the exercise"* and that *"the exercise Cygnus scenario and the responses of participants during the exercise were based on unsubstantiated assumptions about the reaction of the public to a pandemic of this magnitude."* This makes the assumption that the public will inevitably need reassurance even more perplexing. In 2018, while looking for source material for another project, I received a copy of the Cygnus report from Professor Amlôt in PHE. I can see from my reply to him that this line in the report caught my eye at the time *"Health messaging at the national level within England failed to provide specific advice to the public or responding organisations"* and that I was surprised at *"such a lot of emphasis on reassurance!"* {JR/18 – INQ000146431}.

- 2.58. In my view, placing further emphasis on the focus groups as a way of evaluating the communications would likely have been informative. Whether additional work along these lines was conducted at some stage by DH / DHSC in order to test their planned messaging I do not know but testing pre-prepared emergency communications in such a way is a useful step in ensuring that the public's questions are being appropriately addressed.
- 2.59. I think the composition of the group brought together to provide feedback on the communications plan would have benefitted from more academic diversity, as the collaborators on the INFLUENCE project were largely psychologists. Similarly, asking participants to provide individual feedback on only one template was not the perfect method. Ideally, we would have had a multidisciplinary group reviewing each one. However, there was a degree of pragmatism at play here. The academics might simply have declined if asked to take on a large volume of duties (reviewing every aspect of the plan and having several meetings).
- 2.60. Adopting a suboptimal approach and getting some feedback may have been better than trying, and failing, to convince academics to sit on 'yet another committee.' However, it should still have been possible to cast the net wider and pull in more views. I will return to this point later in my statement; I believe that had a more

general, standing group existed that was able to advise Government on issues of behavioural science relating to emergencies, such a group might have been commissioned to support the review of the communications plan and could also have supported the Cygnus technical team.

Workshops on Workforce Absenteeism

- 2.61. I was invited to join two roundtable meetings organized by the Government Office for Science to review planning assumptions related to workforce absenteeism during a flu pandemic. These meetings were held on 19 June and 9 October 2017. The 19 June 2017 meeting consisted of preliminary discussions to scope out the issue {JR/19 – INQ000146432}. The report of the 9 October 2017 meeting notes that discussions were undertaken on a literature review of absence length, planning assumptions around caring for children and the elderly, staffing required for critical national infrastructure, various modelling issues, discussion of a behavioural science subgroup of NERVTAG, discussion of a BBC app, and options for future work {JR/20 – INQ000146433}.
- 2.62. My main input in these meetings was to discuss the issue of presenteeism as a particular issue; that is, people attending work despite being ill. I shared some correspondence about this issue with others on the group {JR/21 – INQ000146434 & JR/22 – INQ000146438} and I subsequently asked my team to produce a systematic review of the academic evidence on this issue {JR/23 – INQ000146440}. This concluded that presenteeism is common and might be tackled by improving workplace cultures and sickness absence policies.
- 2.63. An action from the 9 October 2017 meeting was for “*GO-Science to liaise with James Rubin (KCL) and Brooke Rogers (KCL) on whether a behavioural science [group] should sit in SPI-M or NERVTAG.*” Professor Rogers and I, together with Professor Amlôt from PHE who also attended the meeting, proposed via email a list of possible people who might join such a group. We were advised by the secretariat at GO-Science that NERVTAG was currently recruiting a behavioural science expert, who could then be tasked to convene and lead an external sub-group to consider specific behavioural questions {JR/24 – INQ000146441}.
- 2.64. I was also invited to attend a follow-up meeting relating to absenteeism trade-offs involved with closing schools during a flu pandemic on 5 February 2018, but I was unable to attend it due to a fault with the teleconference facility {JR/25 – INQ000146442}. I have provided the note of the meeting {JR/26 – INQ000146443}.

- 2.65. Most invitees to the workshops, aside from civil servant representatives from various government departments, were epidemiologists and modellers. There were three behavioural scientists. I am not sure how the invite lists for these type of meetings are decided by the organisers within Government. I think the most obvious missing group were representatives from industry / occupational health. Issues around absenteeism or presenteeism could be well informed by insights from these groups.
- 2.66. Having a tightly focused topic of conversation was useful, and helped me (and I suspect others) to see a direct way in which additional research might help policy colleagues (e.g. producing a review paper on the factors underlying presenteeism which was drawn on several years later during the COVID-19 pandemic). I don't recall there being any specific resource or support made available to pursue such research, but this would be unnecessary. Small pieces of interesting work can often be done as part of the day job (as long as they can be published via the standard peer-reviewed route, and hence count as an easy-to-cite output from a university's point of view). For larger pieces of work, standard routes already exist to obtain funding, and being able to explain to a funder that there is a clear need for the work within Government can be helpful in making a funding bid more competitive.
- 2.67. The fact that the workshops were clearly time-limited was also useful; this was a specific task, and not an ongoing committee and this provided extra clarity around the ask. Although most members were likely to be involved in any future pandemic response in some role, it would not be in this group. Issues around sustainability did not apply. Similarly, given the limited time-commitment needed for these meetings, inviting academics to attend as part of their day jobs, rather than offering remuneration, is entirely appropriate.
- 2.68. From a psychology perspective, the advice given in the 19 October 2017 note seems sensible, bearing in mind its brevity. It notes the importance of presenteeism as a key risk, that different factors for this will be present in different sectors, that a severe pandemic might cause higher anxiety and result in qualitatively different behaviour to the 2009 swine flu pandemic, that firms would need advice that is biological and behavioural to reduce the risks of presenteeism, that elderly people do not necessarily see themselves as vulnerable and are often carers (both of which might place them at greater risk), and that behaviour is nuanced. All of these points seem correct to me. It also notes that closing schools will cause "*strong views on both sides.*" I can see two things that are missing, however. First is a discussion of school dismissal, rather than closure; that is, sending large sections of a school community home while leaving the school open for those children who benefit most from

attendance. This is what happened in practice in the COVID-19 pandemic. The second is the attitudes of parents towards school attendance during a pandemic, which might have touched on the likelihood of parents withdrawing their children even in absence of a closure. In October 2019 my team took on a PhD student with a particular interest in how to reduce the transmission of infectious illness within schools and this put us in a good position to produce a rapid review of evidence in the area of behavioural science and school closures in February 2020. We were not familiar enough with the literature to do this in 2017, but we (or others) could have become familiar with it if given the task.

