

Response to Public Inquiry request for information.

Ian Hall, University of Manchester.

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

- Education and Qualifications:
 - 2003 PhD Applied Mathematics, University of Exeter, Exeter, UK. Thesis title: 'Quasi-modes and the evolution of coherent planar vortices'
 - 1999 MMath Pure and Applied Mathematics, 1st (Hons), University of Exeter, Exeter, UK.
- Appointments held
 - Professor of Mathematical Epidemiology and Statistics, Department of Mathematics (80%) and School of Health Sciences (20%), University of Manchester, 2021 | present
 - Head of Statistics and Probability Group, Department of Mathematics, August 2019 | July 2022
 - Reader in Mathematical Statistics, Department of Mathematics and School of Health Sciences, University of Manchester, Jan 2018 | July 2021
 - Honorary Senior Principal Modeller in Emergency Preparedness, Health Protection Division/Advanced Analytics, Public Health England, 2019 | present
 - Principal Modeller in Emergency Preparedness, Health Protection Division, Public Health England, 2018 | 2019
 - Scientific Programme leader and Principal Modeller in Emergency Preparedness, Health Protection Division, Public Health England, 2006 | 2017
 - Senior Modeller in Emergency Preparedness, Health Protection Division, Public Health England, 2002 | 2006
 - Held Security Check level clearance (National Security Vetting), 2003-2022. Currently being vetted for DV clearance.
- Committee memberships and honorary appointments
 - Academic Chair of the SAGE Social Care Working Group.
 - Member of SPIM
 - Output Assessor of REF Sub-panel 2: Public Health, Health Services and Primary Care in the assessment phase (2021-2022)
 - Member of EPSRC's Healthcare Technologies Strategic Advisory Team Jan 2021- March 2024
 - William Penney Fellow for Statistics, Atomic Weapons Establishment (10% FTE), 2021-present.
 - Fellow of the Alan Turing Institute of Data Science and Artificial Intelligence, 96 Euston Rd, London, UK, 2018-present (renewed 2021)
 - Member of the University of Warwick's MathsSys external advisory panel. 2021-present
 - Member of HMPPS National Review Panel for health advice. 2021-present
 - NIHR Policy Research programme commissioning committee July 2022 - July 2024
- Major peer reviewed or archive server publications (see over)

Overton, Christopher E; Pellis, Lorenzo; Stage, Helena B; Scarabel, Francesca; Burton, Joshua; Fraser, Christophe; Hall, Ian; House, Thomas A; Jewell, Chris; Nurtay, Anel;	EpiBeds: Data informed modelling of the COVID-19 hospital burden in England	PLOS Computational Biology	18	9	e1010406	2022	Public Library of Science San Francisco, CA USA
Pattni, Karan; Hungerford, Daniel; Adams, Sarah; Buchan, Iain; Cheyne, Christopher P; García-Fiñana, Marta; Hall, Ian; Hughes, David M; Overton, Christopher E; Zhang, Xingna;	Effectiveness of the BNT162b2 (Pfizer-BioNTech) and the ChAdOx1 nCoV-19 (Oxford-AstraZeneca) vaccines for reducing susceptibility to infection with the Delta variant (B. 1.617. 2) of SARS-CoV-2	BMC infectious diseases	22	1	01-Nov	2022	BioMed Central
Meslé, Margaux M; Vivancos, Roberto; Hall, Ian M; Christley, Robert M; Leach, Steve; Read, Jonathan M;	Estimating the potential for global dissemination of pandemic pathogens using the global airline network and healthcare development indices	Scientific Reports	12	1	01-Sep	2022	Nature Publishing Group
Donaldson, Anna L; Harris, John P; Vivancos, Roberto; Hungerford, Daniel; Hall, Ian; O'Brien, Sarah J;	School Attendance Registers for the Syndromic Surveillance of Infectious Intestinal Disease in UK Children: Protocol for a Retrospective Analysis	JMIR research protocols	11	1	e30078	2022	JMIR Publications Inc., Toronto, Canada
Overton, Christopher E; Webb, Luke; Datta, Uma; Fursman, Mike; Hardstaff, Jo; Hiironen, Iina; Paranthaman, Karthik; Riley, Heather; Sedgwick, James; Verne, Julia;	Novel methods for estimating the instantaneous and overall COVID-19 case fatality risk among care home residents in England	arXiv preprint arXiv:2202.07325				2022	

Aylett-Bullock, Joseph; Gilman, Robert Tucker; Hall, Ian; Kennedy, David; Evers, Egmond Samir; Katta, Anjali; Ahmed, Hussien; Fong, Kevin; Adib, Keyrellous; Al Ariqi, Lubna;	Epidemiological modelling in refugee and internally displaced people settlements: challenges and ways forward	BMJ global health	7	3	e007822	2022	BMJ Specialist Journals
Whitfield, Carl; van Tongeren, Martie; Han, Yang; Wei, Hua; Daniels, Sarah; Regan, Martyn; Denning, David; Verma, Arpana; Pellis, Lorenzo; Hall, Ian;	Modelling the impact of non-pharmaceutical interventions on workplace transmission of SARS-CoV-2 in the home-delivery sector (preprint)					2022	
Carruthers, Jonathan; Xu, Jingsi; Finnie, Thomas James Ronald; Hall, Ian;	A within-host model of SARS-CoV-2 infection	medRxiv				2022	Cold Spring Harbor Laboratory Press
Miller, Daniel; King, Marco-Felipe; Nally, James; Drodge, Joseph R; Reeves, Gary I; Bate, Andrew M; Cooper, Henry; Dalrymple, Ursula; Hall, Ian; López-García, Martín;	Modeling the factors that influence exposure to SARS-CoV-2 on a subway train carriage	Indoor air	32	2	e12976	2022	
Bridgen, Jessica RE; Wei, Hua; Whitfield, Carl A; Han, Yang; Hall, Ian; Jewell, Chris; van Tongeren, Martie JA; Read, Jonathan M;	Contact patterns of UK home delivery drivers and their use of protective measures during the COVID-19 pandemic: a cross-sectional study	medRxiv				2022	Cold Spring Harbor Laboratory Press
Cahuantzi, Roberto; Lythgoe, Katrina; Hall, Ian; House, Thomas A; Pellis, Lorenzo;	Analysis and comprehensive lineage identification for SARS-CoV-2 genomes through scalable learning methods	bioRxiv				2022	Cold Spring Harbor Laboratory
Pellis, Lorenzo; Scarabel, Francesca; Stage, Helena B; Overton, Christopher E; Chappell, Lauren HK; Fearon, Elizabeth;	Challenges in control of COVID-19: short doubling time and long delay to effect of interventions	Philosophical Transactions of the Royal Society B	376	1829	20200264	2021	The Royal Society

Bennett, Emma; Lythgoe, Katrina A; House, Thomas A; Hall, Ian;							
Pratt, Adrian; Bennett, Emma; Gillard, Joseph; Leach, Steve; Hall, Ian;	Dose–Response Modeling: Extrapolating From Experimental Data to Real-World Populations	Risk Analysis	41	1	67-78	2021	
Morciano, Marcello; Stokes, Jonathan; Kontopantelis, Evangelos; Hall, Ian; Turner, Alex J;	Excess mortality for care home residents during the first 23 weeks of the COVID-19 pandemic in England: a national cohort study	BMC medicine	19	1	01-Nov	2021	BioMed Central
Fyles, Martyn; Fearon, Elizabeth; Overton, Christopher; University of Manchester COVID-19 Modelling Group; Wingfield, Tom; Medley, Graham F; Hall, Ian; Pellis, Lorenzo; House, Thomas;	Using a household-structured branching process to analyse contact tracing in the SARS-CoV-2 pandemic	Philosophical Transactions of the Royal Society B	376	1829	20200267	2021	The Royal Society
Han, Yang; Sun, Yujia; Hsu, Jason C; House, Thomas; Gent, Nick; Hall, Ian;	Statistical Design and Analysis of Diagnostic Tests for Mutating Viruses	medRxiv				2021	Cold Spring Harbor Laboratory Press
Daniels, Sarah; Wei, Hua; Han, Yang; Catt, Heather; Denning, David W; Hall, Ian; Regan, Martyn; Verma, Arpana; Whitfield, Carl A; Van Tongeren, Martie;	Risk factors associated with respiratory infectious disease-related presenteeism: a rapid review	BMC public health	21	1	01-Dec	2021	BioMed Central
Hall, Ian; Lewkowicz, Hugo; Webb, Luke; House, Thomas; Pellis, Lorenzo; Sedgwick, James; Gent, Nick; University of Manchester COVID-19 Modelling Group and the Public Health England Modelling Team;	Outbreaks in care homes may lead to substantial disease burden if not mitigated	Philosophical Transactions of the Royal Society B	376	1829	20200269	2021	The Royal Society

