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Communicating scientific advice: lessons from the UK covid-19 inquiry

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The clue is in the name. Scientific advisers to politicians must first have a good understanding of science, including not just the physical and biological sciences, but also the social and political sciences. Second, they must also be able to communicate their advice in ways that are understood.¹ The UK's covid-19 inquiry has highlighted the challenges that arise in both of these roles.

It is obvious that experts advising on any complex threat must be able to draw on a very wide range of disciplines and bodies of knowledge. During the pandemic, Patrick Vallance, chief scientific adviser, and Chris Whitty, chief medical officer, both experts in their respective specialisms, were able to draw on groups with specialised knowledge in emerging viruses (NERVTAG), in modelling (SPI-M), in behavioural sciences (SPI-B), and in environmental modelling (EMG), among others.² Yet there were also gaps, in particular in economics, which was largely left to the Treasury. As Ben Warner, an adviser to the then prime minister, Boris Johnson, recalled at the covid inquiry recently: "I felt that the biggest absence throughout the pandemic was the lack of economic modelling in decision making ... I found that [the Treasury] was severely limited when it came to specialists in science, advanced analytics, technology or data."³ Angela McLean, then chief scientific adviser to the Ministry of Health, was even blunter, saying about Treasury staff: "Given their inability to spot egregious errors in other things they were sent I do not have any confidence in their ability to hack a simple, sensible model."⁴

Integrating different sources of knowledge also led to problems. The imposition of a strict, but artificial separation of science from policy and practice meant that members of the UK's scientific advisory group for emergencies (SAGE) often did not know the context surrounding the questions they were being asked.⁵ It also meant that they lacked essential pieces of knowledge, such as how staff of care homes often worked in multiple facilities on different days.⁶ The advice they gave was not always used. Thus, despite SPI-B rejecting the concept of behavioural fatigue, it was invoked, implicitly and explicitly, by those advising on the timing of the initial restrictions and has been identified by Boris Johnson, the prime minister at the time, in his evidence, as a major reason for delaying action. The relative scarcity of independent public health input, a specialty that combines a wide range of disciplines—including policy analysis—was an obvious problem. The physicist Brian Cox, commenting on the covid inquiry on X, formerly Twitter, has argued that "Breadth of knowledge is key, as well as specialisation/expertise, and I don't think our system delivered that in the 80s and 90s ... I think we need to be producing more polymaths."⁷ The importance of interdisciplinary

collaboration also emerged in a study of science advisers in five European countries.⁸

It was, however, the communication of advice that was much more problematic. Patrick Vallance's diary provides a terrifying account of the challenges of getting key politicians to understand the issues. He noted how the "PM is bamboozled," "still confused on different types of test (he holds it in his head for a session and then it goes)," and he described how "watching PM get his head round stats is awful."⁹ A particular challenge was conveying the concept of exponential growth, which seems surprising, given that the same mathematical principle underpins compound interest, something one would expect ministers responsible for the country's finances to understand. His problems were exacerbated by the competing advice Boris Johnson was receiving from senior officials who reportedly despised and distrusted one another.

Communication involves transmission and reception. Scientific advisers can do very little about the limited understanding of basic principles by those who have been chosen by their parties to leadership positions. This means that they must concentrate on ways to present concepts in ways that the politicians can understand. Angela McLean described how she and colleagues developed "explainers" to convey basic concepts.⁴ An extensive body of research shows how best to do this.¹⁰

Yet, while such approaches can work with politicians who are uninformed, this is only one of the reasons why people fail to understand things. It does not tackle the second reason—that they are misinformed.¹¹ This happens when the information being conveyed conflicts with their existing understanding or values. A classic American study gathered information on respondents' mathematical skills and their views on gun control, a topic known to attract strongly held views. When presented with mathematical calculations involving either skin cream or gun control, the probability of a correct answer depended on mathematical ability with the former, but prior views in the latter.¹¹ This becomes relevant when, as Chris Whitty noted, he was asking the prime minister to make a decision that was "almost antithetical to his whole philosophy of life."¹² In these circumstances, how to communicate the message so it is understood is as important as the message itself.