NERVTAG

- 2.69. I was approached by the NERVTAG secretariat in November 2017 to see if I was interested in applying for the behavioural science role on the committee, but I declined on the basis that I was too busy with my full-time university job.
- 2.70. When the role was advertised again in 2018, I took the view that it was important for someone from the field of behavioural science to do this, and so I applied, and was appointed in September 2018 in tandem with a colleague who had applied for a social scientist role on the group. A tasking to set-up an external behavioural science group (as per paragraph 2.63 above) did not materialize.
- 2.71. Between my appointment to NERVTAG in September 2018 and the end of the Module 1 date range (21 January 2020), I believe that I attended six NERVTAG-related meetings. These were:
- (1) Two normal NERVTAG committee meetings on 12 December 2018 and 17 June 2019. I also attended a NERVTAG meeting in response to the COVID-19 pandemic on 21 January 2020 which I believe falls under Module 2 of the Inquiry;
 - (2) Two joint meetings with the Joint Committee on Vaccination and Immunology (JCVI) Influenza subgroup on 3 June and 9 September 2019;
 - (3) Two meetings relating to the National Pandemic Flu Service clinical algorithm on 15 April and 24 July 2019.
- 2.72. In the two regular NERVTAG meetings, I can see from the resulting notes that my input related to providing advice on how to prevent members of the public from picking up dead birds, highlighting the need for ethical experts to be involved in reviewing clinical guidance for pandemic influenza, and highlighting that rapid testing

- for pandemic influenza might be helpful in preventing people undergoing quarantine unnecessarily but might lead to added demand at locations where the tests are available {JR/27 – INQ000146444 & JR/28 – INQ000146445}.
- 2.73. I do not recall any particular behavioural science points arising in the JCVI meetings and have not seen any in the notes {JR/29 – INQ000146446 & JR/30 – INQ000146447}.
- 2.74. I do not have the notes for the meetings on the National Pandemic Flu Service clinical algorithm and do not remember these meetings. I have a record of the agenda {JR/31 – INQ000146448}.
- 2.75. I missed the first COVID-19 related meeting of NERVTAG on 13 January 2020, as I was interviewing applicants for our medical school all day. I recall sending an email to the group ahead of this focusing on the lack of evidence about 'public reassurance' from screening at airports and the possible adverse effects of screening (e.g. stigma). I do not have a copy of this email, but I raised a similar point in the meeting of 21 January 2020 which appears as point 4.5 in the minutes: *"JR noted that while he was not aware of any evidence that port of entry screening provides public reassurance, there could be a negative outcome of stigma for those who were screened. This would need to be considered."* {JR/32 – INQ000146454}
- 2.76. By the time of the COVID-19 pandemic, I had only attended two normal NERVTAG meetings. However, I was impressed with the organisation of the group and the calibre of the members.
- 2.77. The group was composed of experts in their fields, with a broad and, as far I am able to judge, appropriate range of expertise. It included experts in emerging infectious diseases, virologists, modellers and epidemiologists, a behavioural and a social scientist, respiratory physicians and experts in acute medicine, a consultant in public health, an expert in paediatric respiratory medicine, as well as co-opted members with expertise in pandemic influenza preparedness, animal influenza and infection control.
- 2.78. The group takes requests for advice primarily from DHSC and PHE / UKHSA. Often these are in the form of a request to review an existing policy in light of a specific new development, with a member from the relevant team attending to talk through the issue and take questions. Questions to the group were usually clear, and the group always provides a thorough view. These questions tend not to have a specific behavioural aspect to them (notwithstanding the first question I was asked on joining the group re asking people not to pick up dead birds). I, and my social science

- counterpart Professor Robert Dingwall, tended to have less input in addressing requests for advice – the finer points of modelling, genomics and medical countermeasures are a long way outside my expertise. However, having a behavioural and social science component on the group seems sensible for when needed.
- 2.79. During the time period between my joining NERVTAG and the end of the date range for Module 1, NERVTAG was required to meet at short notice only once. This was on 13 January 2020, to discuss the developing situation in Wuhan. As I have noted, I was unable to re-arrange my medical student interview commitment in order to attend, but I can see from the minutes of that meeting {JR/33 – INQ000146455} that it was attended by 10 members. Although outside the date range, the ability of the group to meet at short notice is also well-illustrated during the COVID-19 pandemic, when short notice meetings occurred, and were well attended, on several occasions (e.g. an urgent meeting on 23 December 2020 to discuss the emergence of a new variant in South Africa, attended by 15 members). Prior to the pandemic, NERVTAG meetings were in person by default, with a teleconference option. However, the group moved to teleconference by default in the early stages of the COVID-19 pandemic with relatively little difficulty and has since moved to Zoom / Teams by default and, again, this seems to work well.
- 2.80. Because the group was not activated for an emergency response except at the very end of the Module 1 date range, I do not have any particular comments about the length of its activation, frequency of meetings during the activation or sustainability over a long activation. Clearly, however, NERVTAG was active for an extended period during the COVID-19 pandemic. In Section 3 of my statement below, I will make some comments on possible lessons about Governmental preparedness for lengthy activations of advisory groups which apply to NERVTAG and other groups.
- 2.81. As noted, my post on NERVTAG and the social science post were advertised, and I was only appointed after submitting an application and having a formal interview with a three-person panel. I know that a similar process happened for the social scientist post that was advertised at the same time, and I believe a similar process is in place for other posts. This is the most rigorous process I have been through for any Government advisory group that I have been involved with. Given the 'seniority' of NERVTAG as a formal advisory committee, that members are appointed for three years, and that it is a standing committee that meets during non-emergency periods and therefore has time to appoint members in this way, this seems like a very good process.

