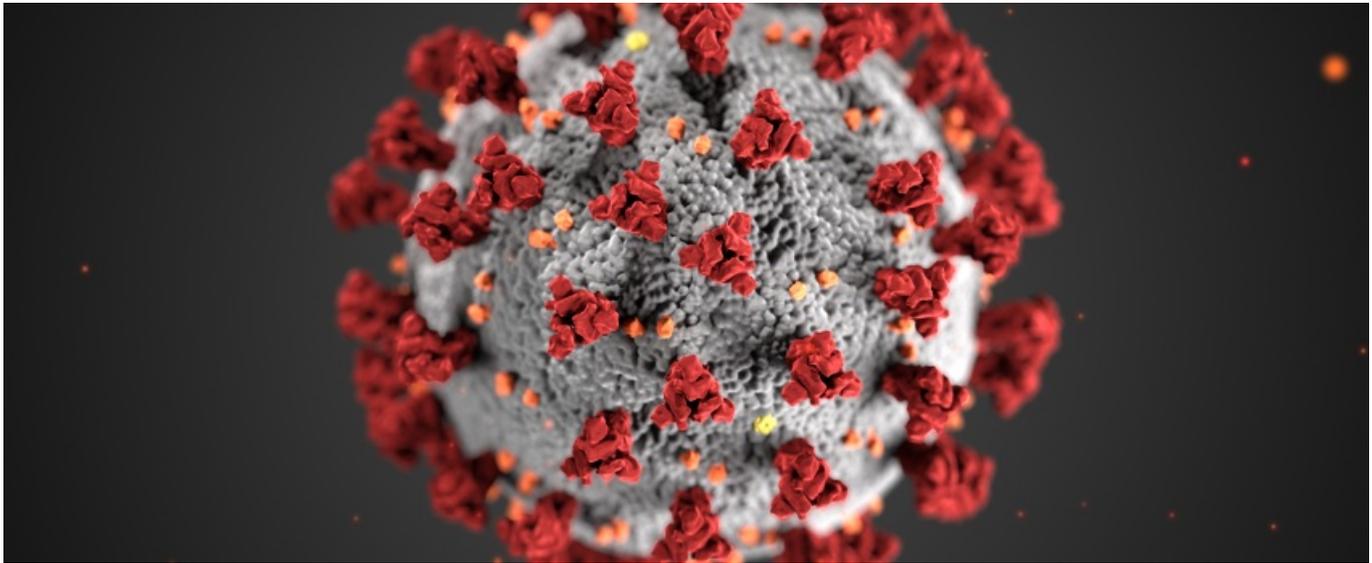


## The Delta for Covid-19 vaccine efficacy



[Jacob Plieth](#)



### **Pfizer/Biontech's and Astrazeneca's Covid-19 vaccines come out strong in an analysis of thousands of UK cases of the Delta variant.**

The ability of new coronavirus mutations to derail global vaccination campaigns remains an ever-present threat, but a large real-world observational analysis of UK cases, [just published in the NEJM](#), suggests that Delta is not a variant capable of doing this.

With Delta quickly becoming the dominant Covid-19 variant in the west the results will be seen as a major endorsement of the current generation of vaccines from Pfizer/Biontech and Astrazeneca. The headline numbers, revealing 67-88% efficacy after a double dose, was previously revealed by Public Health England, but the NEJM paper has laid out the data and their importance in full.

The analysis comprises nearly 80,000 people across various UK regions. Most had received one or both doses of either Pfizer/Biontech's Comirnaty or Astrazeneca's Vaxzevria (those given Moderna's Spikevax or a short or mixed schedule were excluded). Efficacy at preventing symptomatic Covid-19 was then compared against a 108,000-strong cohort of unvaccinated individuals.

One caveat is that this huge dataset is subject to numerous adjustments. It is, for instance, derived from data on nearly 300,000 Covid-19 samples that have been sequenced in the UK since last November, whittled down to just over 19,000 that occurred in people given Comirnaty or Vaxzevria, and comprising the Delta or Alpha variant. Further exclusions make the total cases adjudicated, comprising vaccinated and unvaccinated people, around 15,000, and efficacy is adjusted for ethnic group, sex, age and other factors.

#### **Single dose**

The authors found that the biggest decline in vaccine effectiveness between the two variants was seen in individuals who had received only one dose, where adjusted effectiveness fell from 48.7% for Alpha to 30.7% for the Delta variant. The relatively worse single-dose efficacy against Delta was more pronounced with Vaxzevria than with Comirnaty, at 30.0% versus 35.6%.

However, the good news is that a second dose made up much of the shortfall; here the decline in vaccine effectiveness when comparing Delta against Alpha variant was 5.7 points for Comirnaty and 7.5 for Vaxzevria. During the time this dataset was generated Delta accounted for 22% of all the Covid-19 cases.

The results support an earlier analysis of this Public Health England dataset, available so far only in [summary via a preprint published in June](#). This concerns an arguably even more important metric: vaccine effectiveness

against hospitalisation with severe Covid-19.

Again, this yielded the very positive finding that there was no falloff in effectiveness in terms of hospitalisations between the Alpha and Delta Covid-19 variant. Numerically the efficacy actually rose for Delta, but this was largely an artefact of low sample size: of the 14,000 symptomatic cases adjudicated in this analysis just 166 led to hospitalisation.

Public Health England observational Covid-19 study summary				
	VE against symptomatic Covid-19		VE against hospitalisation	
	Alpha (Kent) variant	Delta (India) variant	Alpha (Kent) variant	Delta (India) variant
<i>Either vaccine</i>				
1 dose	49%	31%	78%	75%
Both doses	88%	80%	92%	94%
<i>Comirnaty</i>				
1 dose	48%	36%	83%	94%
Both doses	94%	88%	95%	96%
<i>Vaxzevria</i>				
1 dose	49%	30%	76%	71%
Both doses	75%	67%	86%	92%
<i>Source: NEJM &amp; PHE preprint. VE=vaccine effectiveness.</i>				

The NEJM authors caution that an observational analysis of this sort has limitations, and is subject to the sensitivity and specificity of PCR testing, which might differ between the two variants. Despite adjustments age might also play a factor, given that the youngest people and health care workers are more likely to have received Comirnaty than Vaxzevria.

But the results should provide comfort to those concerned about sequencing data showing the Delta variant accounting for 83% of all US Covid-19 cases, and likely being responsible for all US cases doubling every nine days or so. Fears had recently been stoked by data from Israel suggesting that vaccine efficacy dipped to as low as 60% for the Delta variant, though these findings were likely confounded by other factors.

The authors say their key negative finding, reduced single-dose effectiveness against the Delta variant, supports efforts to maximise vaccine uptake with two doses among vulnerable groups.

This is also borne out by figures suggesting that case increases in the US are primarily driven by areas with relatively low vaccination coverage. Overall, immediate panic over the Delta variant might be misplaced.

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