Questionnaire

UK COVID-19 Inquiry: Module 2 - Rule 9 Request to Dr Benjamin Killingley - Reference:

M2/SAGE/01/BK

Please provide the following information:

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

MB ChB, MRCP, BSc, PhD

I am a full time NHS clinician

Clinical Activity

Infectious Diseases and General Medical consultant since 2013

Acute medicine consultant Whittington Hospital 2013 -2018

Clinical Lead for Acute Medicine and Infectious Diseases consultant at University College London Hospital since 2018 – current

Research:

- University of Nottingham (10/2008 – 09/2011):

I was awarded an MRC Clinical Research Fellowship to undertake a PhD looking into the transmission of influenza in humans. Two clinical studies were performed;

  - Use of a human influenza challenge model to assess person-to-person transmission: Proof-of-concept study. Funded by the Dept of Health, England.
  - Virus shedding and environmental deposition of novel A (H1N1) pandemic influenza virus. Funded by the National Institute for Health Research (NIHR).

- University of Nottingham (07/12 – 09/13):

In 2012 I returned to Nottingham University to take up the position of consultant level clinical research fellow. The success of the proof of concept study mentioned above led to the award of a

competitive grant from CDC to conduct a series of follow on studies to further explore influenza transmission.

- Secondment to hVIVO from UCLH (02/21 - 10/21):

Principal Investigator for a dose finding human experimental infection study in healthy subjects using a GMP-produced SARS-COV-2 wild type strain (SARS-CoV-2 Characterisation Study).

Publications (selected):

Original Research

Killingley B, Mann AJ, Kalinova M,et al. Safety, tolerability and viral kinetics during SARS-CoV-2 human challenge in young adults. Nat Med. 2022 Mar 31. doi: 10.1038/s41591-022-01780-9.

Bueno de Mesquita PJ, Nguyen-Van-Tam J, Killingley B, et al. Influenza A (H3) illness and viral aerosol shedding from symptomatic naturally infected and experimentally infected cases. Influenza Other Respir Viruses. 2021 Jan;15(1):154-163. doi: 10.1111/irv.12790

Nguyen-Van-Tam JS, Killingley B, Enstone J, Hewitt M, Pantelic J, Grantham ML, et al. (2020) Minimal transmission in an influenza A (H3N2) human challenge-transmission model within a controlled exposure environment. PLoS Pathog 16(7): e1008704.

Ramos-Sevillano E, Wade WG, Mann A, Gilbert A, Lambkin-Williams R, Killingley B, Nguyen-Van-Tam JS, Tang CM. The Effect of Influenza Virus on the Human Oropharyngeal Microbiome. Clin Infect Dis. 2019 May 30;68(12)

Killingley B, Greatorex J, Digard P, Wise H, Garcia F, Varsani H, Cauchemez S, Enstone JE, Hayward A, Curran MD, Read RC, Lim WS, Nicholson KG, Nguyen-Van-Tam JS. The environmental deposition of influenza virus from patients infected with influenza A(H1N1)pdm09: Implications for infection prevention and control. J Infect Public Health. 2016 May-Jun;9(3):278-88

Killingley B, Enstone JE, Greatorex J, Gilbert AS, Lambkin-Williams R, Cauchemez S, Katz JM, Booy R, Hayward A, Oxford J, Bridges CB, Ferguson NM, Nguyen Van-Tam JS. Use of a human influenza challenge model to assess person-to-person transmission: proof-of-concept study. J Infect Dis. 2012 Jan;205(1):35-43.

Killingley B, Greatorex J, Cauchemez S, Enstone JE, Curran M, Read RC, Lim WS, Hayward A, Nicholson KG, Nguyen-Van-Tam JS. Virus shedding and environmental deposition of novel A (H1N1) pandemic influenza virus: interim findings. Health Technol Assess. 2010 Oct;14(46):237-354.

Reviews / Editorials

Killingley B, Nguyen-Van-Tam J. Routes of influenza transmission. Influenza Other Respir Viruses. 2013 Sep;7 Suppl 2:42-51

Killingley B, Enstone J, Booy R, Hayward A, Oxford J, Ferguson N and Van-Tam JN on behalf of the influenza transmission strategy development group. Potential role of human challenge studies for investigation of influenza transmission. Lancet Infect Dis. 2011 Nov;11(11):879-886.