Fearon, Elizabeth; Buchan, Iain E; Das, Rajenki; Davis, Emma L; Fyles, Martyn; Hall, Ian; Hollingsworth, T Deirdre; House, Thomas; Jay, Caroline; Medley, Graham F;	SARS-CoV-2 antigen testing: weighing the false positives against the costs of failing to control transmission	The Lancet Respiratory Medicine	9	7	685-687	2021	Elsevier
Green, R; Tulloch, JSP; Tunnah, C; Coffey, E; Lawrenson, K; Fox, A; Mason, J; Barnett, R; Constantine, A; Shepherd, W;	COVID-19 testing in outbreak-free care homes: what are the public health benefits?	Journal of Hospital Infection	111		89-95	2021	WB Saunders
Walters, Caroline E; Dunbar, Maria Bekker-Nielsen; Weston, Dale; Hall, Ian M;	Modelling infectious disease transmission potential as a function of human behaviour	medRxiv				2021	Cold Spring Harbor Laboratory Press
Ward, Thomas; Glaser, Alex; Johnsen, Alexander; Xu, Feng; Hall, Ian; Pellis, Lorenzo;	Growth, reproduction numbers and factors affecting the spread of SARS-CoV-2 novel variants of concern in the UK from October 2020 to July 2021: a modelling analysis	BMJ open	11	11	e056636	2021	British Medical Journal Publishing Group
Biggerstaff, Matthew; Dahlgren, Fredrick Scott; Fitzner, Julia; George, Dylan; Hammond, Aspen; Hall, Ian; Haw, David; Imai, Natsuko; Johansson, Michael A; Kramer, Sarah;	Coordinating the real-time use of global influenza activity data for better public health planning	Influenza and Other Respiratory Viruses	14	2	105-110	2020	
Brooks, Samantha K; Smith, Louise E; Webster, Rebecca K; Weston, Dale; Woodland, Lisa; Hall, Ian; Rubin, G James;	The impact of unplanned school closure on children's social contact: rapid evidence review	Eurosurveillance	25	13	2000188	2020	European Centre for Disease Prevention and Control
Overton, Christopher E; Stage, Helena B; Ahmad, Shazaad; Curran-Sebastian, Jacob; Dark,	Using statistics and mathematical modelling to understand	Infectious Disease Modelling	5		409-441	2020	Elsevier

Paul; Das, Rajenki; Fearon, Elizabeth; Felton, Timothy; Fyles, Martyn; Gent, Nick;	infectious disease outbreaks: COVID-19 as an example						
Webster, Rebecca Katie; Liu, Regina; Karimullina, Kristina; Hall, Ian; Amlot, Richard; Rubin, Gideon James;	A systematic review of infectious illness presenteeism: prevalence, reasons and risk factors	BMC public health	19	1	Jan-13	2019	BioMed Central
Meslé, Margaux Marie Isabelle; Hall, Ian Melvyn; Christley, Robert Matthew; Leach, Steve; Read, Jonathan Michael;	The use and reporting of airline passenger data for infectious disease modelling: a systematic review	Eurosurveillance	24	31	1800216	2019	European Centre for Disease Prevention and Control
Gobin, Maya; Hawker, Jeremy; Cleary, Paul; Inns, Thomas; Gardiner, Daniel; Mikhail, Amy; McCormick, Jacquelyn; Elson, Richard; Ready, Derren; Dallman, Tim;	National outbreak of Shiga toxin-producing Escherichia coli O157: H7 linked to mixed salad leaves, United Kingdom, 2016	Eurosurveillance	23	18	17-00197	2018	European Centre for Disease Prevention and Control
Walters, Caroline E; Meslé, Margaux M; Hall, Ian M;	Modelling the global spread of diseases: A review of current practice and capability	Epidemics	25		01-Aug	2018	Elsevier
Finnie, TJR; Copley, VR; Hall, IM; Leach, Stephen;	An analysis of influenza outbreaks in institutions and enclosed societies	Epidemiology & Infection	142	1	107-113	2014	Cambridge University Press
Bennett, E; Ashton, M; Calvert, N; Chaloner, J; Cheesbrough, J; Egan, J; Farrell, I; Hall, Ian; Harrison, TG; Naik, FC;	Barrow-in-Furness: a large community legionellosis outbreak in the UK	Epidemiology & Infection	142	8	1763-1777	2014	Cambridge University Press
Wood, RM; Egan, JR; Hall, IM;	A dose and time response Markov model for the in-host dynamics of infection with intracellular bacteria following	Journal of The Royal Society Interface	11	95	20140119	2014	The Royal Society

	inhalation: with application to <i>Francisella tularensis</i>						
Rizzo, Caterina; Fabiani, Massimo; Amlôt, Richard; Hall, Ian; Finnie, Thomas; Rubin, G James; Cucuiu, Radu; Pistol, Adriana; Popovici, Florin; Popescu, Rodica;	Survey on the likely behavioural changes of the general public in four European countries during the 2009/2010 pandemic	Modeling the interplay between human behavior and the spread of infectious diseases			23-41	2013	Springer, New York, NY
Hall, Ian M; Barrass, Iain; Leach, Steve; Pittet, Didier; Hugonnet, Stéphane;	Transmission dynamics of methicillin-resistant <i>Staphylococcus aureus</i> in a medical intensive care unit	Journal of the Royal Society Interface	9	75	2639-2652	2012	The Royal Society
Bull, Matthew; Hall, Ian M; Leach, Stephen; Robesyn, Emmanuel;	The application of geographic information systems and spatial data during Legionnaires' disease outbreak responses	Eurosurveillance	17	49	20331	2012	European Centre for Disease Prevention and Control
Egan, Joseph R; Hall, Ian M; Lemon, David J; Leach, Steve;	Modeling Legionnaires' disease outbreaks: estimating the timing of an aerosolized release using symptom-onset dates	Epidemiology			188-198	2011	JSTOR
House, Thomas; Hall, Ian; Danon, Leon; Keeling, Matt J;	Contingency planning for a deliberate release of smallpox in Great Britain-the role of geographical scale and contact structure	BMC infectious diseases	10	1	01-Dec	2010	BioMed Central
Egan, Joseph R; Legrand, Judith; Hall, Ian M; Cauchemez, Simon; Ferguson, Neil M; Leach, Steve;	Re-assessment of mitigation strategies for deliberate releases of anthrax using a real-time outbreak characterization tool	Epidemics	2	4	189-194	2010	Elsevier
Ghani, Azra; Baguelin, Marc; Griffin, Jamie; Flasche, Stefan; Van Hoek, Albert Jan; Cauchemez, Simon; Donnelly, Christl;	The early transmission dynamics of H1N1pdm influenza in the United Kingdom	PLoS currents	1			2009	Public Library of Science

Robertson, Chris; White, Michael; Truscott, James;							
Legrand, Judith; Egan, Joseph R; Hall, Ian M; Cauchemez, Simon; Leach, Steve; Ferguson, Neil M;	Estimating the location and spatial extent of a covert anthrax release	PLoS Computational Biology	5	1	e1000356	2009	Public Library of Science San Francisco, USA
Hall, IM; Egan, Joseph R; Barrass, I; Gani, R; Leach, Stephen;	Comparison of smallpox outbreak control strategies using a spatial metapopulation model	Epidemiology & Infection	135	7	1133- 1144	2007	Cambridge University Press
Hall, Ian M; Gani, R; Hughes, HE; Leach, Stephen;	Real-time epidemic forecasting for pandemic influenza	Epidemiology & Infection	135	3	372-385	2007	Cambridge University Press

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.

- Scientific Pandemic Influenza Group on Modelling (SPIM) Scientific Pandemic Influenza Group on Modelling (SPI-M) - GOV.UK (www.gov.uk)– approx. 2006 to present
- SPIM-Operational (SPIM-O) - Jan 2020 to April 2022
- Social Care Working Group (SCWG) – April 2020 to April 2022 (also academic chair)
- Environmental Modelling Group – April 2020 to April 2022
- Hospital Onset COVID-19 Working Group (HOCl) – Sept 2020 to April 2022
- Scientific Advisory Group for Emergencies (SAGE), About us - Scientific Advisory Group for Emergencies - GOV.UK (www.gov.uk) – Feb 2020 to April 2022
- UK Health Security Agency (Public Health England as was) Joint Modelling Team (JMT) – Jan 2020-July 2022
 - (JMT-lite - Jan 2020 to present)

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

- a. *When and how you came to be a participant:* see above response to Q2 for timing
 - SPIM-O – participated as a long standing member of SPIM
 - SCWG – participated as was chairing a SPIM-O subgroup on care home modelling which merged with SAGE commissioned group (becoming social care working group in Sept 2020)
 - EMG – asked to join to provide a conduit between SPIM-O and EMG by chair of SPIM-O
 - HOCl – invited by chair of HOCl to attend to provide updates on work in social care, attendance was for specific agenda items.
 - SAGE – Attended Feb 2020 as acting chair of SPIM-O covering SPIM-O chairs planned leave. Afterwards attended when called as academic chair of SCWG. There were also SAGE coordination calls for subgroup chairs.
 - UKHSA JMT – invited as existing trusted academic collaborator/advisor.
- b. *The number of meetings you attended, and your contributions to those meetings:*
 - I attended 18 SAGE meetings (5 as observer) starting at SAGE 8 as SPIM acting chair and then as SCWG academic chair. I attended all meetings I was called to that I could attend. For SAGE and subgroups other than SCWG I recommend you contact the specific secretariat support. SCWG timeline is shared below for key outputs and meetings.
 - For SCWG I was academic chair and so shared chairing duties in virtual meetings with my co-chair at the time (Charlotte Watts, Jenny Harries, Eamonn O’Moore and Thomas Waite). This meant facilitating discussion and ensuring consensus was reached on discussion. Often I brought analysis to the group for situational awareness or to frame discussion. Hard to quantify number of meetings, as there were chair coordination calls and ad-hoc task and finish groups for specific commissions.
 - For HOCl I attended for single standing agenda item at each meeting on social care/hospital interactions.
 - For EMG (attended 23 out of 39 meetings), SPIM-O (attended 100 out of 104) and SAGE I attended as participant and offered comment when relevant and steer on outputs. Often I may bring a paper to the group for information or to address specific discussion/commission.