- 2.82. In terms of resources and support, NERVTAG has an excellent secretariat, but I do not believe other resources are available. I am not sure any were required however.
- 2.83. As noted, only limited behavioural science advice was given by NERVTAG during my tenure in the Module 1 date range, the most substantive point being around advice to DHSC and others on how to discourage members of the public from picking up dead birds. The advice was noted in the minutes of 12 December 2018 and related to a recommendation that DEFRA review its website content about this, and that awareness-raising activities be conducted with groups and societies who might be specifically at risk of contact with dead birds and who I was given to understand sometimes handle them in order to identify them and / or alert Government agencies. This does seem proportionate given the situation at the time. I am not sure what actions were taken based on that advice. In terms of other advice given by NERVTAG in the pre-COVID-19 meetings that I attended, to the extent that I am qualified to say, I am not aware of any advice that strikes me as particularly controversial or problematic. The first COVID-19 meeting of 13 January 2020 falls within the Module 1 date range; given the limited evidence available at the time, the advice within that seems reasonable to me. The advice in the minutes {JR/33 – INQ000146455} not to use port of entry screening is based on prior evidence relating to the likelihood of someone developing symptoms during their flight and assumes that people who are already symptomatic would be prevented from boarding in the first place. The minutes are clear about the importance of there being point of departure screening and it seems from the post-meeting note that this issue was specifically followed-up on. The added advice by the committee to ensure that information is given to arriving passengers is sensible.
- 2.84. On 22 November 2018, the NERVTAG secretariat asked me for comments on a briefing that DHSC was due to give to “the Permanent Secretary” on “who should be aware of pandemic preparations and what should they know, and the rational for not communicating public health messages outside of a pandemic situation” {JR/34 – INQ000148481}. I can see that I offered to provide some quick comments, and that I noted that some of the material to be used in the presentations pre-dated the 2009/10 pandemic was likely out-of-date, but I do not seem to have a copy of any comments that I then provided.
- 2.85. NERVTAG members attend in a voluntary capacity. When discussing SPI-B&C (paragraph 2.27), I commented on the need for payments to be made to the employer in order to provide for backfill during any long-lasting duration. Those comments apply equally to NERVTAG.

Ad hoc requests for comment or advice

- 2.86. In addition to formal scientific advisory groups, I have occasionally been asked for advice or comment on topics outside of these groups.
- 2.87. In November 2015, I was asked by the then Director of my research unit (Professor Simon Wessely) to provide some text for a chapter he was writing for an official document on communicating with the public during a crisis. I was asked to give some wording using the swine flu pandemic as a case study. I am not clear where the paragraphs I provided then went and was not fully sighted on either the original brief or the final version. Further information on this is hopefully available from the Government Office for Science.
- 2.88. In 2017, I was asked by Professor Amlôt at Public Health England whether I could think of any evidence "*off the top of your head*" about stockpiling ('panic buying') in the context of a pandemic. This was to feed back to ongoing work at BEIS. I replied that "*nothing immediately springs to mind I am afraid.*" {JR/35 – INQ000146456}

3: UK's pandemic planning, preparedness and resilience

- 3.1. With respect to the general state of the UK's pandemic planning, preparedness and resilience at the time the Covid-19 pandemic struck, I would make two points in relation to behavioural science preparedness. First, I believe there was insufficient capacity within PHE in this regard. Much of the benefit from behavioural science arises from careful analysis of specific issues, leading to specific recommendations. For example, why might vaccine uptake be low in one specific community within the UK, or how effective are the information posters at airports, or what issues are limiting the ability of workers within a given industry to adhere to self-isolation guidance? Assessing these issues, and providing specific, useable advice requires an experienced workforce that can be quickly deployed. In early 2020, there were excellent examples of behavioural science expertise within PHE, but the number of people who had that expertise was limited. Many behavioural scientists who were within PHE at the time were employed on short-term contracts funded by specific research projects. This has now changed. There is a substantially larger behavioural science contingent within UKHSA, with links to academia in many cases. This is a positive movement which will allow a better response to a future major incident, and I hope it is maintained.

3.2. Second, I believe a case can be made that a standing behavioural advisory group for emergencies should have been in existence before SPI-B was rushed into being in February 2020. Such a group nearly came into existence on several occasions. SPI-B&C could have been the nucleus for it but was disbanded when the swine flu pandemic ended. BSEG has many of the necessary skills but has a tightly-focussed remit. The PHE Psychosocial and Behavioural Issues expert advisory group came close but had a limited membership and was more a collaboration between two teams than a formal advisory group. And while a behavioural science subgroup to NERVTAG was mooted, this would have been infectious disease-specific. In my view, an advisory group in this area would work best if it had sufficient expertise to consider a broad range of scenarios. Some behavioural science questions that policy makers might ask are relatively generic across different types of crisis (e.g. “will people riot,” “how do we best convey urgent information”). While specific answers may be required during the incident, identifying, agreeing and publishing the principles and evidence base that would underlie these answers can be done in slower time. Having a broader remit than infectious diseases would also allow such a group to remain busy whereas having no work to do would likely lead to a loss of motivation for the experts involved. Solely in terms of infectious diseases, over the time period of Module 1, such a group could have been called on to provide advice on:

- (1) The review of the Cygnus scenario and DH communications material (paragraph 2.47 & 2.51);
- (2) Issues around absenteeism and presenteeism during a pandemic, including school closures (paragraph 2.61 & 2.64);
- (3) Ways to discourage members of the public from picking up dead birds (paragraph 2.72)
- (4) Issues around the provision of information at ports of entry (paragraph 2.75)
- (5) Generic ways of communicating with the public during a crisis (paragraph 2.87)
- (6) Issues around stockpiling during a pandemic (paragraph 2.88)

3.3. I am also conscious that during the West African Ebola outbreak in 2014, SAGE received advice from experts in anthropology and a standing behavioural science group might also have been useful in this context.

