COVID-19 Inquiry: Module 2

Reference: M2/SAGE/01/WSL

1. Overview of qualifications, career history, professional expertise and major publications

Name: Wei Shen LIM

Current Position: Consultant Respiratory Physician, Nottingham University Hospitals NHS Trust – since 2003. Honorary Professor of Respiratory Medicine, University of Nottingham – since 2015

Work address: Respiratory Medicine, David Evans Building, Nottingham University Hospitals NHS Trust, City Hospital Campus, Nottingham NG5 1PB, UK

Qualifications

FRCP 2007
DM (Nottingham) 2002
MRCP (UK) 1996
BM BS (University of Nottingham) 1991
B Med Sci (Hons) (University of Nottingham) 1989

Career History

1991 – 1992 Pre-registration house officer. Queens Medical Centre, Nottingham. Stoke Mandeville Hospital.
1992 – 1994 Medical Officer, Singapore Armed Forces, Singapore
1994 - 1996 Medical Officer Training, Internal Medicine, Singapore.
1997 – 2003 Specialist Registrar Training, Respiratory Medicine, East Midlands. 2003 – present Consultant Respiratory Physician, Nottingham University Hospitals NHS Trust

Awards

Royal College of Physicians (London), Moxon Medal 2021 University of Nottingham, School of Medicine, Honorary Staff Contribution Award 2021 Nottingham University Hospitals NHS Trust, COVID-19 Research Heroes Award 2021 British Thoracic Society Award for Meritorious Service 2016

I am an NHS clinician with a specialist interest in respiratory infections. I have been involved in clinical research, guideline development, quality improvement initiatives and educational projects in the field of respiratory infections, including pneumonia, pneumococcal disease, influenza and pandemic preparedness. I have chaired national clinical management guideline committees relating to SARS (2003), pandemic influenza (2007) and community acquired pneumonia (2009) and been involved in other clinical guideline developments since, including NICE Pneumonia and NICE

Key research contributions include development of the CURB65 severity scoring tool for the management of community acquired pneumonia and the assessment of dexamethasone for the management of COVID-19 (RECOVERY Trial). In 2009, I was a member of the Chief Medical Officer's Pandemic Influenza Clinial and Operational Advisory (PICO) Group. Since 2014, I have been a member of the New and Emerging Respiratory Viral Threats Advisory Group (NERVTAG) to the Chief Medical Officer, England. I am current Chair of COVID-19 Immunisation on the Joint Committee on Vaccination and Immunisation (JCVI).

Positions held

· Chair, COVID-19 Immunisation, Joint Committee on Vaccination and Immunisation (JCVI) (2020-)

· Member, Joint Committee on Vaccination and Immunisation (JCVI) (2018 -) · Member, Expert Panel, NICE COVID19 Rapid Guideline, AcuteCOVID19 (2021-) · Member, National Clinical Policy, Specialised Commissioning COVID-19 therapuetics (2020-) · Member, NHS Improvement, Long-Term Plan Pneumonia Working Group (2019 -) · Member, New and Emerging Respiratory Viral Threats Advisory Group (NERVTAG) (2014 -) · Working group, National Community Acquired Pneumoni CQUIN (2020 -) · Working group, National Confidential Enquiry into Patient Outcome and Deaths (NCEPOD) Pneumonia (2020 -)

· National lead, British Thoracic Society community acquired pneumonia audit programme (2008-)

· Lead, Acute Pneumonia Sub-Theme, Respiratory Theme, NIHR Nottingham Biomedical Research Centre (2017 -)

Major publications (2017 to present)

· Gordon AL, Rick C, Juszczak E, Montgomery A, Howard R, Guthrie B, **Lim WS**, Shenkin S, Leighton P, Bath PM; PROTECT-CH triallists. The COVID-19 pandemic has highlighted the need to invest in care home research infrastructure. ***Age Ageing***. 2022 Feb 17:

· RECOVERY Collaborative Group. Casirivimab and imdevimab in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial. ***Lancet.*** 2022 Feb 12;399(10325):665-676.

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· RECOVERY Collaborative Group. Aspirin in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial. ***Lancet.*** 2022 Jan 8;399(10320):143-151.