- For JMT I attended all meetings I could (UKHSA will have detail on cadence of meetings) as an honorary senior principal modeller with almost 20 years of experience advising on modelling disease outbreaks. During pandemic as SCWG became established I would brief updates on work to JMT to a standing agenda item.

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

- For SCWG this was facilitating discussion and guiding subgroups of participants working on responses to commissions, drafting and finalising consensus statements for SAGE and DHSC policy teams.
- For SPIM-O my role was initially as an expert on spatial modelling and stochastic processes (outbreaks in specific populations and Quantitative Microbial Risk Assessment, QMRA) expanding later to focus on social care and environmental modelling.
- For EMG and HOCl my role was to facilitate communications between SAGE subgroups as well as be expert on epidemic modelling and outbreaks in enclosed societies.

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 contributed to the UKHSA (was PHE) joint modelling team report which was written on a weekly basis for some of the pandemic. First meeting in records 27 January 2020, final meeting 27 June 2022. JMT closed officially 30 June 2022. JMT Lite meetings continue monthly (27 January 2020 meeting set up and called nCoV Epi and Modelling Cell, 07 February 2020 meeting renamed nCoV Modelling Cell, 27 January 2021 meeting renamed Joint Modelling Team (JMT), 25 July 2022 meeting renamed Joint Modelling Team Lite (JMT Lite)).

I also contributed analysis and advice to the HM Prison and Probation Service (HMPPS) National Review Panel (NRP) for health advice from foundation in 2021 (NRP commenced: 13/12/21, Ended: 30/08/2022). We shared existing reports and bespoke analysis with HMPPS science team from 30/3/2020.

Output to SAGE

Was either main author or involved in final edits.

- **SCWG: Care homes analysis, 12 May 2020**, Consensus statement the Social Care Working Group
- **SCWG: COVID-19 and care homes - update paper, 23 September 2020**, Consensus statement by the Social Care Working Group.
- **SCWG: Consensus statement on family or friend visitor policy into care home settings, 2 November 2020**, Consensus statement by the Social Care Working Group.
- **SCWG: Estimating the minimum level of vaccine coverage in care home settings, March 2021**, Consensus statement by the Social Care Working Group
- **SCWG: What are the appropriate mitigations to deploy in care homes in the context of the post vaccination risk landscape?, 26 May 2021**, Consensus statement by the Social Care Working Group
- **SCWG Chairs Summary of role of shielding, 20 December 2021**, Paper prepared by the Social Care Working Group (SCWG), based on SCWG discussion but written by chairs due to timescale constraints (not a full consensus statement). **University of Manchester: Age-based NPIs, simple model insight, 20 December 2021**, Paper prepared by the University of Manchester (Annex to SCWG Chairs summary of same date).
- **The association between the discharge of patients from hospitals and COVID in care homes**, A consensus statement from the Social Care Working Group (Noting declaration of interest and one participant request for removal from consensus)

Output timeline from SCWG

January – June 2020

Date	Product or decision	Key issue
February		
13 February 2020		Ian Hall shared papers he had previously written about outbreaks in closed settings. [based on Finnie, TJR; Copley, VR; Hall, IM; Leach, Stephen; An analysis of influenza outbreaks in institutions and enclosed societies, <i>Epidemiology & Infection</i> , 142, 1, 107-113, 2014, Cambridge University Press and rapid work on Diamond Princess outbreak]
March		
April		
06 April 2020	Outbreaks	The paper “ <i>Modelling outbreaks in enclosed societies</i> ” was produced. It was written by Ian Hall. This drew on SPIM paper from early March from UoM group [Epidemics in carehomes – impact of “cocooning”].
07 April 2020	Outbreak	“ <i>Preliminary analysis of PHE Care Home data</i> ” paper, authored by Ian Hall was published.
22 April 2020	Surveillance	A meeting was proposed by Ian Hall to inform SPIM about PHE modelling and potential datasets for capturing outbreak data:
26 April 2020	Outbreaks	The draft of the paper “ <i>Rapid increase of Care Homes reporting outbreaks a sign of eventual substantial disease burden</i> ” was produced.
26 April 2020		An update report was shared with SPIM members
May		
06 May 2020	Surveillance	Care Home outbreaks and some insight on deaths
07 May 2020		The paper “ <i>Rapid increase of Care Homes reporting outbreaks a sign of eventual substantial disease burden</i> ” was published. It was authored by Ian Hall, Hugo Lewkowicz, Thomas House, Lorenzo Pellis, James Sedgwick, Nick Gent.

10 May 2020		The Frailty briefing paper for SAGE Care home Working Group was produced.
12 May 2020	Surveillance	SCWG Care Home Analysis SCWG: Care homes analysis, 12 May 2020 - GOV.UK (www.gov.uk)
15 May 2020		<p>SAGE Social Care Sub-group provided new advice to DHSC on testing for SARS-CoV-2 in care homes using PCR and LFD testing, specifically focussing on testing mainly for staff (further advice on testing for infection in residents will be provided in early January). In summary, a consensus statement is now recommending:</p> <p>In non-outbreak settings, for staff, ADDING an LFD test to the WEEKLY PCR test (current practice) with aim of detecting quickly any new infection. Testing ideally at start of shift and concurrent (so both tests together). In addition, another LFD test at point when person is returning to work after period out of work (e.g. rest periods, time off) which will be taken at start of shift.</p> <p>In outbreak settings, for ALL (staff and residents), ADDING an LFD test to the current PCR testing for staff and residents, taken concurrently, to inform decisions about outbreak management. If LFD +ve, treat as infected case, stand down if PCR -ve. For day 4-5 second round of testing, ADD LFD to current PCR testing protocol. For recovery testing (Day 28), PCR as per current (but further decision on adding LFD to this round tbc).</p> <p>In non-outbreak settings, for staff, ADDING an LFD test to the WEEKLY PCR test (current practice) with aim of detecting quickly any new infection. Testing ideally at start of shift and concurrent (so both tests together). In addition, another LFD test at point when person is returning to work after period out of work (e.g. rest periods, time off) which will be taken at start of shift. In non-outbreak settings, for staff, ADDING an LFD test to the WEEKLY PCR test (current practice) with aim of detecting quickly any new infection. Testing ideally at start of shift and concurrent (so both tests together). In addition, another LFD test at point when person is returning to work after period out of work (e.g. rest periods, time off) which will be taken at start of shift.</p>
29 May 2020	Surveillance	Care Homes: Data gaps and research priorities Report
29 May 2020	Mortality	"Multi-morbidity & frailty" was created.

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Timeline June 2020 to June 2021

Date	Product or Decision	Key issue
June 2020		
05 June 2020	Surveillance	Multi-morbidity & frailty.
06 June 2020	Surveillance	SCWG Covid Related ASC Analysis Spreadsheet Identifying Research Questions & Data Gaps.
06 June 2020	Surveillance	Covid-19 – Scottish Adult Care Homes Data and Policy.
18 June 2020		The paper “ <i>Update on Evidence to Inform Emerging Policy questions for Adult Social Care.</i> ” Was brought to SAGE.
July 2020		
02 July 2020		The paper “Adverse effects of social isolation and loneliness in care homes during COVID-19” was shared with members of the SCWG for discussion.
03 July 2020	Testing	Care Homes analysis report was published after being taken to SAGE 12 th May (see above)
07 July 2020	Surveillance	Estimates of Excess Mortality in Domiciliary Care Data in England.
10 July 2020	Surveillance	Vivaldi – Preventing COVID-19 in Care Homes – Care Home Daily Reporting
August 2020		

September 2020		
02 September 2020	Surveillance	Impact of Interventions to reduce risk of outbreak occurrence in care homes
9 September 2020	Risk assessment	A dynamic risk assessment slidepack was created.
11 th September 2020	Administration	Changing the remit and decreasing the number of SCWG members was proposed.
18 September 2020	Visiting	Discussions at the SAGE meeting around the impact on visiting restrictions on the Care Home populations
23 September 2020	Surveillance	Social Care Working Group update paper published 9 October 2020 SCWG: COVID-19 and care homes - update paper, 23 September 2020 - GOV.UK (www.gov.uk)
23 September 2020		The paper : <i>“The effectiveness of PPE in reducing the transmission of COVID-19 in unpaid carers and those delivering care within the same parameters as unpaid carers”</i> was produced
25 September 2020	Visiting	SAGE social care subgroup meeting – discussions were held about developing a model around visiting policy considering the risks associated with social isolation

October 2020		
02 October 2020		<i>Draft ToR SAGE Social Care Working Group Sage paper / Feedback, Task list & Research Priorities (see attached), Progress Updates (Vivaldi, Discharge & Modelling, Wider impacts/health economics)</i>
10 October 2020		SCWG meeting took place The agenda covered: Policy Update Trends – Julia / Alasdair Review CONTACT study (presentation by Carl Thompson, Leeds) Reach consensus on Health economics work on visitor policy.
21 October 2020	Testing	Comparison between the current PCR testing regimen and higher frequency, faster turnaround, lower sensitivity testing (eg. Novel lateral flow device testing) in long-term care facilities)
26 October 2020	Surveillance	New modelling data presented at SAGE SC Sub-group today indicated the COVID-19 associated death rate in care homes currently approx. 40/day with doubling time of about 14 days- but differential across nursing and residential homes with former about 16 days doubling time and latter about 10 days. This coincides with signal PHE surveillance has detected on risk of larger outbreaks in care homes which also identifies residential homes, particularly those with dementia care, as being a higher risk for larger outbreaks than nursing homes looking after similar client group. Dementia care providers remain a higher risk setting for outbreaks generally.