- 3.4. Outside of infectious diseases, over the time period of Module 1, the UK also needed to react to: episodes of severe flooding; the impact of the Fukushima nuclear reactor meltdown on British Nationals in Japan; the Salisbury Novichok incident; multiple terrorist attacks; major rioting during 2011; and contingency planning in relation to events such as the 2012 Olympic Games. Behavioural science input for such events tends to be organised with approaches to individual experts. A single group could facilitate this, provide a degree of support to those experts, and allow a wider range of perspectives to be brought to bear. It would also allow a formal recruitment process to be in place, including terms of reference, agreed ways of working and monitoring for diversity.
- 3.5. I do not believe such a group would solve everything Individual experts will always need to be identified in a hurry when an unexpected incident occurs. It is also important that any such group does not detract from the important work of in-house behavioural scientists within Government departments and agencies. However, I believe it is worth consideration.
- 3.6. With regards to whether the groups discussed in Section 2 of my statement succeeded in their aims, I believe that they broadly did. The role of SPI-B&C was primarily to respond to the swine flu pandemic rather than to prepare for a future pandemic, and much of its work in that regard occurred before I joined. However, the papers it produced and published on demographic and attitudinal factors influencing behaviour were thorough in setting out the state of the science and useful during the earliest stages of the COVID-19 pandemic in acting as a baseline for what was known on this issue up to 2010.
- 3.7. BSEG's role in terms of preparedness is constrained to scoring specific risks in terms of their likely psychological impact, which are then incorporated with the views of other expert groups to produce a consolidated risk assessment. The paper we produced on the likely risks of a pandemic in terms of psychological impact (paragraph 2.37) recommended appropriately high risk scores.
- 3.8. The PHE Scientific and Technical Subgroup for exercise Cygnus was tasked with supporting development of a realistic exercise scenario. I cannot really judge the modelling aspects of this, except to say that a great deal of effort and discussion was put into it. From my perspective, the scenario already seemed good and I had little input. I did not particularly follow what happened in relation to Cygnus once the work of the subgroup was over, but I am not aware of any particular scientific flaws in the scenario. From my perspective, the workshops relating to workplace absenteeism

were particularly useful in raising the linked issue of presenteeism; this led to additional work in that area, including a systematic review on the topic that was then used by advisory groups during the COVID-19 pandemic. NERVTAG provide clear advice on a range of issues to Government, including in its first emergency meeting about the developing situation in Wuhan in January 2020. The advice was evidence-based and prompt.

- 3.9. The one exception to this list is the PHE Psychosocial and Behavioural Issues expert advisory subgroup. As noted, I have only limited recollection of this. But if the draft Terms of Reference that I have for the group were formally adopted, I am not sure if we fully met them. As I have noted, I believe some of the aims were more suited to a research collaboration than an advisory group, and indeed many of the members were research collaborators. I think formal ToRs were possibly unnecessary.
- 3.10. In terms of what was done well in relation to the UK's pandemic planning, preparedness and resilience, I would particularly highlight the foresight and resourcing given to developing research networks, collaborations and infrastructure. One recommendation by Dame Deirdre in her report on the swine flu pandemic (Recommendation 13) was that:

"The Department of Health should build relationships between the Behaviour and Communication sub-group of the Scientific Pandemic Influenza Advisory Committee (SPI-B&C) and the Department of Health's policy and communications teams so that the SPI-B&C's expertise can be used in addition to in-house resources in planning for vaccine uptake and other relevant policy areas."
- 3.11. In practice, SPI-B&C was stood down at the end of the pandemic. As far as I know, it was not involved in preparedness activities. However, the principles underlying Recommendation 13 were followed up.
- 3.12. Several of the academics involved in SPI-B&C set up and participated in scientific meetings about pandemic research, some of which I attended or helped to organise.
- 3.13. To be clear, these meetings were not, as far as I remember them, official 'SPI-B&C activities.' However, these meetings included civil service representatives (in particular from PHE) and helped to maintain relationships.
- 3.14. Conferences and workshops that I helped to organise included:
 - (1) A symposium run during the EC Belgian Presidency Conference on Lessons Learned from the Influenza Pandemic. 2 July 2010 {JR/36 – INQ000146457}.

- (2) Lessons learned from swine flu for behavioural and social scientists: How should we study the next pandemic? Funded by the Infectious Disease Research Network. 12 April 2010 {JR/37 – INQ000146458}
 - (3) Improving national influenza engagement and communication effectiveness. 31 July 2015 {JR/38 – INQ000146459 & JR/39 – INQ000146460}.
- 3.15. Research funding was also made available towards academic collaborations that began during the Swine Flu pandemic, and these also promoted continued discussions between academia and government. I led a collaboration funded by the NIHR that developed a new survey for use in a future pandemic and that could be used to understand how the public were responding to the pandemic and what, if any, impact official communications were having. This was the 'FluTEST / CORSAIR' project. The contract for this work was signed in 2012.
- 3.16. The main report from the work conducted to prepare the survey was concerned with developing and checking the wording for survey items that could be used in the future to understand, for example, whether people believed that specified behaviours were effective in reducing the transmission of infection, or how worried people were about an outbreak {JR/40 – INQ000146461}.
- 3.17. I am reminded by reading the methods section of the report that developing the survey involved "discussion with senior representatives from the following groups of end users of the survey data: the pandemic flu team for the English DH; the two official advisory groups for DH and the UK Health Protection Agency (now part of PHE) that deal with the behavioural and communication aspects of pandemic planning; a team from the Health Protection Agency responsible for modelling the spread of a pandemic; and academic colleagues with a particular interest in pandemic flu planning." The FluTEST study was intended to enter hibernation once the survey was prepared, to be activated again in the event of a future pandemic. This was facilitated by a specific funding stream launched by NIHR, in which a portfolio of studies were funded, prepared and then hibernated. This scheme is summarised in a paper that I co-authored with other academics involved in these studies {JR/41 – INQ000146462}.
- 3.18. In 2018, during the hibernation, NIHR asked us to conduct an exercise to test our readiness. This allowed us to check again our links to the renamed Department of Health and Social Care (DHSC) and to remind key players within DHSC about the relevance of the study.