· Carreno D, Wanford JJ, Jasiunaite Z, Hames RG, Chung WY, Dennison AR, Straatman K, Martinez Pomares L, Pareek M, Orihuela CJ, Restrepo MI, **Lim WS**, Andrew PW, Moxon ER, Oggioni MR.

Splenic macrophages as the source of bacteraemia during pneumococcal pneumonia. ***EBioMedicine*** 2021 Oct;72:103601.

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- Baskaran V, **Lim WS**, McKeever TM. Effects of tobacco smoking on recurrent hospitalisation with pneumonia: a population-based cohort study. ***Thorax.*** 2021 Jun 18:thoraxjnl-2020-216494. ·

RECOVERY Collaborative Group. Convalescent plasma in patients admitted to hospital with COVID-19 (RECOVERY): a randomised controlled, open-label, platform trial. ***Lancet.*** 2021 May 29;397(10289):2049-2059.

- RECOVERY Collaborative Group. Tocilizumab in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial. ***Lancet.*** 2021 May 1;397(10285):1637-1645.

- Pick HJ, Faghy MA, Creswell G, Ashton D, Bolton CE, McKeever T, **Lim WS**, Bewick T. The feasibility and tolerability of using inspiratory muscle training with adults discharged from the hospital with community-acquired pneumonia. ***Adv Respir Med.*** 2021;89(2):216-220.

- Baskaran V, Lawrence H, Lansbury LE, Webb K, Safavi S, Zainuddin NI, Huq T, Eggleston C, Ellis J, Thakker C, Charles B, Boyd S, Williams T, Phillips C, Redmore E, Platt S, Hamilton E, Barr A, Venyo L, Wilson P, Bewick T, Daniel P, Dark P, Jeans AR, McCanny J, Edgeworth JD, Llewelyn MJ, Schmid ML, McKeever TM, Beed M, **Lim WS.** Co-infection in critically ill patients with COVID-19: an observational cohort study from England. ***J Med Microbiol***. 2021 Apr;70(4).

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inequalities and ensuring deliverability: Prioritisation of COVID-19 vaccination in the UK. ***The Lancet Regional Health – Europe*** Vol. 2 January 25, 2021

- Harnden A, **Lim WS**, Earnshaw A. COVID-19 vaccination programme: a central role for primary care. ***Br J Gen Pract***. 2021 Jan 28;71(703):52-53.

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2. List of SAGE groups/sub-group participated in

- New and Emerging Respiratory Viral Threats Advisory Group (NERVTAG) to the Chief Medical Officer, England. Member 2014 to present.
- Scientific Advisory Group for Emergencies (SAGE), COVID-19. Attended occasionally 2020 – 2022.

3. Overview of involvement in SAGE groups/sub-groups (Jan 2020 to Feb 2022)

NERVTAG: I applied for and was appointed by interview to membership of NERVTAG in 2014. My attendance at NERVTAG meetings within the period Jan 2020 to Feb 2022 is listed below:

- 2020 – 35 NERVTAG meetings, 7 Birdtable meetings
- 2021 – 21 NERVTAG meetings
- 2022 – 2 NERVTAG meetings
- Other extraordinary meetings – 4 attended.

- Non-COVID19 meetings 2020 to 2022 – 4 meetings
- Novel therapeutics subgroup - 3 meetings

At these meetings, I contributed towards discussions as an independent clinician and academic within the scope of my professional expertise. Where appropriate, I provided relevant information or advice. In March 2020, I chaired a NERVTAG sub-group to rapidly develop clinical advice on the optimal use of oxygen therapy, non-invasive ventilation and high-flow nasal oxygen for patients with suspected or confirmed COVID-19 infection.

SAGE: I was invited to participate in 18 SAGE meetings between 2020 to 2022; the first SAGE meeting attended was SAGE 67 and the last SAGE meeting attended was SAGE 103. At these meetings, where appropriate, I contributed information or advice. I did not contribute any primary research findings to SAGE.

4. Summary of documents contributed

Documents developed by the Non-invasive ventilation (NIV) and oxygen sub-group in March 2020; I was chair of this sub-group. The clinical advice in these documents was disseminated to clinical teams mainly through NHS England (NHSE).