28 October 2020	Surveillance	Discharges from NHS Scotland Hospitals to Care Homes between 1 March and 31 May 2020
November 2020		
01 November 2020	Surveillance	The role of genomics in understanding COVID-19 outbreaks in long term care facilities.
November 2020	Testing	Comparing sequential and alternative testing in care home staff
02 November 2020	Visiting	SCWG Consensus Statement on Family or friend Visitor Policy into Care Home Settings. S0875 Social Care Working Group Consensus statement on visitor policies.pdf (publishing.service.gov.uk)
03 November 2020		SCWG Consensus statement on visiting shared with the wider group.
06 November 2020	Meeting	Meeting took place
08 November 2020	Testing	Preliminary report from the Joint PHE Porton Down & University of Oxford SARS-CoV-2 test development and validation cell: Rapid evaluation of Lateral Flow Viral Antigen detection devices (LFDs) for mass community testing.
12 November 2020	Testing	Repeated mass testing with rapid antigen tests can effectively reduce SARS-CoV-2 transmission in defined populations.
13 November 2020	Surveillance	The Sage Social Care Working Group met on the 13 th November 2020 to hear presentations from PHE and NHSEngland on their studies into deaths of people with learning disabilities.
19 November 2020	Surveillance	Consultation response on proposed amendment to Regulation 18 of the Health and Social Care Act 2008 (Regulated Activities) Regulations 2014.

20 November 2020		Meeting of the SAGE SCWG took place, the following topics were discussed: Trends Update, Genomics paper, managing second positive tests, Care workers moving between care settings. Ian Hall informed the group that they were awaiting a formal commission minister on the Learning Disabilities reports.
23 November 2020	Surveillance	DRAFT Sage Care Home Working Group Statement on Mortality Trends in Care Homes 25/11/2020
23 November 2020	Genomics	The paper: <i>"The role of genomics in understanding COVID-19 outbreaks in long term care facilities"</i> was made available pre-print.
27 November 2020		Meeting of the SCWG took place. The following topics were discussed: Mortality, Vivaldi, Care home testing, CONDOR, PHE work on testing, Timeline for further modelling insights, Implementation issues.
December 2020		
01 December 2020	Surveillance	Care Home Forecasting
01 December 2020	Testing	Challenges with routine testing of staff.
03 December 2020	Testing	SAGE SOCIAL CARE SUBGROUP has been asked by PHE to review the use of the combination of PCR/LFD tests for outbreak/non outbreak testing for staff/visitors/residents.
04 December 2020	Meeting	Meeting took place
10 December 2020	Testing	Liverpool Covid-SMART Pilot Systematic Meaningful Asymptomatic Repeated Testing
13 December 2020	PPE	Note on the Effectiveness of PPE in reducing the transmission of COVID-19 in health and social care settings was produced.

17 December 2020	Surveillance	Draft - Guidance on Care Home Testing Strategy to Make Best Use of New Technology.
21 December 2020	Testing	<p>SAGE Social Care Sub-group provided new advice to DHSC on testing for SARS-CoV-2 in care homes using PCR and LFD testing, specifically focussing on testing mainly for staff. A consensus statement is now recommending: In non-outbreak settings, for staff, ADDING an LFD test to the WEEKLY PCR test (current practice) with aim of detecting quickly any new infection. Testing ideally at start of shift and concurrent (so both tests together). In addition, another LFD test at point when person is returning to work after period out of work (e.g. rest periods, time off) which will be taken at start of shift. In outbreak settings, for ALL (staff and residents), ADDING an LFD test to the current PCR testing for staff and residents, taken concurrently, to inform decisions about outbreak management. If LFD +ve, treat as infected case, stand down if PCR -ve. For day 4-5 second round of testing, ADD LFD to current PCR testing protocol. For recovery testing (Day 28), PCR as per current (but further decision on adding LFD to this round tbc). In non-outbreak settings, for staff, ADDING an LFD test to the WEEKLY PCR test (current practice) with aim of detecting quickly any new infection. Testing ideally at start of shift and concurrent (so both tests together). In addition, another LFD test at point when person is returning to work after period out of work (e.g. rest periods, time off) which will be taken at start of shift. In non-outbreak settings, for staff, ADDING an LFD test to the WEEKLY PCR test (current practice) with aim of detecting quickly any new infection. Testing ideally at start of shift and concurrent (so both tests together). In addition, another LFD test at point when person is returning to work after period out of work (e.g. rest periods, time off) which will be taken at start of shift.</p>
December 2020	Surveillance	Care Home Forecasting

21 December 2020	Surveillance	Interim Chair's Briefing Note – Care Home Staff Testing (21/12/2020)
23 December 2020	Testing	Liverpool Covid-19 Community Testing Pilot
January 2021		
Unknown	Vaccination	The paper " <i>Vaccine impact on Care Homes in England</i> " was published, authored by Ian Hall
January 15, 2021,	Testing	Meeting of the SAGE SCWG took place, the following topics were discussed: Trends / Forecast, Case Fatality paper, Testing strategy, Vaccination
February 2021		
02 February 2021	Mortality	A data report on COVID-19 deaths in England was produced.
05 February 2021	Testing	Meeting of the SAGE SCWG took place. The following topics were discussed: Trends / Forecasts, Vaccination Update, Testing Update
08 February 2021	Testing	SAGE Social Care sub-group have issued advice on testing in care home outbreaks, using LFD and PCR testing for residents and staff- reviewed at meeting on February 5th. Monitoring the extent of the presence of variants presenting within Care Homes now an important consideration;
25 February 2021	Vaccination	A report: "Vaccine coverage and impact" was published, authored by Ian Hall.
26 February 2021	Vaccination	SAGE meeting- modelling work focusing on the vaccination coverage for staff was discussed

March 2021		
02 March 2021	Vaccination	Slides created on post vaccination risk assessment created for a future discussion.
02 March 2021	Research	The report: " <i>Family visits to care homes: experiences and perspectives on policies and practices during the COVID-19 pandemic. A summary of ongoing UK research</i> " Was written
04 March 2021	CFR	A paper: " <i>Temporal and regional trends in the care home case fatality ratio</i> " was published, written by Christopher Overton, Luke Webb, and Ian Hall. The analysis was of use to SCWG.
05 March 2021	Meeting	Meeting took place. Updates from Four Nations.
11 March 2021	Administration	A spreadsheet covering the declarations of interest of SAGE SCWG members was created.
12 March 2021	Testing	Question put forward to members of the SAGE SCWG to provide feedback on the proposal to move from a weekly PCR testing regime and replace it with a twice weekly LFT testing regime.
19 March 2021		Meeting of the SAGE SCWG took place, the following topics were discussed: Trends/Forecast, Vaccination update, Visitor Paper, 90 day paper, Commission updates: Testing in non CH settings & Evaluation, 14 – 28 day rule
25 March 2021	Mortality	An updated version of " <i>Temporal and regional trends in the care home case fatality ratio</i> " was published.
26 March 2021		Meeting of the SAGE SCWG took place. The following topics were discussed: Update on 90 day paper, Debrief and next step on vaccine policy paper, Testing in medium risk settings, present on LFD sensitivity/efficacy work, update on network modelling for dom care project trends: (Outbreaks, Mortality, Vaccine coverage).
Unknown		A spreadsheet was created which provided responses to policy questions.

April 2021		
01 April 2021	Mortality	A report on COVID-19 mortality in England was published
09 April 2021	Decision; Testing	<p>SAGE social care working group meeting – discussed key scientific issues around possible modifications to care homes testing protocols in light of falling levels of infections and higher vaccinations during the gradual unlock. Discussed the differences between sensitivities of the LFD and PCR tests. Analysis of PCR tests show they are more accurate on picking up higher levels of infections. DHSC colleagues subsequently agreed that all care homes in England to have testing protocol following national standards of minimum testing and the frequency reduced from weekly to fortnightly testing. PCR testing to be the main modality of testing, this could change (increase rapidly) where certain conditions are met. Tests from care homes also to be sent for Genomic sequencing to be agreed.</p> <p>Awaiting approval for: amendments to guidance documents regarding reducing the 28-day isolation period to 14 days for care homes. Care Home visiting guidance – amendments to be made regarding the wearing of PPE, masks, and how frequently they should be changed. Current guidance on the website is still safe pending the updating of the guidance.</p>
23 April 2021		<p>Meeting was held, during the call it was confirmed that Éamonn O'Moore was appointed as interim co-chair of the SCWG. The following topics were also discussed: Update from main SAGE group. Hospital Discharge – Bruce, Alicia, Vaccine advisory note – publication routes, Evaluation of interventions post vaccine, Trends – data issues</p>
May 2021		
7 May 2021	Vaccination paper	Meeting took place which further developed vaccination coverage paper and updated on the progress of the interventions paper.

