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Covid-19: Two vaccine doses are crucial for protection against delta, study finds

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The two dose regimen of the Pfizer-BioNTech covid-19 vaccine is 88% effective against symptomatic disease caused by the delta variant, while the Oxford-AstraZeneca vaccine is 67% effective, research has found.¹

The study, funded by Public Health England, estimated the effectiveness of vaccination against symptomatic disease caused by the delta and alpha variants in people aged 16 or over between 5 April and 16 May 2021. It found that although two doses of either vaccine offered good protection against delta, a single dose of either vaccine was only around 30% (95% confidence interval 25.2% to 35.7%) effective against the variant.

In the UK the two doses of the covid-19 vaccines have been given at an interval of around 12 weeks to maximise effectiveness while getting a single dose to as many people as quickly as possible. However, some people have been given the vaccine earlier, depending on availability and infection rates.

In England an estimated 84 600 deaths and 23 million infections have been prevented as a result of the covid-19 vaccination programme, up to 6 August.²

The researchers analysed data from the national vaccination register, extracted on 17 May. Just over 19 000 sequenced cases were included, of which 14 837 were caused by the alpha variant and 4272 the delta. The interval between vaccine doses ranged from 21 to 106 days, although most people had an interval of around 10-12 weeks.

The study, published in the *New England Journal of Medicine*, reported that for the alpha variant the two dose regimen of the Pfizer vaccine was 93.7% effective while AstraZeneca's was 74.5% effective.

In a linked editorial professor of pharmacoepidemiology Stephen Evans and professor of biostatistics and epidemiology Nicholas Jewell from the London School of Hygiene and Tropical Medicine, wrote, "The key results are encouraging but emphasize the necessity of the second vaccine dose by showing a markedly lower effectiveness against the delta variant than against the alpha variant among persons who received only one dose of either vaccine."³

They also pointed out that the two vaccine brands were used in different ways over time and were available in different healthcare settings and to different age groups at different times, making valid comparisons of effectiveness between the two difficult.

1 Lopez Bernal J, Andrews N, Gower C, et al. Effectiveness of covid-19 vaccines against the B.1.617.2 (delta) variant. *N Engl J Med* 2021;385:585-94. doi: 10.1056/NEJMoa2108891 pmid: 34289274

2 Public Health England. Covid-19 vaccine surveillance report: week 32. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1010472/Vaccine_surveillance_report_-_week_32.pdf.

3 Evans SJW, Jewell NP. Vaccine effectiveness studies in the field. *N Engl J Med* 2021;385:650-1. doi: 10.1056/NEJMe2110605 pmid: 34289269

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