- NERVTAG COVID-19 NIVs and Nosocomial Transmission Subcommittee: Advice on the use of non-invasive ventilation (NIV) and high-flow nasal oxygen (HFNO) for patients with suspected or confirmed COVID-19 infection. (6 March 2020)

- NERVTAG COVID-19 NIVs and Nosocomial Transmission Subcommittee: Recommendations regarding oxygen therapy in the event of significant oxygen supply shortage during the COVID-19 outbreak. (6 March 2020)

Other documents

I contributed towards three NERVTAG papers that went to SAGE.

- Coinfections, vaccination and their interactions with SARS-CoV-2 (14 July 2020) · Respiratory infections, their interactions with SARS-CoV-2 and implications for winter 2021 (11 Oct 2021)
- Antiviral drug resistance and use of DAAs for COVID-19 (6 Dec 2021)

5. Summary of articles written, interviews and/or evidence given

I have not written any articles or given any interview/evidence in relation to the work of SAGE or NERVTAG.

(In my position as Chair of JCVI COVID-19 Immunisation, I have written articles, given numerous interviews, and given evidence in relation to *COVID-19 vaccination*. JCVI is not a sub-group of SAGE; JCVI provides its advice directly to the Secretary of State for Health in accordance with the 2009 Hine Report, Section 4.56, Recommendation 12.)

6. My 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

NERVTAG. NERVTAG held its first meeting in response to the COVID-19 pandemic on 13 Jan 2020. Since then, NERVTAG has met about 75 times. Throughout the pandemic, NERVTAG has sought to provide timely, independent scientific advice to the Government via the Chief Medical Officer (CMO) for England. When COVID-19 SAGE was set up later in Jan 2020, NERVTAG reported to SAGE. Fuller details regarding NERVTAG membership, roles and outputs are summarised in the NERVTAG 5th Annual Report January 2020 to July 2021.

In my view, NERVTAG was flexible in its processes of working and broadly succeeded in its aims. New members were co-opted to the Committee when deemed appropriate and meetings were timed according to need; in the earlier part of 2020, NERVTAG was meeting around 2 times per week. Members of NERVTAG have always been entirely professional in their interactions with each other and this continued throughout the pandemic under the leadership of the Chair, thus enabling honest and open discussions of data and their interpretation, including challenges when appropriate.

From the outset, the flow of scientific information relating to COVID-19 far exceeded that from the last pandemic of 2009 both in volume and speed. Scientific information is the bedrock of scientific advice. However, a major challenge especially in the early months of 2020, was the capacity and resource to assimilate and sift the torrent of information being released. Unlike usual practice, much of the information from research was being shared as pre-prints, news releases or on social media platforms, prior to peer-review. Members worked long hours in order to apply rigorous scientific thinking to emerging data. Many members contributed towards NERVTAG whilst simultaneously continuing with their usual work. In some instances, the demands of usual work had also increased dramatically due to the pandemic.

Interactions between NERVTAG and other bodies (SAGE, Department of Health and Social Care (DHSC)) were handled by the Chair, which was appropriate.

The establishment at an early stage of a separate SAGE sub-group to bring together a wider range of expertise to advise on Infection Prevention and Control (IPC) measures was good.

Independent scientific advice regarding COVID-19 vaccination was (and continues to be) provided to Government by the Medicines and Healthcare products Regulatory Agency (MHRA) and the Joint Committee on Vaccination and Immunisation (JCVI). The JCVI provides its advice directly to the Secretary of State for Health in accordance with the 2009 Hine Report, Section 4.56, Recommendation 12. This process was appropriate, ensuring scientific advice on vaccination remained robustly independent and could be offered without delay, as needed.

SAGE. My participation at SAGE meetings were relatively few. Most of the meetings I attended were opportunities for SAGE sub-groups to share their scientific findings and advice with each other and with the Chief Scientific Officer (CSO) and CMO. The nature and conduct of these meetings was appropriate.

7. My views as to any lessons that can be learned from the UK's response to the COVID-19 pandemic, in particular relating to the work of SAGE/SAGE sub-groups.

I have limited my comments to those areas relevant to NERVTAG and SAGE.