14 May 2021	Vaccines	Meeting took place which was largely focused on discussions on the impact of vaccines, and future “game changers as well as risks.
20 May 2021	PPE	Update of “ <i>The effectiveness of PPE in reducing the transmission of COVID-19 in health and social care settings</i> ” paper was produced
21 May 2021	IPC mitigations	Meeting of the SCWG took place, it was largely focused on the interventions paper. During the call a gap in visiting data.
21 May 2021	Vaccination	SCWG: Estimating the minimum level of vaccine coverage in care home settings, March 2021 SCWG: Estimating the minimum level of vaccine coverage in care home settings, March 2021 - GOV.UK (www.gov.uk)
26 May 2021	IPC mitigations	SAGE Social Care Working Group paper on mitigations in highly vaccinated populations at SCWG: What are the appropriate mitigations to deploy in care homes in the context of the post vaccination risk landscape?, 26 May 2021 - GOV.UK (www.gov.uk)
27 May 2021	Discharge/ Outbreaks	<i>A data linkage approach to assessing the contribution of hospital-associated SARS-CoV-2 infection to care home outbreaks in England, 30 January to 12 October 2020 (report)</i> published on gov.uk. The findings of this report suggest hospital associated seeding accounted for a small proportion of all care home outbreaks. Policies on systematic testing prior to hospital discharge for patients discharged to care homes, and where a test result was still awaiting, the patient would be discharged and pending the result, isolated in the same way as a COVID-positive patient, were introduced on 15 April 2020. This may have supported the decline seen in these types of outbreaks, contributing to an overall reduction in care home cases.
28 May	Vaccination Paper.	Meeting took place which provided a platform to discuss recent feedback from SAGE about the vaccination paper.
June 2021		
4 June 2021	Interventions, IPC mitigations.	Meeting took place, the following topics were on the agenda: Presentation of findings from the interventions paper, risk tolerance, further evaluation, discuss feedback from the main Sage Attendees.

18 June 2021		Meeting was held, the following topics were on the agenda: Policy Question on Non - Care home ASC settings, mortality analysis, SCWG paper update: Feedback from MSC&DG, trends. There was also a suggestion to normalise delta VOC in outbreak analysis.
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Timeline July 2021 – April 2022

July 2021		
2 July 2021	Nosocomial discharge	Addendum to PHE report on 'Contribution of hospital-associated SARS-CoV-2 infection to care home outbreaks in England' includes data requested by, and provided to, the chair of the Public Accounts Committee (PAC), following the publication of the original report on the gov.uk website on 27 May 2021. Contribution of hospital-associated SARS-CoV-2 infection to care home outbreaks: addendum (publishing.service.gov.uk)
2 July 2021	Vaccination Winter Preparedness	Meeting of the SAGE SCWG took place. The following items were discussed: Vaccination & Outbreak Trends. Winter preparedness: Considerations re Covid and Flu. Post SCWG Interventions paper: Approach to standing down mitigations. Literature Review and Vivaldi next steps.
16 July 2021		The Consensus statement "estimating the minimum level of vaccine coverage in care home settings" was updated on gov.uk
16 July 2021	Vaccination Coverage	Meeting of the SCWG took place. It covered Trends; Vaccination Coverage; and Consensus statement on hospital discharge impact.
30 July 2021	Hospital Discharge	A meeting of the SAGE SCWG meeting took place. The meeting was focused on developing the hospital discharge consensus statement. Here it was agreed that the deadline of the paper would be delayed.
July 2021	Vaccination	A report on vaccine effectiveness was published. Written by Ian Hall.
August 2021		
20 August	Visiting	The "Social Care Working Group: Consensus Statement on family or friend visitor policy into care home setting" was published after being made available to SAGE members on 2 nd November 2020.

20 August		The consensus statement: <i>“The adverse effects of social isolation and loneliness on psychological and physical health outcomes in care home residents during Covid-19”</i> was published.
September 2021		
10 September 2021		Meeting took place, discussed the PHE guidance on staff-only outbreaks in care homes and whether to continue with the hospital discharge consensus statement without NHS data. Further discussion on winter pressures and the possibility of multiplex testing.
October 2021		
8 October 2021	Meeting	Meeting of the SCWG occurred. The group discussed winter pressures, staffing challenges, and the hospital discharge paper. Thomas Waite (TW): For AOB recommended discussing the SAGE SCWG TOR and the creation of a conflict or declaration of interest statement [Personal Data] abstained from being involved in the paper as [Personal Data] felt the content does not reflect the efforts of National Care Forum.
15 October 2021	Draft publication	Draft <i>Consensus statement on the association between the discharge of patients from hospitals and COVID in care homes.</i>
22 October 2021	Meeting	SCWG meeting - Discussion around modelling and forecasting - focus is understand current data indications
November 2021		
5 th November	Hospital Discharge and trends	Meeting of the SCWG occurred to discuss the hospital discharge consensus statement and forecast concerns for 2022. It was discussed that the hospital discharge statement should be DHSC badged as they were the original commissioner. It was asked what a baseline testing/de-escalated testing level would look like and it was indicated that there may be a future SAGE commission to investigate this. Continuation of resident-only outbreaks was identified as a concern.
December 2021		
3 December 2021		Consensus statement on the association between the discharge of patients from hospitals and COVID in care homes
3 December 2021	VOC	Meeting of the SCWG took place. It was primarily focused on the possible impact of the Omicron variant. It was felt that earlier discussions about de-escalating testing and focusing on implementing multiplex testing is no longer relevant due to Omicron spreading quickly. Reviewing PPE was recommended.

17 December 2021		Meeting was held which discussed the rapidly spreading Omicron VoC and the then recent change in policy which saw CH staff take 3 weekly LFTs. There was an initial reference to Jackie Cassell's interventions paper.
20 December 2021	Shielding	SCWG Chairs: Summary of role of shielding, 20 December 2021 - GOV.UK (www.gov.uk)
31 December 2021	Testing	Meeting was held to discuss changes in testing policy on asymptomatic staff and whether the weekly PCR test for care home staff be replaced with an LFD system. At the time there was a significant demand for PCR tests. SCWG members were cautious about it. Also discussed was a paper on isolation periods written by Jackie Cassell following a commission from UKHSA ASC Team on evidence on duration of infectivity with Covid-19 in different population groups.
January 2022		
07 January 2022		Meeting of the SAGE SCWG took place, in it, the recent paper on shielding and its annex on testing was discussed. Steve Willner presented a presentation on the severity on the Omicron Variant.
14 January 2022		Meeting took place which was focused around the further development of the isolation paper by Jackie Cassell.
21 January 2022		Meeting took place to gain a consensus on the isolation paper as well as a presentation about the ATACC study.
21 January 2022	Isolation/ Final version	Final draft of the paper on isolation periods led by Jackie Cassell. <i>What is the current evidence on duration of isolation periods in care home residents?</i>
February 2022		
04 February		SCWG took place which covered wastewater surveillance and a paper on transmission.
9 th February		Meeting took place. Hazard profiles of care homes post vaccination were discussed. Alongside a baseline scenario with a relaxed defensive posture and minor interventions, a strong defensive posture with strong interventions, and an outbreak response structure with maximum interventions in place. Isolation and testing mitigations discussed
18 February		Meeting to discuss outbreaks including restriction
March 2022		
18 March		Meeting took place and discussion was around the future arrangements of the SCWG.
April 2022		

1 April 2022		What should be thresholds and criteria for moving between COVID-19 threat levels?
01 April 2022		SCWG Meeting took place and discussion covered c19 trends in 4 nations, discussing CH size, A study on Omicron led by Maria Zambon (MZ), the summary of interventions paper being produced by Jackie Cassell (JC), and Research Gaps.
May 2022		
26 May 2022	Hospital Discharge	The “Consensus statement on the association between the discharge of patients from hospitals and COVID in care homes” was published on Gov.UK

Outputs from SPIM-O

As a core participant of SPIM-O I contributed to each consensus statement that was submitted to SAGE ahead of each SAGE meeting, for dates and content please contact SPIM secretariat.

I sent papers (primarily written by me) to SPIM (when active papers may have been shared with SCWG too) on following dates/topics:

- Mortality projections (also shared with PHE/UKHSA joint modelling team and SCWG) – 20/10/20, 4/11, 18/11. 23/11, 1/12, 22/12/22, 11/1/2021, 20/1, 27/1, 2/2, 9/2, 2/3, 9/3, 16/3, 31/3, 7/4, 21/4, 26/5, 15/6, 23/6, 29/6, 6/7, 13/7, 27/7, 7/9, 12/9, 6/10, 12/10, 3/11, 24/11, 30/11, 15/12, 22/12/21, 6/1/2022, 18/1, 25/1, 1/2/22
- Update on analysis of transmission and outbreaks – 10/6/2020, 21/7, 27/7/2020, 27/8/2020, 15/12/21, 10/1/22, 2/3, 8/3, 23/3/22
- Testing advice – 15/12/20, 27/7/21, 7/12/22
- Vaccine impact assessment in care home settings – 26/1/2021, 3/2, 17/2, 24/2, 24/3, 11/5/21
- NHS discharge data visualisation – 18/11/2020
- Disease ingress and visitor policy - 3/11/2020
- Spatial modelling of vulnerable settings – 9/6/2020, 11/9/2020
- Shielding advice for vulnerable settings – 20/12/2021 (to SCWG and SAGE too)
- Situational awareness – shared report on Manchester Foundation Trust disease trends written by CDSU team 14/10/2020
- Care home subgroup modelling assessments – 15/3/2020, 5/5/2020.