3.19. A separate study, funded by DH from 2013 to 2015, involved a consortium from King's College London, Imperial College, University College London, the University of Southampton, the University of Sussex, Northumbria University and PHE studying attitudes towards vaccination and antiviral use. This study was called "INFluENCE." I was the co-Principal Investigator. The study included dissemination events including a 10-minute presentation to the Department of Health Pandemic Preparedness Board (26 October 2015) {JR/41 – INQ000146462}. We also held a workshop for stakeholders relating to the results of the study {JR/42 – INQ000146463, JR/38 – INQ000146459 & JR/39 – INQ000146460}. A full final report was delivered to DH {JR/43 – INQ000146464}. The report concluded that:

- (1) Particular attention in terms of vaccination uptake should be paid to people who perceive themselves to be healthy particularly if they are, objectively, in at-risk groups;
- (2) Providing factual information about vaccination is likely to be useful, but may be less effective for people who are sceptical about the risk of infection;
- (3) Messages should focus on the safety and efficacy of vaccination;
- (4) Messages which portray vaccination as a way of boosting health or that attempt to alter emotions such as regret or worry are unlikely to be effective;
- (5) Messages should be short and come from trusted sources;
- (6) Tweets by NHSChoices or news websites were most likely to be retweeted;
- (7) Messages to reduce delay in people accessing the national pandemic flu survey would be worthwhile.

3.20. Another collaboration worth mentioning at this point are the Health Protection Research Units (HPRU). There are fourteen such Units, that have been funded by NIHR in two 5-year rounds. Funding began in 2014. Each was awarded approximately £4million per 5-year period. Each Unit focuses on a different topic - I am the Director of the HPRU in Emergency Preparedness and Response at King's College London. All HPRUs are partnerships between higher education institutions and PHE / UKHSA.

3.21. During the pandemic, several of the HPRUs responded rapidly to the pandemic, changing their programme of work, seconding their scientists to advise on SAGE sub-groups or to kickstart essential projects and producing a large volume of relevant work. While not specifically intended as pandemic preparedness, the existence of the

- HPRUs and the flexibility that their funding allows meant that a lot of work occurred that would not otherwise have been possible.
- 3.22. Overall, I believe that the research that was funded in the inter-pandemic period was not only useful in its own right, but also useful in that it maintained connections between different researchers, and between research groups and policy makers. This then facilitated the launch of rapid studies in the early stages of the COVID-19 pandemic. This was further helped by the existence of research units with flexible funding structures and by the hibernating pandemic research scheme that NIHR had put in place. I believe this went a long way towards meeting the issues raised by the Hine Report in its recommendation 13.
- 3.23. In terms of what could have been done better in relation to the UK's pandemic planning, preparedness and resilience, I would highlight two, linked issues relating to planning about the likely role of academic advisors during a pandemic. NERVTAG is a good example of the issue. For many members, NERVTAG is just one of several essential functions that they perform during a pandemic. During the COVID-19 pandemic members (and observers) found themselves attending many meetings for different groups, ramping-up multiple essential research projects, appearing in the media to keep the public updated on developments, and simultaneously holding down their university or clinical jobs (which had themselves become suddenly more challenging). These meetings invariably led to spin-out working groups, advisory boards, seminars and so forth. Many came with voluminous pre-meeting reading and post-meeting reports to be written. From my own experience in the COVID-19 pandemic I went from being a member of NERVTAG, to also being invited to SAGE meetings, SPI-B meetings, SPI-M meetings, advisory groups for the Office for National Statistics, working groups with NHS Test and Trace, requests for advice from my university, research meetings with UKHSA about ongoing projects, discussions with DHSC about their polling, and so forth. It was not unusual to be invited to multiple meetings for each of these activities in a single week. This leads me to question how many roles one clinician or academic should have within the advisory apparatus for Government. A more joined-up view could have been taken prior to the pandemic about the workload that would be placed on advisors and a view taken on how to manage or limit it. Of course, as with many things, this is easy to say in hindsight.
- 3.24. The second issue that I would raise, which is linked to this, is that more thought could have been given as to how to support advisors in the early stages of the pandemic. As I have noted, during the COVID-19 pandemic many advisors were left to deal with

the requirements of their day jobs at the same time as assisting the Government. Eventually, funding was provided by the Treasury directly to the employers of some advisors in order to provide backfill for their roles (e.g. to employ a teaching assistant to help mark university essays). My employer received £22,500 in lieu of the time I provided across the pandemic. The funding arrived on 14 January 2021, a year and a day after the first NERVTAG meeting on COVID-19 had taken place and long after the most urgent need for support had passed. It is predictable that, in a future major incident or pandemic, some external advisors will once again be required to work long hours for an extended period. Writing arrangements for backfill into the response plan would have been sensible in advance of the COVID-19 pandemic and remains sensible now.

- 3.25. With regards to other decisions made (or not made) by the Government in preparation for a future pandemic, one issue that seems relevant is the third key learning point raised in the Cygnus report that *“the public reaction to a reasonable worst case pandemic scenario needs to be better understood.”* To the extent that the Government’s plan for a future, high severity pandemic revolved around members of the public being willing to proceed with daily life largely as normal, send their children to school, support other members of the community and so forth, an assessment of whether the public would in practice be willing and able to do this would seem to be important. I am unaware of any follow-up to this lesson, or any decisions being made to conduct research into how the public understood their role in the nation’s pandemic preparedness plan and whether they would be willing to largely ‘carry on as normal.’ A better understanding of the concerns and challenges that members of the public might have faced in such a scenario might have improved the ability of planners to pre-empt such issues and provide better support, communications or alterations to the plan.
- 3.26. Given the above, I would summarise the lessons that I believe should be learned as follows:
- (1) UKHSA requires a permanent group of staff able to apply behavioural science expertise to understanding specific health protection challenges. This was set up during the latter stages of the COVID-19 pandemic but requires maintaining.
 - (2) Higher-level advice on behavioural science matters relating to emergencies is regularly sought by Departments and agencies across Whitehall. There have been several over-lapping groups in this area and individual experts are often

approached. A single standing group, with clear Terms of Reference and diverse membership is worth consideration as a better route. I am not aware that this is currently being looked into.