Surge response

Pre-2020, the UK, similar to many other countries, had established influenza pandemic plans. However, COVID-19 posed different challenges. COVID-19 was due to the emergence of a completely novel respiratory pathogen. Consequently, the scientific evidence gap at the outbreak of the pandemic was enormous; very much greater than for an influenza pandemic. The application of scientific and technological advancements towards research and communication enabled both the volume and pace of scientific knowledge to increase at a high pace particularly during the first year of the pandemic. However, the resources required to rapidly integrate the ever-emerging flow of information was not always commensurate to the circumstances, especially in the early stages of the pandemic. In preparation for the next pandemic, greater emphasis on the provision of adequate surge capacity in information management should be considered. This may include:

- Additional staff within the secretariat
- Co-opting of information management specialists
- Recognised protected time (capacity) from usual work for SAGE and SAGE sub-group members
- Earlier activation of SAGE sub-groups to cover relevant scientific areas of relevance ·

Review of the breadth and depth of expertise required to rapidly response to a pandemic involving a novel, highly transmissible and clinically dangerous pathogen, with appropriate and proportionate surge responses determined.

The rapid adoption of internet-enabled platforms for meetings (Zoom, MS Teams etc.) was an important and valuable intervention. Leveraging technological solutions to information management and communication challenges should continue.

Science and research

At a global level, the UK has contributed tremendously towards our increase in scientific knowledge regarding COVID-19. British scientists, including many members of SAGE/SAGE sub-groups, commissioned and conducted high-quality research from the outset of the pandemic. The UK clinical research infrastructure, including NIHR, responded to the COVID-19 pandemic with innovation, determination and commitment. The UK was one of the few countries in the world to have a pandemic portfolio of research studies already set up in 'hibernation' as part of influenza pandemic

preparedness and this portfolio was successfully turned towards studying COVID-19.

Research should continue to be an essential component of pandemic preparedness planning. Topic areas that would particularly benefit from coordinated research efforts ahead of a future pandemic

should be identified. It should be noted that research infrastructure in the UK is relatively well developed at some levels (eg. secondary care) but much less so in other areas (eg. in care homes).

Strong, timely UK-based research provides the most relevant knowledge base to inform good advice.

Public communication

Strong clear communication of public health advice by trusted experts is essential for a coherent public health response during a pandemic. This responsibility was, in part, fulfilled by the Chief Scientific Officer (CSO) and the Chief Medical Officer (CMO). Inevitably, in the setting of scientific uncertainty as occurs during a pandemic due to a novel pathogen, alternative viewpoints and opinions will be expressed by other individuals and scientific bodies, such as independent SAGE (iSAGE). The deliberate generation of misinformation by some parties is of particular concern.

Alternative sources of information, particularly of misinformation, may lead some persons to adopt behaviours which are associated with poorer health outcomes. The extent of the impact of misinformation on health outcomes and health inequalities is difficult to quantify.

Communication platforms and modalities will continue to evolve and expand. Developing trusted sources of public health information that can effectively reach different communities is a long-term endeavour that should be strongly considered.

Human resilience

Local heroes were evident everywhere over the course of the pandemic. At an individual level, many people were offered care and assistance by other family members, friends, professionals and strangers. At a population level, many communities were willing to accept sacrifices for the good of others more vulnerable than themselves. Many healthcare professionals worked beyond their call of duty.

This community spirit and willingness to sacrifice should neither be overlooked nor exploited.

Infrastructure

During a pandemic, the advice from SAGE and SAGE sub-groups is applied within the existing healthcare infrastructure. Physical infrastructure cannot be easily nor rapidly modified. The COVID 19 pandemic revealed the vulnerability of the NHS and social care structures to nosocomial transmission of infection. This was most evident in care homes for older aged residents but also likely contributed towards infections amongst healthcare staff.

Limitations in the flow of oxygen at many secondary care facilities were also related to infrastructural constraints. Concerns regarding the ability to provide oxygen supplementation to

patients were most apparent during the peaks of pandemic waves when demands were at their highest.

Would the Inquiry consider the importance of physical infrastructure in relation to the UK's response to the pandemic and how it might influence future pandemic preparedness?

8. A brief description of documentation relating to these matters that you hold (including soft copy material held electronically).

I do not hold printed copies of any material discussed at NERVTAG or SAGE.

I retain some personal soft copies of some of the agenda items discussed at NERVTAG meetings, though these are not systematic nor complete; they represent a selection of the papers held by the NERVTAG secretariat.

My hospital IT system is supported by a 'cryoserver' repository for emails.