Public Health England
Protecting and improving the nation's health

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Dear Chair

Science and Technology Select Committee: UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks

Thank you for your invitation to give evidence on 28 April and your letter of 05 May.

Please see responses to your questions below:

What assessment, if any, PHE has made of the scientific evidence and rationale underlying the public health guidance issued by the CDC[1]

Public Health England (PHE) continues to review the evidence on COVID-19 vaccination, including examining international practice. This has included an assessment of the evidence used to support public health guidance issued by the United States Centers for Disease Control and Prevention (CDC) and European Centre for Disease Control information, which forms part of a wider evidence review on vaccine effectiveness on infection, morbidity, mortality and transmission.

There is good evidence in support of the effectiveness of all vaccines authorised by the United States Food and Drug Administration and World Health Organization in significantly reducing symptomatic infections, disease severity and deaths[i].

The CDC's guidance reflects societal values as well as the scientific data, favouring the benefits of avoiding an individual's disruptions such as quarantine over the residual risks of becoming ill with COVID-19 or transmitting the virus to others. This approach is untested within the United Kingdom. Other factors, such as disease prevalence, vaccine coverage and presence of circulating variants of concern all impact on the risk transmission and are being closely reviewed by PHE.

CDC travel-related exemptions[ii] from pre and post departure testing and quarantine require a high level of vaccine coverage in origin locations to minimise travel associated risks. This is not yet the case in many countries and a precautionary approach maintains travel-related testing and quarantine, with an aim to lift restrictions according to risk rating in origin countries.

[1] https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/fully-vaccinated-people.html

If PHE has given advice to the Government on the public health rationale for lifting some restrictions for those who have received two doses of a covid-19 vaccine; o if so, what advice it has given (including evidence) and whether that advice included sociological considerations;

PHE has not provided any advice to the government on lifting restrictions for vaccinated individuals to date.

The basis for your observation to the Committee that the lifting of restrictions may have been possible for those who have received two doses of mRNA vaccines but not those who have received two doses of adenoviral vector-based vaccines; and
What data PHE would require, with regard to a second dose of an adenoviral vector-based vaccine, to assess whether there would be a public health benefit to lifting restrictions for those who had received two doses of a vaccine (and when you expect such data to emerge).

Guidance from the United States of America (USA) appears to be based largely on the results available at the time of licensure, which mainly derives from clinical trials of the two messenger ribonucleic acid (mRNA) vaccines and the Johnson and Johnson single dose vaccine.

In general, the clinical trials of COVID-19 vaccines, have included relatively healthy older individuals; and were powered to determine protection against symptomatic disease of mild to moderate severity. These trials would not have included, for example, the frail elderly in care homes, or the immunosuppressed and the clinical trials have in general had insufficient sample sizes to allow for detailed analysis of protection against hospitalisation or severe disease, typically recording a handful of events. In addition, not all clinical trials have evaluated the protection from a single dose, or protection against asymptomatic infection. Clinical trials are normally conducted under ideal situations, and real-world evidence may differ, and so it's important that real world evidence is used to underpin policy.

England has taken a population-based approach to its advice, which is based on the government's roadmap and driven by the real-world data. This aims to lift restrictions at each stage, based on the overall level of control across the population on that date. This, alongside the vaccination strategy, which was based initially on wider roll out of the first dose of the vaccine, and the nature of evidence required for decisions at each stage is different from the evidence required for the USA advice to individuals. In addition, because the United Kingdom used a large volume of AstraZeneca vaccine as part of its programme, which is immunologically different to the mRNA vaccines, appearing to provide a slower T-cell dependent response, it is particularly important that there is evidence for this vaccine.

So far, robust evidence has been generated on the following aspects:

- Protection against symptomatic COVID-19 after a single dose of Pfizer and AstraZeneca vaccines in over 80s, 70-79s, and 60-69s
- Protection against hospitalisation against COVID-19 after a single dose of Pfizer and AstraZeneca vaccines in over 80s
- Protection against death from COVID-19 after a single dose of Pfizer vaccine in over 80s
- Protection against symptomatic and asymptomatic infection in health care workers after a single dose of Pfizer vaccine
- Protection against symptomatic and asymptomatic infection in care home residents after a single dose of Pfizer and AstraZeneca vaccines
- A limited amount of evidence on two doses of Pfizer given at a three-week interval.

Further evidence has recently emerged on

- Protection against onward household transmission after a single dose of Pfizer and AstraZeneca vaccines[iii]
- Protection against death from COVID-19 after a single dose of AstraZeneca vaccine in over 80s
- Protection against death and hospitalisation from COVID-19 after two doses of Pfizer vaccines in over 80s.

To inform future control, ongoing evaluation is required to establish further evidence on

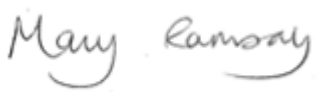
- Protection against death and hospitalisation from COVID-19 after two doses of AstraZeneca vaccine
- Protection against symptomatic COVID-19 after one dose of Pfizer and AstraZeneca vaccine in people who are clinically extremely vulnerable or have underlying medical conditions
- Protection against symptomatic and asymptomatic infection in health care workers after a single dose of AstraZeneca vaccine and after two doses of either Pfizer or AstraZeneca vaccine
- Protection against onward household transmission after two doses of Pfizer and AstraZeneca vaccines
- Protection against symptomatic COVID-19 due to variants of concern
- The duration of protection against all these outcomes.

PHE has been working in collaboration with other groups, including academics, to establish many of the important factors that are required as part of the roadmap decisions[iv].

The government's decision to relax restrictions according to the current road map will be largely based upon a view of the overall risk to the population, regardless of an individual's clinical condition, age or vaccination status, as well as any risk posed by variants of concern. As restrictions relax, and the bulk of the population has received a full course of vaccination, specific guidance in relation to particular events will be reviewed and it is likely that individuals will be permitted to undertake certain activities based on a range of factors, only one of which will include vaccination status.

I hope you found this response helpful.

Yours sincerely,



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[i] https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/fully-vaccinated-people.html
[ii] https://www.cdc.gov/quarantine/travel-restrictions.html
[iii] Harris R, Hall J, Zaidi A et al. Impact of vaccination on household transmission of SARS-CoV-2 in England. Preprint. 2021. Pre-print. Accessed 35bf4bb1-6ade-d3eb-a39e-9c9b25a8122a (khub.net)
[iv] https://www.gov.uk/government/publications/covid-19-vaccine-surveillance-strategy