- (3) In a crisis, rapid behavioural science research is important. It allows us to provide highly specific advice on ways to improve the ongoing response and it allows evidence to be gathered to improve responses to future incidents. Some rapid research can be planned in advance. Other research questions are hard to pre-empt and studies need immediately-available funding in order to address them. The NIHR hibernating pandemic influenza research portfolio was an excellent way of addressing the first point, and the Health Protection Research Units were an excellent way of addressing the second. I have a conflict here, because I am a beneficiary of both schemes, but I do think that renewal of both is important. I understand that conversations about both schemes are ongoing.
- (4) During a major incident, academic advisors can suddenly find themselves very busy. Planning should be in place to release money to their employers to provide backfill, and to do so quickly so that it can be used in a timely manner. Thought should also be given to limiting the number of roles that any one academic is asked to take on, both to increase the diversity of views that are brought to bear and to limit the burden placed on individual volunteers. I am not certain whether these issues are or are not currently under consideration within Government.
- (5) The most impactful forms of advice to Government are papers that assist with the pressing issue at hand, and which are also available many years later to inform subsequent, related issues. This only works if advice papers can be found. Papers from SPI-B&C that were published in the peer reviewed literature were relatively easy to locate. Other papers that appear only on the Gov.uk website (which is an awful system that is very difficult to navigate) or which are not made public cannot be discovered by potential future users and have less impact. There should be a default assumption that advice papers are put quickly into the public domain, and authors should be encouraged to publish them in a format that makes them easy to discover (e.g. in the peer reviewed literature) where possible.

4: Articles, interviews, reports and evidence regarding UK's planning, preparedness or resilience to high consequence infectious disease, epidemics or pandemics

4.1. I provide a list below of key articles, reports or evidence I have produced or co-authored about planning, preparedness or resilience to high consequence infectious disease, epidemics or pandemics, from January 2009 to January 2020. It should be noted, particularly for presentations, that this list may be incomplete and that I stopped maintaining a record of the talks that I have given sometime in 2018.

- (1) Webster RK, Rubin GJ. Influencing side-effects to medicinal treatments: A systematic review of brief psychological interventions. *Frontiers in Psychiatry* 2019;10 (Feb). Doi: 10.3389/fpsy.2018.00775 {JR/44 – INQ000146465}
- (2) Patel SS, Rogers MB, Amlôt R, Rubin GJ. What do we mean by 'community resilience'? A systematic review of how it is defined in the literature. *Plos Currents Disasters* 2017; Feb 1. {JR/45 – INQ000146466}
- (3) Ahluwalia J, Brooks SK, Weinman J, Rubin GJ. A systematic review of factors affecting adherence to malaria prophylaxis amongst travellers from non-endemic countries. *Malaria* 2020;19:16. doi: 10.1186/s12936-020-3104-4 {JR/46 – INQ000146467}
- (4) Waterman S, Cole CL, Greenberg N, Rubin GJ, Beck A. A qualitative study assessing the feasibility of implementing a group CBT based intervention in Sierra Leone. *British Journal of Psychiatry International*. 2019;16(2):31-34 doi:10.1192/bji.2018.7 {JR/47 – INQ000146468}
- (5) Webster RK, Liu R, Karimullina K, Hall I, Amlôt R, Rubin GJ. A systematic review of infectious illness Presenteeism: Prevalence, reasons and risk factors. *BMC Public Health*. 2019;19(1) doi:10.1186/s12889-019-7138-x. {JR/19 – INQ000146432}
- (6) Simpson CR, Knight M, Beever D, Challen K, De Angelis D, Fragaszy E, Goodacre S, Hayward A, Shen Lim W, Meakin G, Rubin GJ, Semple M, Walters H. The UK's pandemic influenza research portfolio: a model for future research on emerging infections. *The Lancet Infectious Diseases*. 2019;19(8):e295-e300 doi:10.1016/S1473-3099(18)30786-2. {JR/41 – INQ000146462}
- (7) Carter H, Gauntlett L, Rubin GJ, Russell D, Genereux M, Lemyre L, Blain P, Byers M, Amlot R. Psychosocial and behavioural aspects of early incident response: outcomes from an international workshop. *Global Security: Health,*

Science and Policy. 2018;3(1):28-36 doi: 10.1080/23779497.2018.1556112. {JR/48 – INQ000146469}

- (8) Brooks SK, Rubin GJ, Greenberg N. Traumatic stress within disaster-exposed occupations: Overview of the literature and suggestions for the management of traumatic stress in the workplace. *British Medical Bulletin*. 2018;129(1);25-34 doi:10.1093/bmb/ldy040. {JR/49 – INQ000146470}
- (9) Brooks SK, Dunn R, Amlot R, Greenberg N, Rubin GJ. Training and post-disaster interventions for the psychological impacts on disaster-exposed employees: a systematic review. *Journal of Mental Health*. 2018;Feb 15; 1-25 doi:10.1080/09638237.2018.1437610. {JR/50 – INQ000146471}
- (10) Waterman S, Hunter ECM, Cole CL, Evans LJ, Greenberg N, Rubin GJ, et al. Training peers to treat Ebola centre workers with anxiety and depression in Sierra Leone. *International Journal of Social Psychiatry*. 2018;64(2):156-65 doi:10.1177/0020764017752021. {JR/51 – INQ000146472}
- (11) Brooks SK, Dunn R, Amlot R, Rubin GJ, Greenberg N. A Systematic, Thematic Review of Social and Occupational Factors Associated with Psychological Outcomes in Healthcare Employees during an Infectious Disease Outbreak. *Journal of Occupational and Environmental Medicine*. 2018;60(3):248-57 doi:10.1097/JOM.0000000000001235. {JR/52 – INQ000146473}
- (12) McClelland E, Amlot R, Brooke Rogers M, Rubin GJ, Tesh J, Pearce JM. Psychological and Physical Impacts of Extreme Events on Older Adults: Implications for Communications. *Disaster Medicine and Public Health Preparedness*. 2017;11(1):127-34 doi:10.1017/dmp.2016.118. {JR/53 – INQ000146474}
- (13) Elliot AJ, Morbey R, Edeghere O, Lake IR, Colon-Gonzalez FJ, Vivancos R, Rubin GJ, O'Brien S, Smith GE. Developing a Multidisciplinary Syndromic Surveillance Academic Research Program in the United Kingdom: Benefits for Public Health Surveillance. *Public health reports (Washington, DC : 1974)*. 2017;132(1):111S-5S doi:10.1177/0033354917706953. {JR/54 – INQ000146475}
- (14) Brooks SK, Dunn R, Amlot R, Rubin GJ, Greenberg N. Social and occupational factors associated with psychological wellbeing among occupational groups affected by disaster: a systematic review. *Journal of*