- Literature review on COVID-19 done for NIHR PRP OPERA – 16/3/2020
- National mortality analysis – though March and April 2020 regular graphs shared
- Growth rate analysis (3 day doubling time) – 31/3/2020 but work done earlier in March
- Core group (healthcare worker) mixing analysis – drafts shared on 16/3 and 27/3/2020
- School closure paper shared – 18/2/2020
- First case analysis shared – 5/2/2020
- Reflections on possible interventions – 30/1/2020
- Border screening work shared (not COVID specific as had no data, based on Ebola and flu work) – 29/30/2020
- Beta-Poisson transmission model (not COVID specific as had no data but method considered over-dispersion in transmission) – 23/1/2020

I would have contributed to numerous University of Manchester and JUNIPER outputs not listed about but held in SPIM archive and been involved in discussions of some MFT reports.

Outputs from EMG

[it is hard to say in the timescale provided my precise contribution to all these papers but I was likely involved in EMG meetings where final version reached consensus and provided drafting comments on some papers]

EMG, TWEG or TSG lead/co-lead papers:

1. Evidence of environmental dispersion for different mechanisms, and the risks and potential mitigations/measures of control within different environments from what we know about COVID-19, 14th April 2020
2. Environmental Influence on Transmission, 28th April 2020
3. Risk Estimation to inform risk assessment, 7th May 2020
4. Principles of understanding of transmission routes to inform risk assessment and mitigation strategies, 14 May 2020
5. Possible additional interventions to address hospital transmission risks of SARS-CoV-2, 12 May 2020
6. EMG: Transmission and Control of SARS-CoV-2 on Public Transport, 18 May 2020
7. EMG: Evidence for transmission of SARS-CoV-2 on ground public transport and potential effectiveness of mitigation measures, 18 May 2020
8. EMG: Summary of disinfection technologies for microbial control, 18 May 2020
9. EMG: Application of UV disinfection, visible light, local air filtration and fumigation technologies to microbial control, 19 May 2020
10. SARS-CoV-2 in the hospital environment and risk of COVID-19 nosocomial transmission, 31 May 2020

11. Transmission of SARS-CoV-2 and Mitigating Measures - update, 4 June 2020
12. TWEG: Evidence of wider environmental transmission of SARS-CoV-2, 12 June 2020
13. NERVTAG/EMG: Hand hygiene to limit SARS-CoV-2 transmission, 2 July 2020
14. EMG: COVID-19 - Theatres, concert halls and other performance spaces, 12 July 2020
15. EMG: Measurement of effectiveness of risk mitigation measures in reducing transmission, 16 July 2020
16. NERVTAG/EMG: Role of aerosol transmission in COVID-19, 22 July 2020
17. PHE/EMG: Aerosol and droplet generation from singing, wind instruments and performance activities, 13 August 2020
18. SPI-B/EMG: COVID-19 housing impacts, 10 September 2020
19. EMG: Processing methods to facilitate the re-use of personal protective equipment (PPE), 8 September 2020
20. NERVTAG/EMG: Duration of wearing of face coverings, 15 September 2020
21. EMG: Role of Ventilation in Controlling SARS-CoV-2 Transmission SAGE-EMG, 30 September, 2020
22. EMG: Simple summary of ventilation actions to mitigate the risk of COVID-19, 1 October 2020
23. NERVTAG/EMG SARS-COV-2: Transmission Routes and Environments, 22 October 2020
24. EMG: Potential application of air cleaning devices and personal decontamination to manage transmission of COVID-19, 4 November 2020
25. EMG/SPI-B: Mitigating risks of SARS-CoV-2 transmission associated with household social interactions, 26 November 2020
26. PHE: Factors contributing to risk of SARS-CoV2 transmission in various settings, 26 November 2020
27. TWEG: Environmental monitoring of viral presence, infectivity and transmission of SARS-CoV-2, 3 December 2020
28. EMG/SPI-B/TWEG: Mitigations to reduce transmission of the new variant SARS-CoV-2 virus, 22 December 2020
29. EMG: Application of physical distancing and fabric face coverings in mitigating the B117 variant SARS-CoV-2 virus in public, workplace and community, 13 January 2021 - GOV.UK (www.gov.uk)
30. EMG/SPI-B/SPI-M: Reducing within- and between-household transmission in light of new variant SARS-CoV-2, 14 January 2021
31. EMG: COVID-19 risk by occupation and workplace, 11 February 2021
32. HOCl and EMG: Masks for healthcare workers to mitigate airborne transmission of SARS-CoV-2, 25 March 2021
33. EMG Transmission Group: COVID-19 transmission in prison settings, 25 March 2021
34. EMG and DCMS: Science framework for opening up group events, 16 March 2021
35. EMG Transmission Group: Insights on transmission of COVID-19 with a focus on the hospitality, retail and leisure sector, 8 April 2021
36. EMG, SPI-M and SPI-B: Considerations in implementing long-term 'baseline' NPIs, 22 April 2021
37. EMG and SPI-B: Application of CO2 monitoring as an approach to managing ventilation to mitigate SARS-CoV-2 transmission, 27 May 2021
38. EMG/TG/SPI-B: COVID-19 Transmission in Hotels and MQFs, 9th Sept 2021
39. EMG and NERVTAG: Update on transmission and environmental and behavioural mitigation strategies, including in the context of Delta, 13 October 2021
40. SPI-B, SPI-M and EMG: Considerations for potential impact of Plan B measures, 13 October 2021 (includes EMG consensus on face coverings shared with cabinet office 28th Sept 2021)

41. EMG and SPI-B: Non-Pharmaceutical Interventions (NPIs) in the context of Omicron, 15 December 2021
42. EMG Transmission Subgroup: Consensus statement on SARS-CoV-2 transmission risk at festivals, 23 December 2021

Support or leadership to papers from other working groups:

43. SCWG: Care homes analysis, 12 May 2020
44. Managing infection risk in high contact occupations, 15 June 2020
45. TFC: Risks associated with the reopening of education settings in September, 8 July 2020
46. COVID-19: Preparing for a challenging winter 2020/21, 7 July 2020
47. NERVTAG: Assessment of transmission of COVID-19 through musical events, 16 July 2020
48. Principles for managing SARS-CoV-2 transmission associated with higher education, 3 September 2020
49. Principles for managing SARS-CoV-2 transmission associated with further education, 3 September 2020
50. Summary of the effectiveness and harms of different non-pharmaceutical interventions, 21 September 2020
51. NERVTAG: Seasonality and its impact on COVID-19, 22 October 2020
52. Key evidence and advice on celebrations and observances during COVID-19, 5 November 2020
53. BEIS CSA Team: Potential application of glycol-based sprays to manage transmission of SARS-CoV-2, 13 November 2020
54. TFC: COVID-19 in higher education settings, 10 February 2021
55. Cross organisation study: Risk factors associated with places of enduring prevalence and potential approaches to monitor changes in this local prevalence, 22 April 2021
56. SCWG: What are the appropriate mitigations to deploy in care homes in the context of the post vaccination risk landscape?, 26 May 2021
57. AMS: COVID-19 preparing for the future – Looking ahead to winter 2021, 2022 and beyond, 15 July 2021
58. RAEng: Infection Resilient Environments – Buildings that keep us healthy and safe, 19 July 2021
59. Academics: Modeling the factors that influence exposure to SARS-CoV-2 on a subway train carriage, 22 July 2021 (journal paper published Feb 2022)
60. UKHSA: Face coverings and COVID-19 – statement from an expert panel, 14 October 2021

[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.](#)

Media interviews

I stopped doing media work in early 2021 due to way I was presented as advisor in BBC2 documentary of Nov 2020 and general demands of work meant I couldn't engage.

- Newsnight, 29th April 2020
- Panorama, July 2020
- BBC2 documentary, Nov 2020
- Newsnight, 26th Nov 2020
- BBC1 documentary, recorded Dec 2020, never aired.
- Some quotes used in Newspapers but not curated these.

Articles in public domain not including SAGE published papers.

Authors	Title	Publication	Volume	Number	Pages	Year	Publisher
Webster, Rebecca Katie; Liu, Regina; Karimullina, Kristina; Hall, Ian; Amlot, Richard; Rubin, Gideon James;	A systematic review of infectious illness presenteeism: prevalence, reasons and risk factors	BMC public health	19	1	Jan-13	2019	BioMed Central
Biggerstaff, Matthew; Dahlgren, Fredrick Scott; Fitzner, Julia; George, Dylan; Hammond, Aspen; Hall, Ian; Haw, David; Imai, Natsuko; Johansson, Michael A; Kramer, Sarah;	Coordinating the real-time use of global influenza activity data for better public health planning	Influenza and Other Respiratory Viruses	14	2	105-110	2020	
Brooks, Samantha K; Smith, Louise E; Webster, Rebecca K; Weston, Dale; Woodland, Lisa; Hall, Ian; Rubin, G James;	The impact of unplanned school closure on children's social contact: rapid evidence review	Eurosurveillance	25	13	2000188	2020	European Centre for Disease Prevention and Control
Pellis, Lorenzo; Scarabel, Francesca; Stage, Helena B; Overton, Christopher E; Chappell, Lauren HK; Fearon, Elizabeth; Bennett, Emma;	Challenges in control of COVID-19: short doubling time and long delay to effect of interventions	Philosophical Transactions of the Royal Society B	376	1829	20200264	2021	The Royal Society