Killingley B. Respirators versus medical masks: evidence accumulates but the jury remains out. Influenza Other Resp Viruses. 2011 May;5(3):143-5.

My professional expertise lies in the area of influenza virus transmission and by extension to respiratory virus transmission. I have built up knowledge about routes of transmission and interventions to reduce transmission, e.g. masks. This expertise has a real world, clinical focus as opposed to a basic science one. This clinical focus, that includes the fact that I am a front-line front door clinician in the NHS as well as my past research interests was the major reason I was approached to join NERVTAG

2. A list of the groups (i.e. SAGE and/or any of its sub-groups) in which you have been a participant, and the relevant time periods.

- NERVTAG: 2014 – 2022 (Ending Nov)
- SAGE Environmental Modelling Group (EMG): April 2020 – current (though currently not meeting)

3. An overview of your involvement with those groups between January 2020 and February 2022, including:

NERVTAG

a. When and how you came to be a participant

Invited to apply by the then Chair (Prof Sir Jonathan Van-Tam) and interviewed in 2014

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

Meetings

- 2020 – 35 regular meetings, 9 'birdtable' discussions
- 2021 – 16 regular meetings

- 2022 – 2 regular meetings
- Non Covid meetings 2020-22 = 3

My expertise on the Group concerns my knowledge and experience researching virus transmission and from my position as a front-line NHS clinician. Any advice / information provided to the Group comes from this background. Such information was provided during discussions and debate amongst the group and in the form of written pieces.

c. Your role in providing research, information and advice.

No specific role other than being an active member of the group

EMG

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

I believe I was suggested as being useful to the group because of my background and knowledge. A subsequent invite to join came from the chair/secretariat.

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

I attended the following SAGE EMG meetings

Meeting 2: 28 April 2020

Meeting 3: 5 May 2020

Meeting 19: 10 Nov 2020

Meeting 20: 24 Nov 2020

Meeting 23: 5 Jan 2021

Meeting 27: 2 March 2021

Meeting 33: 25 May 2021

Meeting 34: 8 June 2021

Meeting 36: 7 Sept 2021

Meeting 38: 14 Dec 2021

c. Your role in providing research, information and advice.

No specific role other than being an active member of the group

4. A summary of any documents to which you contributed for the purpose of advising SAGE and/or its related subgroups on the Covid-19 pandemic. Please include links to those documents where possible.

I had input to the following pieces of work that went to SAGE; Yellow highlight = lead author role

NERVTAG: Distance, time, handshakes, 12 March 2020. https://www.gov.uk/government/publications/nervtag-distance-time-handshakes-12-march-2020

NERVTAG: Face mask use in the community, 13 April 2020. https://www.gov.uk/government/publications/nervtag-face-mask-use-in-the-community-13-april-2020

NERVTAG: Wearing facemasks in a community setting - options and evidence, 16 April 2020. https://www.gov.uk/government/publications/nervtag-wearing-facemasks-in-a-community-setting-options-and-evidence-16-april-2020

NERVTAG: Assessment of transmission of COVID-19 through musical events, 16 July 2020. https://www.gov.uk/government/publications/nervtag-assessment-of-transmission-of-covid-19-through-musical-events-16-july-2020

NERVTAG/EMG: Role of aerosol transmission in COVID-19, 22 July 2020. https://www.gov.uk/government/publications/nervtagemg-role-of-aerosol-transmission-in-covid-19-22-july-2020

NERVTAG/EMG: Duration of wearing of face coverings, 15 September 2020. https://www.gov.uk/government/publications/nervtagemg-duration-of-wearing-of-face-coverings-15-september-2020

EMG

Principles of understanding of transmission routes to inform risk assessment and mitigation strategies, 14 May 2020 https://www.gov.uk/government/publications/principles-of-understanding-of-transmission-routes-to-inform-risk-assessment-and-mitigation-strategies-updated-14-may-2020

Possible additional interventions to address hospital transmission risks of SARS-CoV-2, 12 May 2020, https://www.gov.uk/government/publications/possible-additional-interventions-to-address-hospital-transmission-risks-of-sars-cov-2-12-may-2020

EMG: Transmission and Control of SARS-CoV-2 on Public Transport, 18 May 2020, https://www.gov.uk/government/publications/emg-transmission-and-control-of-sars-cov-2-on-public-transport-18-may-2020

