Questionnaire answers

Anne Presanis

October 6, 2022

UK COVID-19 Inquiry: Module 2 - Rule 9 Request to Dr Anne Presanis - Reference: M2/SAGE/01/AP

Please provide the following information:

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

   - I am a senior statistician at the MRC Biostatistics Unit, University of Cambridge, with almost 20 years experience in statistical epidemiology. My research focusses on statistical methods to integrate multiple sources of data to estimate unobserved characteristics of epidemics such as prevalence, incidence and severity. I have worked on such methods for HIV, influenza, Hepatitis C virus and COVID-19. Please see attached short CV for more detail.

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

   - Infrequent attendee at the SPI-M sub-group of SAGE, between January 2020 and July 2021.

3. 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;

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

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

   - I was not a core member of SPI-M (the modelling sub-group of SAGE), but attended two meetings, on 23rd June 2021 and 14th July 2022. My research group leader at the MRC Biostatistics Unit, Prof. Daniela De Angelis, has been a member of SPI-M since the 2009 A/H1N1 influenza pandemic. Some of my work, and the work of Prof De Angelis' group in general, on the COVID-19 pandemic has therefore been submitted and/or presented at SPI-M and SAGE at various times in the period January 2020 - February 2022 by Prof. De Angelis. My contribution to our work on the pandemic has been on estimating its severity, in terms of the confirmed case-fatality risk, hospital-fatality risk and lengths of stay, by calendar period, vaccination status and variants. As one of a number of us in Prof. De Angelis' group working on severity, I took an increasing role through 2020-2021 in leading the severity work, funded by one of the urgent UKRI/MRC/NIHR/DHSC COVID-19 rapid response awards (https://gtr.ukri.org/projects?ref=MC_PC_19074). Much of this work also went to the UKHSA Joint Modelling Team and the Variant Technical Group coordinated by UKHSA to inform the Variant Technical Briefings and Risk Assessments (https://www.gov.uk/government/publications/investigation-of-sars-cov-2-variants-technical-briefings).

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

- Our estimates of severity have been contributed to SPI-M as either short reports or presentations, and are stored on the DH exchange SPI-M repository (`https://dhexchange.kahootz.com/system/login`; requires login, but I believe SPI-M secretariat are co-ordinating access for the inquiry to the documents centrally):

  - April 2020: Estimated case/severity rates and length of stay in hospital and ICU. Christopher Jackson, Brian Tom, Anne Presanis, Peter Kirwan, Kevin Kunzmann, Alice Corbella, Daniela De Angelis on behalf of the MRC-BSU COVID-19 working group.

  - June 2020: Estimated severity: infection-fatality risks and hospitalised case-severity risks. Christopher Jackson, Brian Tom, Paul Birrell, Anne Presanis, Daniela De Angelis on behalf of the MRC-BSU COVID-19 working group, the PHE Modelling Cell and the ISARIC (CO-CIN) Collaboration.

  - July 2020: Estimated severity: infection-fatality risks and hospitalised case-severity risks. Christopher Jackson, Brian Tom, Peter Kirwan, Paul Birrell, Anne Presanis, Daniela De Angelis on behalf of the MRC-BSU COVID-19 working group, the PHE Modelling and Surveillance Cells and the ISARIC (CO-CIN) Collaboration.

  - December 2020: Notes on within-hospital severe burden. MRC Biostatistics Unit.

  - April 2021: Estimated COVID-19 hospitalised case-fatality risks: March 2020 to February 2021. Peter Kirwan, **Name Redacted**, Chris Jackson, Brian Tom, Sema Mandal, Daniela De Angelis, Anne Presanis.

  - June 2021: Updated estimates of COVID-19 hospitalised case-fatality risks and length of stay: SARI-Watch sentinel data from March 2020 to April 2021. Peter Kirwan, **NR** **NR**, Chris Jackson, Brian Tom, Sema Mandal, Daniela De Angelis, Anne Presanis, MRC Biostatistics Unit, Cambridge & PHE Surveillance Cell & PHE Joint Modelling Team

  - June 2021: Risk of hospital admission and emergency care attendance with Delta vs Alpha variants: Preliminary results. Tommy Nyberg, Anne Presanis, Daniela De Angelis (MRC Biostatistics Unit, Cambridge), Kate Twohig, Asad Zaidi, Simon Thelwall, Shirin Aliabadi, Mary Sinnathamby, Gavin Dabrera (PHE COVID-19 Epidemiology Cell); Ross Harris, Andre Charlett (PHE Joint Modelling Team). Later published as a peer-reviewed paper here: `https://doi.org/10.1016/S1473-3099(21)00475-8`

  - June 2021: Hospital severity update. Anne Presanis, Peter Kirwan, Tommy Nyberg, Andre Charlett, Daniela De Angelis (MRC Biostatistics Unit, PHE Joint Modelling Team, in collaboration with PHE COVID-19 Epidemiology Cell, PHE Surveillance Cell, PHE Genomics Cell, PHE HO-COVID, PHE Immunisation and Countermeasures Division, COG-UK).