Scientists are often encouraged to communicate uncertainty, but this poses a challenge when politicians lack the skills to appreciate concepts such as probability and contingency. They are also expected to provide their advice dispassionately, yet the inquiry also heard that, to be effective, the message should be "electrifying." The problems are summarised in a quotation often attributed to the

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former US President Harry S Truman, “Give me a one-handed economist. All my economists say ‘on the one hand . . . the other’.”¹³ Of course, this may simply be that the politicians wish to avoid responsibility for the decisions they are paid to take. The use of the now-discredited notion that they were “following the science” would support this view.¹⁴

Angela McLean identified the question of “how are scientific advisers going to get a whole lot better at communicating what we think?” as “really important.”⁴ It seems likely that the inquiry will agree, but perhaps we need an answer now as a new crisis could arise at any time.

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- 1 McKee M, Altman D, Costello A, et al. Open science communication: The first year of the UK’s Independent Scientific Advisory Group for Emergencies[published Online First: 20220115]. *Health Policy* 2022;126:44. doi: 10.1016/j.healthpol.2022.01.006. pmid: 35140018
- 2 Government Office for Science. List of participants of SAGE and related sub-groups. Updated 1 July 2022 [Available from: <https://www.gov.uk/government/publications/scientific-advisory-group-for-emergencies-sage-coronavirus-covid-19-response-membership/list-of-participants-of-sage-and-related-sub-groups> accessed 4th December 2023.
- 3 Inquiry COVID. Transcript. 6 November 2023 2023 [Available from: <https://covid19.public-inquiry.uk/wp-content/uploads/2023/11/06192714/2023-11-06-Module-2-Day-18-Transcript.pdf> accessed 4th December 2023.
- 4 Inquiry COVID. Transcript. 23 November 2023 2023 [Available from: <https://covid19.public-inquiry.uk/wp-content/uploads/2023/11/24170018/C-19-Inquiry-23-November-2023-Module-2-Day-25-Redacted.pdf> accessed 4th December 2023.
- 5 Inquiry COVID. Transcript. 19 October 2023 2023 [Available from: <https://covid19.public-inquiry.uk/wp-content/uploads/2023/10/19193334/2023-10-19-Module-2-Day-13-Transcript.pdf> accessed 4th December 2023.
- 6 Cox B. X2023 [Available from: <https://twitter.com/martinmckee/status/1731230127827173839> accessed 4th December 2023.
- 7 Colman E, Wanat M, Goossens H, Tonkin-Crine S, Antheriens S. Following the science? Views from scientists on government advisory boards during the COVID-19 pandemic: a qualitative interview study in five European countries. *BMJ Glob Health* 2021;6:e006928. doi: 10.1136/bmjgh-2021-006928. pmid: 34580072
- 8 Inquiry COVID. Transcript. 20 November 2023 2023 [Available from: <https://covid19.public-inquiry.uk/wp-content/uploads/2023/11/20193335/2023-11-20-Module-2-Day-22-Transcript.pdf> accessed 4th December 2023.
- 9 Schonger M, Sele D. How to better communicate the exponential growth of infectious diseases[published Online First: 20201209]. *PLoS One* 2020;15:e0242839. doi: 10.1371/journal.pone.0242839. pmid: 33296387
- 10 Kahan DM, Peters E, Dawson EC, et al. Motivated numeracy and enlightened self-government. *Behav Public Policy* 2017;1:86doi: 10.1017/bpp.2016.2.
- 11 Inquiry COVID. Transcript. 22 November 2023 2023 [Available from: <https://covid19.public-inquiry.uk/wp-content/uploads/2023/11/23180915/C-19-Inquiry-22-November-2023-Module-2-Day-24-Revised.pdf> accessed 4th December 2023.
- 12 The Economist. The one-handed economist 2003 [Available from: <https://www.economist.com/business/2003/11/13/the-one-handed-economist> accessed 4th December 2023.
- 13 Inquiry COVID. Transcript. 19 October 2023 2023 [Available from: <https://covid19.public-inquiry.uk/wp-content/uploads/2023/10/19193334/2023-10-19-Module-2-Day-13-Transcript.pdf>
- 14 MacAulay M, Fafard P, Cassola A, et al. Analysing the ‘follow the science’ rhetoric of government responses to COVID-19. *Policy Polit* 2023;51:85. doi: 10.1332/030557321X16831146677554.