Independent report

Update to JCVI advice on booster vaccination in adults, 15 November 2021

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This publication is available at https://www.gov.uk/government/publications/covid-19-booster-vaccine-programme-for-winter-2021-to-2022-jcvi-statement-november-2021/update-to-jcvi-advice-on-booster-vaccination-in-adults-15-november-2021

Introduction

The Joint Committee on Vaccination and Immunisation (JCVI) has been asked by the Secretary of State for Health and Social Care to consider the options for and timing of a booster programme to revaccinate adults in order to reduce mortality, morbidity and hospitalisations from COVID-19 over the 2021 to 2022 winter period and through 2022, as well as to minimise the COVID-19 case infection rate and the chance of new variants emerging.

JCVI has previously advised booster vaccination for all adults aged 50 years and over, and those in a COVID-19 at-risk group (https://www.gov.uk/government/publications/jcvi-statement-september-2021-covid-19-booster-vaccine-programme-for-winter-2021-to-2022). This programme aims to maintain protection against serious disease and mortality in these more vulnerable groups. JCVI has continued to consider options for booster vaccination for adults in the UK.

JCVI updated advice

JCVI advises that all adults aged 40 to 49 should also be offered a booster vaccination with an mRNA COVID-19 vaccine, 6 months after their second dose, irrespective of the vaccines given for the first and second doses.

Booster vaccination should preferably be undertaken with either the Pfizer-BioNTech vaccine (BNT162b2/Comirnaty®), or a half dose of Moderna (mRNA-1273/Spikevax®) vaccine, as previously advised (https://www.gov.uk/government/publications/jcvi-statement-september-2021-covid-19-booster-vaccine-programme-for-winter-2021-to-2022).

Future considerations include the need for booster vaccination (third dose) for 18 to 39 year olds who are not in an at-risk group, and whether additional booster vaccination (fourth dose) for more vulnerable adult groups may be required. At present, it is not known whether recurrent boosters will be required in the long term, and more data is required to inform these decisions as we move into 2022.

JCVI will maintain close review of available data related to durability of protection against severe COVID-19 (hospitalisation and deaths) in all age groups and will develop further advice in due course.

Considerations

JCVI has reviewed the latest epidemiology of COVID-19 in the UK[footnote 1], mathematical modelling[footnote 2] [footnote 3], data on vaccine safety and vaccine effectiveness[footnote 4] [footnote 5] [footnote 6], and data from trials undertaken to understand the immunological impact of booster vaccination[footnote 7]. Operational capacity and vaccine supply have also been taken into consideration.

JCVI has considered how COVID-19 vaccines should be used to maximise protection against hospitalisation and mortality from COVID-19 in the UK in 2021 and the first half of 2022, as well as reduce the overall case rate in adults during this time.

There remain major uncertainties in relation to the data relevant to considerations of booster vaccination. These include:

- the duration of protection against severe COVID-19 (hospitalisations and deaths) provided by the 2-dose primary schedule in younger adults who are not in a COVID-19 at-risk group

- duration of protection provided by booster vaccination in older adults, in particular whether booster vaccination in autumn and winter 2021 would provide good protection through to autumn and winter 2022
- the timing of any future waves of infection in 2022 and beyond
- the likelihood of the emergence of new variants of concern and their potential impacts on vaccine effectiveness.
- long-term effects, if any, of extremely rare adverse events following vaccination, such as myocarditis

Sufficient quantities of mRNA COVID-19 vaccine (Pfizer-BioNTech and Moderna) are available in the UK to offer a booster dose in the coming months to adults aged 18 to 49 years. However, these supplies are not unlimited and have a shelf life. An additional booster vaccination (fourth dose) may also be required to protect the most vulnerable during the first half of 2022.

Background

COVID-19 vaccines used in the UK have provided very good protection against serious disease and mortality, and good protection against infection and/or symptomatic disease. Recent UK and international data has provided early signs of a slight fall in the levels of protection against severe disease, which is most evident among older individuals who completed their primary vaccine course a longer time ago.

Protection against asymptomatic infection and mild symptomatic disease wanes more rapidly over time, compared with protection against serious disease and mortality[footnote 5]. The immune response to vaccination will provide a memory response, which will allow the body to respond more quickly in those who have previously been vaccinated and go on to become infected. While preventing severe COVID-19 is the primary aim of the vaccination programme, prevention of infection may also play an important role in combatting the pandemic through reducing the overall risk of SARS-CoV-2 infection across the population. A reduction in rates of infection generally would also provide indirect protection against serious COVID-19 in more vulnerable populations.

Persons at the highest risk from COVID-19 are those over the age of 70 years and those with certain underlying health conditions, with the risk of serious disease reducing with decreasing age[footnote 8]. Persons aged 40 to 49 years are at a lower risk of serious disease and mortality, although this risk is not negligible and there is some data to indicate a waning of protection following the primary schedule in these persons[footnote 5]. Therefore, JCVI considers that booster vaccination should be offered to persons aged 40 to 49 years to maintain protection against serious disease and mortality.

Adults aged less than 40 years are at relatively lower risk of serious disease and mortality, and high levels of vaccine-induced protection against serious COVID-19 infections continue to be observed in these persons. However, the durability of such high levels of protection beyond 6 months after their second dose is not currently known. A booster vaccine dose in this age group would be expected to provide added assurance of high levels of vaccine-induced immunity and possibly extend the duration of protection further, although there is no concrete data in this latter regard.

As COVID-19 booster vaccination programmes have only recently begun in the UK and internationally, there is only very limited data on the durability of protection in those receiving a booster vaccination. In clinical trials of booster vaccination, measured immune responses following the booster (third) dose were substantially higher than after the primary 2-dose schedules[footnote 7] [footnote 9]. This, and other data, suggests that the pattern and speed of waning of protection following the booster dose may be

different compared to after the 2-dose primary schedule. This makes the need for and timing of additional booster (fourth) doses highly uncertain at this time. In the UK, as of end October 2021, almost all older persons and other vulnerable groups have already been offered booster vaccination (third doses). Should the level of protection from this booster dose wane substantially over the next 6 months, and should this coincide with a further wave of infection, an additional booster (fourth) dose in the first half of 2022 may be appropriate.

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1. National flu and COVID-19 surveillance reports: 2021 to 2022 season (https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season)
2. University of Warwick – modelling the impact of third dose boosters (unpublished)
3. London School of Hygiene and Tropical Medicine – modelling the impact of third dose boosters (unpublished)
4. Coronavirus vaccine – weekly summary of Yellow Card reporting (https://www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions/coronavirus-vaccine-summary-of-yellow-card-reporting)
5. COVID-19 vaccine weekly surveillance reports (weeks 39 to 44) (https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports)
6. Vaccine effectiveness data – Public Health Scotland (unpublished)
7. Comparing COVID-19 booster vaccinations (COV-BOOST) (unpublished)
8. Williamson EJ, Walker AJ, Bhaskaran K, and others. Factors associated with COVID-19-related death using OpenSAFELY (https://www.nature.com/articles/s41586-020-2521-4). Nature. 2020 Aug; 584(7821): 430-436
9. UK Health Security Agency data on immunological responses to booster vaccination (unpublished)