Mental Health. 2017;26(4):373-84 doi:10.1080/09638237.2017.1294732.
{JR/55 – INQ000146476}

- (15) Smith LE, D'Antoni D, Jain V, Pearce JM, Weinman J, Rubin GJ. A systematic review of factors affecting intended and actual adherence with antiviral medication as treatment or prophylaxis in seasonal and pandemic flu. *Influenza and other Respiratory Viruses*. 2016;10(6):462-78 doi:10.1111/irv.12406. {JR/56 – INQ000146477}
- (16) Rubin GJ, Harper S, Williams PD, Öström S, Bredbere S, Amlôt R, et al. How to support staff deploying on overseas humanitarian work: A qualitative analysis of responder views about the 2014/15 West African Ebola outbreak. *European Journal of Psychotraumatology*. 2016;7(1) doi:10.3402/ejpt.v7.30933. {JR/57 – INQ000146478}
- (17) Peprah D, Palmer JJ, Rubin GJ, Abubakar A, Costa A, Martin S, Larson HJ. Perceptions of oral cholera vaccine and reasons for full, partial and non-acceptance during a humanitarian crisis in South Sudan. *Vaccine*. 2016;34(33):3823-7 doi:10.1016/j.vaccine.2016.05.038. {JR/58 – INQ000146479}
- (18) Han YKJ, Michie S, Potts HWW, Rubin GJ. Predictors of influenza vaccine uptake during the 2009/10 influenza A H1N1v ('swine flu') pandemic: Results from five national surveys in the United Kingdom. *Preventive Medicine*. 2016;84:57-61 doi:10.1016/j.ypmed.2015.12.018. {JR/5 – INQ000146418}
- (19) Rubin GJ, Finn Y, Potts HWW, Michie S. Who is sceptical about emerging public health threats? Results from 39 national surveys in the United Kingdom. *Public Health*. 2015;129(12):1553-62 doi:10.1016/j.puhe.2015.09.004. {JR/6 – INQ000146419}
- (20) Brooks SK, Dunn R, Sage CAM, Amlôt R, Greenberg N, Rubin GJ. Risk and resilience factors affecting the psychological wellbeing of individuals deployed in humanitarian relief roles after a disaster. *Journal of Mental Health*. 2015;24(6):385-413 doi:10.3109/09638237.2015.1057334. {JR/59 – INQ000146480}
- (21) Rubin GJ, Bakhshi S, Amlot R, Fear N, Potts HWW, Michie S. The design of a survey questionnaire to measure perceptions and behaviour during an influenza pandemic: the Flu Telephone Survey Template (FluTEST). *Health*

Services and Delivery Research. 2014;2(41): 1-125. doi: 10.3310/hsdr02410 {JR/40 – INQ000146461}

- (22) Rubin GJ, Amlôt R, Page L, Pearce J, Wessely S. Assessing Perceptions about Hazardous Substances (PATHS): The PATHS questionnaire. *Journal of Health Psychology*. 2013;18(8):1100-13 doi:10.1177/1359105312459096. {JR/60 – INQ000146481}
- (23) Rubin GJ, Chowdhury AK, Amlôt R. How to communicate with the public about chemical, biological, radiological, or nuclear terrorism: A systematic review of the literature. *Biosecurity and Bioterrorism*. 2012;10(4):383-95 doi:10.1089/bsp.2012.0043. {JR/61 – INQ000146482}
- (24) Williams ADC, Hall IM, Rubin GJ, Amlôt R, Leach S. An individual-based simulation of pneumonic plague transmission following an outbreak and the significance of intervention compliance. *Epidemics*. 2011;3(2):95-102 doi:10.1016/j.epidem.2011.03.001. {JR/62 – INQ000146483}
- (25) Rubin GJ, Potts HWW, Michie S. Likely uptake of swine and seasonal flu vaccines among healthcare workers. A cross-sectional analysis of UK telephone survey data. *Vaccine*. 2011;29(13):2421-8 doi:10.1016/j.vaccine.2011.01.035. {JR/4 – INQ000146417}
- (26) Page LA, Seetharaman S, Suhail I, Wessely S, Pereira J, Rubin GJ. Using electronic patient records to assess the impact of swine flu (influenza H1N1) on mental health patients. *Journal of Mental Health*. 2011;20(1):60-9 doi:10.3109/09638237.2010.542787. {JR/63 – INQ000146484}
- (27) Dickmann P, Rubin GJ, Gaber W, Wessely S, Wicker S, Serve H, & Gottschalk R. New Influenza A/H1N1 ("Swine Flu"): Information needs of airport passengers and staff. *Influenza and other Respiratory Viruses*. 2011;5(1):39-46 doi:10.1111/j.1750-2659.2010.00168.x. {JR/64 – INQ000146485}
- (28) Rubin GJ, Potts HWW, Michie S. The impact of communications about swine flu (influenza A H1N1v) on public responses to the outbreak: Results from 36 national telephone surveys in the UK. *Health Technology Assessment*. 2010;14(34):183-266 doi:10.3310/hta14340-03. {JR/3 – INQ000146416}
- (29) Rubin GJ, Dickmann P. How to reduce the impact of "low-risk patients" following a bioterrorist incident: Lessons from SARS, anthrax, and pneumonic

plague. *Biosecurity and Bioterrorism*. 2010;8(1):37-43
doi:10.1089/bsp.2009.0059. {JR/65 – INQ000146486}