Lythgoe, Katrina A; House, Thomas A; Hall, Ian;							
Hall, Ian; Lewkowicz, Hugo; House, Thomas; Pellis, Lorenzo; Sedgwick, James; Gent, Nick;	Rapid increase of Care Homes reporting outbreaks a sign of eventual substantial disease burden	medRxiv				2020	Cold Spring Harbor Laboratory Press
Overton, Christopher E; Stage, Helena B; Ahmad, Shazaad; Curran-Sebastian, Jacob; Dark, Paul; Das, Rajenki; Fearon, Elizabeth; Felton, Timothy; Fyles, Martyn; Gent, Nick;	Using statistics and mathematical modelling to understand infectious disease outbreaks: COVID-19 as an example	Infectious Disease Modelling	5		409-441	2020	Elsevier
Morciano, Marcello; Stokes, Jonathan; Kontopantelis, Evangelos; Hall, Ian; Turner, Alex J;	Excess mortality for care home residents during the first 23 weeks of the COVID-19 pandemic in England: a national cohort study	BMC medicine	19	1	01-Nov	2021	BioMed Central
Fyles, Martyn; Fearon, Elizabeth; Overton, Christopher; University of Manchester COVID-19 Modelling Group; Wingfield, Tom; Medley, Graham F; Hall, Ian; Pellis, Lorenzo; House, Thomas;	Using a household-structured branching process to analyse contact tracing in the SARS-CoV-2 pandemic	Philosophical Transactions of the Royal Society B	376	1829	20200267	2021	The Royal Society
Han, Yang; Sun, Yujia; Hsu, Jason C; House, Thomas; Gent, Nick; Hall, Ian;	Statistical Design and Analysis of Diagnostic Tests for Mutating Viruses	medRxiv				2021	Cold Spring Harbor Laboratory Press
Daniels, Sarah; Wei, Hua; Han, Yang; Catt, Heather; Denning, David W; Hall, Ian; Regan, Martyn; Verma, Arpana; Whitfield, Carl A; Van Tongeren, Martie;	Risk factors associated with respiratory infectious disease-related presenteeism: a rapid review	BMC public health	21	1	01-Dec	2021	BioMed Central

Fearon, E; Fyles, M; House, T; Pellis, L; Hall, I; Jay, C; Crowther, P; Stage, HB; Das, R; Medley, G;	On the use of LFA tests in contact tracing: preliminary findings						2020
Hall, Ian; Lewkowicz, Hugo; Webb, Luke; House, Thomas; Pellis, Lorenzo; Sedgwick, James; Gent, Nick; University of Manchester COVID-19 Modelling Group and the Public Health England Modelling Team;	Outbreaks in care homes may lead to substantial disease burden if not mitigated	Philosophical Transactions of the Royal Society B	376	1829	20200269	2021	The Royal Society
Fearon, Elizabeth; Buchan, Iain E; Das, Rajenki; Davis, Emma L; Fyles, Martyn; Hall, Ian; Hollingsworth, T Deirdre; House, Thomas; Jay, Caroline; Medley, Graham F;	SARS-CoV-2 antigen testing: weighing the false positives against the costs of failing to control transmission	The Lancet Respiratory Medicine	9	7	685-687	2021	Elsevier
Green, R; Tulloch, JSP; Tunnah, C; Coffey, E; Lawrenson, K; Fox, A; Mason, J; Barnett, R; Constantine, A; Shepherd, W;	COVID-19 testing in outbreak-free care homes: what are the public health benefits?	Journal of Hospital Infection	111		89-95	2021	WB Saunders
Overton, Christopher E; Pellis, Lorenzo; Stage, Helena B; Scarabel, Francesca; Burton, Joshua; Fraser, Christophe; Hall, Ian; House, Thomas A; Jewell, Chris; Nurtay, Anel;	EpiBeds: Data informed modelling of the COVID-19 hospital burden in England	PLOS Computational Biology	18	9	e1010406	2022	Public Library of Science San Francisco, CA USA
Pattni, Karan; Hungerford, Daniel; Adams, Sarah; Buchan, Iain; Cheyne, Christopher P; García-Fiñana, Marta; Hall, Ian; Hughes, David M; Overton, Christopher E; Zhang, Xingna;	Effectiveness of the BNT162b2 (Pfizer-BioNTech) and the ChAdOx1 nCoV-19 (Oxford-AstraZeneca) vaccines for reducing susceptibility to infection with the Delta variant (B. 1.617. 2) of SARS-CoV-2	BMC infectious diseases	22	1	01-Nov	2022	BioMed Central

Ward, Thomas; Glaser, Alex; Johnsen, Alexander; Xu, Feng; Hall, Ian; Pellis, Lorenzo;	Growth, reproduction numbers and factors affecting the spread of SARS-CoV-2 novel variants of concern in the UK from October 2020 to July 2021: a modelling analysis	BMJ open	11	11	e056636	2021	British Medical Journal Publishing Group
Wei, Hua; Daniels, Sarah; Whitfield, Carl A; Han, Yang; Denning, David W; Hall, Ian; Regan, Martyn; Verma, Arpana; van Tongeren, Martie;	Agility and Sustainability: A Qualitative Evaluation of COVID-19 Non-pharmaceutical Interventions in the UK Logistics Sector	Frontiers in Public Health			1618	2022	Frontiers
Overton, Christopher E; Webb, Luke; Datta, Uma; Fursman, Mike; Hardstaff, Jo; Hiironen, Iina; Paranthaman, Karthik; Riley, Heather; Sedgwick, James; Verne, Julia;	Novel methods for estimating the instantaneous and overall COVID-19 case fatality risk among care home residents in England	arXiv preprint arXiv:2202.07325				2022	
Aylett-Bullock, Joseph; Gilman, Robert Tucker; Hall, Ian; Kennedy, David; Evers, Egmond Samir; Katta, Anjali; Ahmed, Hussien; Fong, Kevin; Adib, Keyrellous; Al Ariqi, Lubna;	Epidemiological modelling in refugee and internally displaced people settlements: challenges and ways forward	BMJ global health	7	3	e007822	2022	BMJ Specialist Journals
Whitfield, Carl A; Van Tongeren, Martie; Han, Yang; Wei, Hua; Daniels, Sarah A; Regan, Martyn; Denning, David W; Verma, Arpana; Pellis, Lorenzo; Hall, Ian;	Modelling the impact of non-pharmaceutical interventions on workplace transmission of SARS-CoV-2 in the home-delivery sector	medRxiv				2022	Cold Spring Harbor Laboratory Press
Carruthers, Jonathan; Xu, Jingsi; Finnie, Thomas James Ronald; Hall, Ian;	A within-host model of SARS-CoV-2 infection	medRxiv				2022	Cold Spring Harbor Laboratory Press

Miller, Daniel; King, Marco-Felipe; Nally, James; Drodge, Joseph R; Reeves, Gary I; Bate, Andrew M; Cooper, Henry; Dalrymple, Ursula; Hall, Ian; López-García, Martín;	Modeling the factors that influence exposure to SARS-CoV-2 on a subway train carriage	Indoor air	32	2	e12976	2022	
Bridgen, Jessica RE; Wei, Hua; Whitfield, Carl A; Han, Yang; Hall, Ian; Jewell, Chris; van Tongeren, Martie JA; Read, Jonathan M;	Contact patterns of UK home delivery drivers and their use of protective measures during the COVID-19 pandemic: a cross-sectional study	medRxiv				2022	Cold Spring Harbor Laboratory Press
Cahuantzi, Roberto; Lythgoe, Katrina; Hall, Ian; House, Thomas A; Pellis, Lorenzo;	Analysis and comprehensive lineage identification for SARS-CoV-2 genomes through scalable learning methods	bioRxiv				2022	Cold Spring Harbor Laboratory

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.

- I hold email correspondence on my UKHSA and Manchester accounts. I hold test and trace and an NHS email account for data access but these have never been used for pandemic response advice.
- I have non-indexed physical notebooks stored in my office.
- Since September 2020 I have been storing reports and presentations in a dedicated directory on UoM servers, but there may be issues with version control on this papers as they have similar names.
- On DHSC exchange I have access (at present) to SPIM minutes, SCWG paper archive and CQC mortality data.

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.

- Procedural
 - It takes time for new multidisciplinary groups to mesh, trust another especially online, and achieve the appropriate membership, as such for faster response to future threats I strongly recommend that a group like SCWG meets regularly outside of pandemic period to support infectious disease science advice to future threats.
 - Having access to multiple email accounts may provide efficient data access but raises an issue of messages for tasks going to an account not regularly reviewed. Being squeezed between a senior strategic coordination role (as chair of SAGE subgroup) and also being someone doing analysis meant keeping track of tasks across multiple accounts was a challenge.
 - Obsession (in media particularly) is with tangible reports or specific meetings but advice may be verbal in meetings or organically developed over versions of paper (as ideas, evidence and data change together). This needs to be understood more generally.
 - Record keeping is hard for academics without dedicated admin support and this needs to be reviewed for similar events in future.
 - Actual meetings are time-consuming but essential for coordination especially between senior people. An effective balance on time to do work and time to coordinate is essential.
 - There was at times a perceived confusion on source of advice between SAGE subgroups and UKHSA from external stakeholders (in spite of UKHSA being on SAGE subgroups so internal separation was clear) so coordination is key, not for single version of truth but to allow groups to share knowledge.
 - Secretariat support is critical for effective record keeping and tracking of commissioning, support to SAGE and all subgroups was excellent but perhaps a common procedure for secretariat support to groups (numbers of people actively supporting, documentation needs, participant lists) should be considered.
- Science advice at pace
 - Civil servants move around jobs quickly and science communication needs time to be effective as results may be nuanced or uncertain. Establishing a core of