  - July 2021: Hospital severity: update by vaccination status, using SUS/ECDS. Peter Kirwan, Andre Charlett, Daniela De Angelis, Anne Presanis (MRC Biostatistics Unit, PHE Joint Modelling Team; Acknowledgements: PHE Surveillance Cell, PHE COVID-19 Epidemiology Cell, PHE HO-COVID, PHE Immunisation and Countermeasures Division).

  - December 2021: Estimates of COVID-19 hospitalised mortality and length of stay: data from March 2020 to September 2021. Peter Kirwan, Anne Presanis, Andre Charlett, Paul Birrell, Daniela De Angelis (MRC Biostatistics Unit, Cambridge & PHE Joint Modelling Team).

- December 2021: Trends in hospitalised mortality risk and lengths of stay during the first, second and current waves of COVID-19 in England: a cohort study. Peter Kirwan et al. Later published as a peer-reviewed paper here: https://doi.org/10.1038/s41467-022-32458-y

- December 2021: No higher hospitalisation or mortality risk for COVID-19 cases with SARS-CoV-2 AY.4.2 (VUI-21OCT-01) compared to non-AY.4.2 Delta variant sub-lineages. Tommy Nyberg, Katie Harman, Asad Zaidi, Shaun R Seaman, Nick Andrews, Sophie G Nash, Andre Charlett, Jamie Lopez Bernal, Richard Myers, Natalie Groves, Eileen Gallagher, Saheer Gharbia, Meera Chand, Simon Thelwall, Daniela De Angelis, Gavin Dabrera, Anne M Presanis. Later published as a peer-reviewd paper here: https://doi.org/10.1093/infdis/jiac063

- January 2022: COVID-19 severity risk for Omicron compared with Delta VOCs. Tommy Nyberg, Daniela De Angelis, Anne Presanis (MRC Biostatistics Unit, University of Cambridge; Joint work with: UKHSA COVID-19 Epidemiology Cell; Joint Modelling Team; Statistics, Modelling and Economics Department; Genomics Cell; HO-COVID; Immunisation and Countermeasures Division).

- The following reports were sent to SAGE:

  - December 2021: Estimates of hospital-fatality risk and length of stay in hospital for COVID-19 patients, March 2020-September 2021. Peter Kirwan, Andre Charlett, Paul Birrell, **Name Redacted**, Russell Hope, Sema Mandal, Daniela De Angelis, Anne Presanis (MRC Biostatistics Unit, Cambridge UKHSA). https://www.gov.uk/government/publications/mrc-biostatistics-unit-and-phe-estimates-of-covid-19-hospitalised-mortality-and-length-of-stay-data-from-march-2020-to-september-2021-7-december-20

  - January 2022: MRC and UKHSA: Omicron severity risk in children, 19 January 2022. https://www.gov.uk/government/publications/mrc-and-ukhsa-omicron-severity-risk-in-children-19-january-2022

5. A summary of any articles you have written, interviews and/or evidence you have given regarding the work of the above-mentioned groups and/or the UK's response to the Covid-19 pandemic. Please include links to those documents where possible.
   Peer-reviewed publications on my work on COVID-19 severity are listed here in reverse chronological order:

   - Kirwan PD, Charlett A, Birrell PJ, Elgohari S, Hope R, Mandal S, De Angelis D, **Presanis AM**. (2022): Trends in COVID-19 hospital outcomes in England before and after vaccine introduction, 2020-2021: a cohort study. *Nat Commun*, 13:4834. https://doi.org/10.1038/s41467-022-32458-y

   - Seaman SR, Nyberg T, Overton CE, Pascall D, **Presanis AM**, De Angelis D. (2022): Adjusting for time of infection or positive test when estimating the risk of a post-infection outcome in an epidemic. *Statistical Methods in Medical Research, in press*, online first: June 12, 2022. https://doi.org/10.1177/09622802221107105

   - Jackson CH, Tom BDM, Kirwan PD, Mandal S, Seaman SR, Kunzmann K, **Presanis AM**, De Angelis D. (2022): A comparison of two frameworks for multi-state modelling, applied to outcomes after hospital admissions with COVID-19. *Statistical Methods in Medical Research, in press*, online first: July 15, 2022. https://doi.org/10.1177/09622802221106720

- Nyberg T*, Ferguson NM*, Nash SG, Webster HH, Flaxman S, Andrews N, Hinsley W, Bernal JL, Kall M, Bhatt S, Blomquist P, Zaidi A, Volz E, Abdul Aziz N, Harman K, Funk S, Abbott S, Hope R, Charlett A, Chand M, Ghani AC, Seaman SR, Dabrera G, De Angelis D*, **Presanis AM***, Thelwall S*. (2022): Comparative analysis of the risks of hospitalisation and death associated with SARS-CoV-2 omicron (B.1.1.529) and delta (B.1.617.2) variants in England: a cohort study. *The Lancet* 399(10332):1303-12. https://doi.org/10.1016/S0140-6736(22)00462-7