- (30) Rubin GJ, Amlôt R, Rogers MB, Hall I, Leach S, Simpson J & Wessely S. Perceptions and reactions with regard to pneumonic plague. *Emerging Infectious Diseases*. 2010;16(1):120-2 doi:10.3201/eid1601.081604. {JR/66 – INQ000146487}
- (31) Rubin GJ, Amlôt R, Carter H, Large S, Wessely S, Page L. Reassuring and managing patients with concerns about swine flu: Qualitative interviews with callers to NHS Direct. *BMC Public Health*. 2010;10 doi:10.1186/1471-2458-10-451. {JR/67 – INQ000146488}
- (32) Rubin GJ, Amlôt R, Page L, Wessely S. Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: Cross sectional telephone survey. *BMJ (Online)*. 2009;339(7713):156 doi:10.1136/bmj.b2651. {JR/2 – INQ000146415}
- (33) Rizzo C, Fabiani M, Amlôt R, Hall I, Finnie T, Rubin GJ, Cucuiu R, Pistol A, Popovici F, Popescu R, Joose V, Auranen K, Leach S, Declich S & Pugliese A (2013). Survey on the likely behavioural changes of the general public in 4 European countries during the 2009/2010 pandemic. In P. Manfredi & A. D'Onofino (editors) *Modelling the Interplay Between Human Behavior and Spread of Infectious Diseases*. Springer: New York. {JR/68 – INQ000146489}
- (34) Michie S, Rubin J & Potts H. (2010). The role of media reporting in determining public worry during the swine flu outbreak. *Psychology & Health*, 25 Supplement 1, 122-123. Published abstract not accessible, but presentation slides given as exhibit {JR/69 – INQ000146490}
- (35) Rogers MB, Pearce JM, Amlôt R, Rubin GJ, Wessely S & Krieger, K. (2010). *Communicating with the public about CBRN Terrorism*. National Safety & Security and Crisis Management. Directorate General for Public Safety and Security of the Netherlands.
- (36) Riddle L, Amlôt R, Page L & Rubin GJ (2010). *Psychological aspects of CBRN emergencies*. In *Responding to CBRN Emergencies. A Training Manual*. Porton Down: Health Protection Agency.
- (37) Rubin GJ, Page L & Amlôt R (2010). *Psychological and psychiatric aspects of CBRN emergencies*. [DVD Presentation] Chilton, Oxon: Health Protection Agency. {JR/70 – INQ000146491}

- (38) 'Influencing national flu engagement and communication effectiveness.' Briefing for the Chief Medical Officer and Department of Health Pandemic Preparedness Board at the Department of Health, Whitehall. 26 October 2015. {JR/71 – INQ000146492}
- (39) 'Improving communication with the public during the next pandemic.' Talk to policy makers at Imperial College London. 31 August 2015 {JR/39 – INQ000146460}
- (40) 'Improving communication with the public during the next pandemic.' Public talk at the Science Museum, London. 31 August 2015 {JR/39 – INQ000146460}
- (41) 'How do the public react to a flu pandemic?' Talk given at Exercise Panacea – a pandemic influenza exercise for Waltham Forest Council. 26 February 2015. {JR/72 – INQ000146493}
- (42) 'Communicating with the public during a disaster: Why it matters and how to do it.' Talk given to the University of the Third Age. 25 November 2014. {JR/73 – INQ000146494}
- (43) 'Public health – an individual's or the government's responsibility; the health protection perspective.' Public lecture organised by Ipsos MORI & King's College London. 1 April 2014.
- (44) 'How to communicate with the public about CBRN terrorism.' Presentation to the Cabinet Office's Civil Contingencies Secretariat. 26 June 2012. {JR/74 – INQ000146495}
- (45) 'Public responses to swine flu communications in the UK.' EC Belgian Presidency conference on lessons learned from the influenza pandemic. 2 July 2010. {JR/75 – INQ000146497}
- (46) 'Public communication and perceptions during a pandemic.' Health Protection Agency Pandemic Influenza Conference. 22 June 2010. {JR/76 – INQ000146498}
- (47) 'Opinion polling during the swine flu pandemic.' Government supported 'lessons learned from pandemic flu' conference. 11 June 2010.
- (48) 'The H1N1 pandemic: What have we learned and where next?' Government supported 'lessons learned from pandemic flu' conference. 12 April 2010.

- (49) Managing “the worried well.” Presentation to the Board of NHS Direct. 10 February 2010.
- (50) ‘Psychological effects of infectious diseases’. A lecture given on several iterations of the European Training in Infectious Disease Emergencies course. Roughly 2008-2009. {JR/77 – INQ000146499}
- (51) Assorted university lectures to undergraduate and postgraduate students

5: Other documentation

- 5.1. I have over 9,000 Outlook items that contain the words ‘pandemic’ or ‘swine.’ Not all of these are in the date range covered by Module 1. Most are irrelevant to Module 1 and cover issues relating to the then-ongoing response to the swine flu pandemic, meeting arrangements, details about papers that were being written and so forth. Many contain attachments that include, for example, drafts of the work referenced above, datasets, financial spreadsheets and research materials.
- 5.2. I have approximately 1,000 files in my university’s cloud server that largely contain research material relating to the papers outlined above as well as PowerPoint files relating to presentations and teaching materials.
- 5.3. In terms of printed or written material, I have some contract-related and administrative material for: my career development fellowship; research conducted during the swine flu pandemic; the analysis of polling data during the swine flu pandemic; the INFLUENCE project and the FluTEST project.
- 5.4. There is a gap in my records from early 2018 to late March / early April 2020. In March 2020 I was made aware by my employer of a successful attempt by an outside entity to gain access to the university’s email system. My line manager arranged a personal briefing for me about this due to concerns that my work was sensitive and could be targeted. On 16 March 2020 I spoke to the university’s data protection officer, Name Redacted over my concerns that my emails contained many Official Sensitive files. She summarised, by text, that *“it’s up to you how you want to manage your information going forwards but it’s always sensible to try and only keep correspondence essential for business continuity.”* Given that essential emails and documents relating to my SAGE work were already securely held in Government systems (e.g. by cc-ing the SAGE in-box) and that I had little time to review individual emails, I deleted the large majority from that point (around late March 2020) to early 2018. When SAGE members received a briefing in September 2020 on record

management in relation to a possible future Inquiry, I alerted Name Redacted from the SAGE secretariat straight away to inform her about this matter.

Statement of Truth

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

Personal Data

Signed: _____

Dated: 13 April 2023