EMG: Evidence for transmission of SARS-CoV-2 on ground public transport and potential effectiveness of mitigation measures, 18 May 2020, https://www.gov.uk/government/publications/emg-evidence-for-transmission-of-sars-cov-2-on-ground-public-transport-and-potential-effectiveness-of-mitigation-measures-18-may-2020

SARS-CoV-2 in the hospital environment and risk of COVID-19 nosocomial transmission, 31 May 2020, https://www.gov.uk/government/publications/sars-cov-2-in-the-hospital-environment-and-risk-of-covid-19-nosocomial-transmission-31-may-2020

Transmission of SARS-CoV-2 and Mitigating Measures - update, 4 June 2020 , https://www.gov.uk/government/publications/transmission-of-sars-cov-2-and-mitigating-measures-update-4-june-2020

NERVTAG/EMG: Hand hygiene to limit SARS-CoV-2 transmission, 2 July 2020, https://www.gov.uk/government/publications/nervtagemg-hand-hygiene-to-limit-sars-cov-2-transmission-2-july-2020

5. A summary of any articles you have written, interviews and/or evidence you have

given regarding the work of the above-mentioned groups and/or the UK's response to the Covid-19 pandemic. Please include links to those documents where possible.

I engaged in a number of media related activities related to my areas of expertise. These included Radio and TV interviews and interviews for newspaper articles. These activities discussed aspects of COVID policy, e.g. use of face masks. However, I spoke in an independent capacity, i.e. I was not a spokesperson for NERVTAG or SAGE EMG.

6. Your views as to whether the work of the above-mentioned groups in responding to the Covid-19 pandemic (or the UK's response more generally) succeeded in its aims.

This may include, but is not limited to, your views on:

Overall - I firmly believe they did succeed

a. The composition of the groups and/or their diversity of expertise;

NERVTAG had been in existence for some time and had had a focus on influenza. Most members, including me, had been there for several years. The group was well led, co-opted some additional members over the COVID period and frequently had 'guest' presenters.

EMG was a newly formed group and came to assume significant prominence as evidence grew to suggest that the aerosol transmission route was important. Composition seemed broad including many from outside the 'healthcare arena', e.g., architecture and building design.

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

My understanding is that commissions came from SAGE or DHSC and that the opportunity to feed in issues via the chair existed

c. The resources and support that were available;

Secretariats provided for both enabled efficient and smooth running of meetings and document flow.

As a full time NHS clinician, giving my time over to these committees was a significant ask. I felt that the many academics on the groups got more recognition and support from their base organisations e.g. their time was supported, and of course many were involved in research projects related to COVID. It is worth saying here that I do not have the sense that such projects were picked up or given out up preferentially to academics on the groups, it is a consequence of having experts as members of such groups. After a protracted period, my NHS organisation were given some funds by DHSC to support the time I was giving to NERVTAG. No support was given / offered re EMG.

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

I have no doubt that this was done to the best of abilities and based on the best available evidence at the time. Unsurprisingly, as scientific evidence accumulated certain views and knowledge moved on and I recognise the psychological factors of anchoring and concretisation that played out in this journey. In hindsight certain views could have evolved more rapidly (e.g. importance of aerosol transmission and what could/should be done to mitigate this) but I think that the vast majority of advice and recommendations given and made, have stood the test of time

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

The commitment and contribution of time and energy from group members was extraordinary. Both groups I sat on were chaired extremely well with members given the opportunity to always speak freely and honestly. Furthermore, all members were given opportunity to comment and provide input to all pieces of work.

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

I don't have anything useful to say here

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

Lessons

- Government control and decision making, certainly on issues of public health (e.g. testing and tracing) was too centralised and lacked the input of local public health professionals.
- Discussions and plans concerning preparations for a future pandemic had to my knowledge focused exclusively on influenza. The warning from SARS in 2003 did not seem to be picked up.
- A key question is how you get diversity of thought and views and how this is maintained down the line of an ever-narrowing avenue to where lone decision makers sit.

Changes/Improvements

- Group members to be given some education/advice on the psychological factors e.g. certain biases, that may play out in the generation of advice
- Improve turnover of group membership with specified length of terms – this is in process
- Ability to quickly co-opt members with certain skills when needed – this was done more latterly
- Better compensation/recognition of the time and energy given for the well-being and optimal functioning of members. We had not planned for this. To some extent a 'call to arms' will always be needed in an emergency situation with little warning, but when this lasts over 18 months it is not sustainable.

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

Email correspondence arising from NERVTAG and SAGE EMG activity