- Nyberg T, Harman K, Zaidi A, Seaman SR, Andrews N, Nash SG, Charlett A, Lopez-Bernal J, Myers R, Groves N, Gallagher E, Gharbia S, Chand M, Thelwall S, De Angelis D, Dabrera G, **Presanis AM**. (2022): Hospitalisation and mortality risk for COVID-19 cases with SARS-CoV-2 AY.4.2 (VUI-21OCT-01) compared to non-AY.4.2 Delta variant sub-lineages. *The Journal of Infectious Diseases*; jiac063, https://doi.org/10.1093/infdis/jiac063

- Twohig KA*, Nyberg T*, Zaidi A, Thelwall S, Sinnathamby MA, Aliabadi S, Seaman SR, Harris RJ, Hope R, Lopez-Bernal J, Gallagher E, Charlett A, De Angelis D, **Presanis AM**, Dabrera G. (2021): Hospital admission and emergency care attendance risk for SARS-CoV-2 delta (B.1.617.2) compared with alpha (B.1.1.7) variants of concern: a cohort study. *The Lancet Infectious Diseases*. 22(1):35-42. https://doi.org/10.1016/S1473-3099(21)00475-8

  - A press release accompanied the publication of this paper (https://www.mrc-bsu.cam.ac.uk/blog/patients-with-sars-cov-2-delta-variant-were-more-likely-to-be-admitted-to-hospital-compared-to-patients-with-alpha-variant/).

- Seaman SR, **Presanis AM**, Jackson C. (2021): Estimating a time-to-event distribution from right-truncated data in an epidemic: A review of methods. *Statistical Methods in Medical Research*, online first December 21, 2021. https://doi.org/10.1177/09622802211023955

- Nyberg T*, Twohig KA*, Harris RJ, Seaman SR, Flannagan J, Allen H, Charlett A, De Angelis D, Dabrera G, **Presanis AM**. (2021): Risk of hospital admission for patients with SARS-CoV-2 variant B.1.1.7: cohort analysis. *BMJ*;373. https://doi.org/10.1136/bmj.n1412

Pre-prints:

- Kirwan PD, Elgohari S, Jackson CH, Tom BD, Mandal S, De Angelis D, **Presanis AM**. (2021): Trends in risks of severe events and lengths of stay for COVID-19 hospitalisations in England over the pre-vaccination era: results from the Public Health England SARI-Watch surveillance scheme. arXiv preprint https://arxiv.org/abs/2103.04867

6. Your views as to whether the work of the above-mentioned groups in responding to the Covid-19 pandemic (or the UK's response more generally) succeeded in its aims. This may include, but is not limited to, your views on:

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

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

   c) The resources and support that were available;

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

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

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

- As I attended so few of the SPI-M meetings, I am not qualified to comment on most of the questions asked above. But I will make a few comments in terms of the composition of SPI-M and the resources and support available. First, it was clear that our group at the MRC Biostatistics Unit and our long-term collaborators at PHE (now UKHSA) were in the minority being statisticians - the majority of groups involved in SPI-M were mathematical modellers. This means there was a focus on transmission models, and our expertise in other types of statistical model was in the minority. There was room for more biostatisticians to be involved, with a heavier engagement with the issues involved in surveillance/observational data (e.g. biases). Second, although I understand from colleagues more heavily involved in the SPI-M meetings that the SPI-M secretariat gave good support in terms of logistics, there was no longer-term funding available to allow academic research teams to carry out all this urgent work. Some of us were able to apply for and obtain some of the UKRI/MRC/NIHR/DHSC rapid response funding to recruit extra postdoctoral research assistants. However, the majority of academic groups were relying on their universities to provide extra support in terms of seconded staff, covering teaching/other responsibilities, etc, and all of us were working intense over-time hours, given the urgent requirements for evidence, for free. Some academic groups were also able to apply for funding at a later stage (e.g. the MRC-funded JUNIPER consortium of which Prof. De Angelis' group at MRC Biostatistics Unit were a part), but it took time and effort which were in short supply early in the pandemic. Better preparation in terms of sleeping projects and longer-term funding than the emergency funding provided, for those academic groups involved in the response, might have been warranted.

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

   - Better/more organised investment in UKHSA (the former PHE already had tremendous expertise, which should be retained and invested in).

   - As mentioned above, better investment in pre-prepared study designs (sleeping projects), and better/more engagement of the advisory groups with statisticians, as well as mathematicians, epidemiologists and clinicians.

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

   - All reports on our work on the COVID-19 pandemic (severity) sent to SPI-M, SAGE, the UKHSA Joint Modelling Team (JMT) and the Variant Technical Group (VTG).

   - The few presentations either I or a member of my team presented to SPI-M, JMT and VTG.

   - Pre-prints of papers describing our work (see attached CV).

   - Published versions of peer-reviewed articles describing our work (see attached CV).