- scientifically competent staff in civil service to translate outputs is critical. Training existing analysts to be comfortable with advanced analytics and modelling and arising uncertainty would be extremely worthwhile to broaden the pool of talent.
- Working across DAs and with policy teams was effective at saving time to communicate outputs, allow policy teams to see progress on tasks and understand commissions. This balance meant say the SCWG occasionally strayed to operational detail but meant outputs could be delivered. Integration of analysts and policy teams is crucial.
 - In non-pandemic periods a project cycle is iterative (model is develop, tested and verified and reviewed by customer to give feedback to restart cycle), this wasn't practical during timescale of response but this iteration of advice (as evidence changes) is critical so shouldn't be lost.
 - Rapid response data collection studies generally did not deliver in useful timescale due to pace of change of policy given start up time (funding review, recruitment and ethics for clinical trials) so more streamlined processes critical to fill fundamental evidence gaps.
 - It was hard to distinguish science from operations at times. I think this was a challenge to separate strategic, tactical and operational science challenges (modelling and analysis cut across all layers of response as strategic goal may fail if operational delivery is impractical). Perhaps the split from science to operations is unhelpful and it should be more about strategy/tactics and implementation.
 - In early stages decision makers did not articulate the objective of interventions and it would be helpful in future responses for this to be clearly stated to frame advice especially if there are wider impacts to be considered.
 - Data sharing is key, it wasn't a barrier if relationship is established and trusted (UKHSA having honorary contracts with researchers meaning data didn't need to leave UKHSA). There are barriers on data linkage, however, but this should be done once within Gov and not separately again within academia. NHS, UKHSA and ONS (and other data owners) data should not be siloed in organisations.
 - Trusted research environments are secure systems but require a proliferation of log in details giving barrier to access and sometimes lack computational resources to do effective work on data and this needs attention in future.
 - Data is not just collected for visualisation and so advanced analytics that add value to data needs to be part of advisory chain. The civil service has GSS and GORS and so as part of these services advanced analytics could be advocated so sped up translation.
 - SAGE papers should be considered REFable and on a par with journal articles as ECRs in smaller research groups have suffered with translating work at pace to peer-review, this is particularly important for PhD students (who now need to find a job) and PDRAs looking for first permanent position.
 - Traditional peer review was largely broken during pandemic with journals not able to find competent reviewers as those involved and cognisant of real life pressures were writing pandemic response SAGE (or equivalent in their jurisdictions) papers themselves so review was left to inexperienced or people out the pandemic response who reviewed with pre-pandemic precision (expectation of reliable data, model validation). This is understandable but meant important work was delayed in publication meaning that the public felt things were hidden or decision triggers were opaque. Giving SAGE papers (and supporting annexes) peer review status (given subgroup scrutiny was effectively peer review) would solve this.
 - Other infectious diseases are a threat to vulnerable populations and simply comparing COVID-19 mortality to past years implicitly makes a judgement that it is

societally acceptable to lose thousands of people each winter to flu and other diseases. The pandemic has generated questions about what the new normal should be and what is acceptable and this debate should be made. Of course people cannot live forever but how to live well in final years is important balance of risks. This is complex and will require evaluating what residents, family and providers want, ensuring equity in those with impaired cognition and need a framework for balancing the respective harms.

- Funding
 - Legacy funding is lacking (multiple high quality awards have been rejected at various stages of project evaluation process in funding agencies) so experience staff will drift to other projects, translation opportunities will be missed and ideas will not develop to mitigate future responses.
 - Spending money is hard (recruiting new staff) and so accounting rules should be relaxed to allow carry over of funds between financial years.
 - Funding of consultants rather than domain experts meant money was poorly spent in early phase of pandemic with focus on visualisation rather than added value of forecasts and understanding public health patterns.
 - Historically funding focussed on large single sites as centres of excellence with danger of strong dominant personalities or group think, the JUNIPER consortium established a distributed network of researchers and has been proven to work effectively to respond but was not supported in medium term. The distribution of funding should be reviewed.

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:

- a. *The composition of the groups and/or their diversity of expertise;*
 - The composition of SAGE was reasonable with a multidisciplinary range of technical expertise and diversity of experience.
 - SPIM was a fairly small technical advisory group that when it become operational support to SAGE (i.e. SPIM-O) scaled up representation across the main UK modelling teams and this was incredibly valuable and diverse technical expertise (stats, networks, genomics, epidemiology, etc.). This scale up happened very quickly (Feb/March 2020). It is worth noting that the original SPIM scale was effective for the 2009 pandemic so the appropriate size for the operational group will depend on the impact/severity of the pandemic. I do not think scaling up faster would have changed timescales for advice as we were lacking reliable data but moving forward a broader constituency is sensible. However, in early stages there were perhaps some dominant voices that had seats at SAGE as well as SPIM-O that may have biased the view on modelling advice at that stage.
 - EMG had a suitable diverse composition.
 - SCWG started as a care home modelling subgroup of SPIM-O and as such had a natural composition of modellers with experience of modelling enclosed societies. In late April this merged with a SAGE convened group that needs a greater breadth of experience. However the SAGE subgroup was set up as a task and finish group on data needs to understand the ongoing care home outbreaks (leading to May SAGE paper from group) as such experts in aging and frailty and public health epidemiology were brought in along with teams involved in HDRUK projects. In summer 2020 the participation increased to include leading members of the British Geriatrician Society and national care forum. In Sept 2020 the participant list and ToRs were reviewed with DCMO Jenny Harries taking over co-chairing responsibility from Charlotte Watts (CSA DfID). The newly created Social Care Working Group had multidisciplinary expertise (as previously task

and finish group did) and brought experts in for discrete commissions (i.e. health economics of visitation)

- b. *The way in which the groups were commissioned to work on the relevant issues;*
- Commissioning was in general clear for SAGE, SPIM-O and EMG. SCWG from Sept 2020 had ToRs that allowed commissions to come straight from DHSC rather than SAGE. This was not an issue for commissioning, developing the advice and drafting reports but became an issue in dissemination. As these commission were not through SAGE publishing on SAGE website was not necessary straightforward and DHSC had operational challenges in publishing advice. This would need to be fixed in future to ensure advice was in public domain efficiently.
- c. *The resources and support that were available;*
- Support was good for the groups I was involved with, as stated above a common operating format for secretariat support would be useful in future to support groups. For virtual meetings this is not an issue but some academics may not have funding for travel if meetings were face to face and take time for institutional support to be agreed so perhaps SAGE secretariat should book travel if needed (I was lucky to have NIHR policy research funding that DHSC could approve spending on). Later on in pandemic SAGE made payments to University for time I spent on SAGE activity to offset such costs and provide admin support and so this would have not been an issue if travel was needed later in response.
- d. *The advice given and/or recommendations that were made;*
- This is too complex and subjective to be answered comprehensively and all the outputs mentioned in summary of documents section above had advisory recommendations. The question of success of group is best posed to the recipients of the advice who acted on it to create policy. In my opinion key advice from groups I was involved with would have been:
 - i. 3 day doubling time, SPIM-O, March 2020
 - ii. Regular contribution of SPIM participants to short, medium term projections and roadmapping scenarios.
 - iii. Collaboration with other SAGE task and finish groups and SPIM on education, hospitals, prisons, areas of enduring prevalence etc.
 - iv. EMG work on environmental exposures and ventilation, mask usage etc.
 - v. Care home trends, SPIM-O, April 2020
 - vi. Care home testing strategy, SCWG, May 2020
 - vii. Visitors and wider impact of interventions, SCWG, Sept-Nov 2020
 - viii. Vaccine thresholds, SCWG, Jan-Feb 2021
 - ix. Hospital discharge impact, SCWG, Sept 2020-May 2022
 - x. Testing options, SCWG May 2020-April 2022
- e. *The extent to which the groups worked effectively together;*
- Groups (and task and finish sub-group when formed) worked efficiently together. The only point of contention was on the SCWG paper on hospital discharge impact where participants were on opposing sides of independent legal proceeding. This lead to some delays in SCWG paper being developed and finalised. The final paper has clear declaration of interest statement. This paper is an example where the SCWG struggled to get analysis completed by external data owners (in this case NHSE running the discharge analysis for England to replicate analysis done in Scotland and Wales).
- f. *The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness.*
- SAGE and subgroups advise on science underpinning policy they do not apply policy, this is remit of decision makers within government.

- The process as I understand for other subgroups and I implemented for SCWG was that for a given commission participants went back to their institutional groups and developed a response for next meeting to be discussed and peer reviewed in that meeting. The consensus of this discussion was then taken to SAGE or relevant commissioning agency. This process was effective. Occasionally reports were late due to time taken to develop new models or challenge in reaching consensus in evolving evidence base.
- Occasionally participants found it hard to balance personal contribution to meetings from institutional roles especially for those from private sector or health sector and this may need support in future events.
- I cannot comment on effectiveness of the translation of SAGE advisory outputs to policy/decision making in detail, however, for those commissions to SCWG from DHSC or UKHSA when SCWG Chairs presented findings those stakeholders listened and developed policy quickly based on advice (changing testing capacity to increase frequency or mandating vaccination of staff, say). Having policy teams listening to call as observers was incredibly helpful to hear operational challenges and enabled them to frame policy as science evidence base evolved. We may not agree with the policy (say mandating vaccine) but this is the point that the advice was to boost vaccine coverage not how it was achieved.
- Once SAGE has stood down academics return to best endeavour response (unless contracted to advisory agencies and institutions) and so find time to respond to short term request (such as inquiry response) is hard with other duties especially after 2 years of working at weekends and juggling effective work life balance.