Vaccine Effectiveness Expert Panel - consensus narrative, 16 July

The values presented reflect the consensus judgement of the Vaccine Effectiveness Expert Panel. The panel considers a wide range of domestic and international data. Because these figures reflect a consensus from a wider range of non-Public Health England (PHE) sources, they may differ from those in PHE's vaccine surveillance report.

The panel has previously agreed that, since there is no statistically significant evidence of differences in effectiveness between the Alpha and Delta variants for severe disease (hospitalisation), the Alpha estimates, for which confidence in the data is greater, should be assumed to apply to both variants. Where there is some evidence that effectiveness is different for symptomatic disease, separate estimates for Delta are provided in the table.

For overall infection (i.e. symptomatic and asymptomatic) the panel agreed, since there is as yet no direct evidence for Delta, and no evidence of relative protection compared with Alpha, that estimates should not be provided for Delta. It was mentioned that there may be new data from Scotland relevant to infection, but this has not yet been made available. This information will be added and reviewed when possible.

On transmission (i.e. the reduction in onward transmission by vaccinated but infected people) the panel agreed that, although there is as yet no direct evidence for the Delta variant, there is indirect evidence suggesting any transmission blocking may be substantially attenuated compared with the effect previously observed for Alpha. Therefore, estimates will not be provided for Delta.

The panel reached consensus on the following narrative summary:

Infection (symptomatic & asymptomatic). For the Alpha variant, protection against any infection is ~60% after one dose of the AstraZeneca or Pfizer vaccines. After the second dose, this increases to ~80% for AstraZeneca and ~85% for Pfizer. These are relatively low confidence estimates. For the Delta variant, as yet there is no direct evidence on protection against overall infection, and no evidence of a difference in protection with respect to Alpha, so estimates are not provided.

Symptomatic disease. There is evidence that vaccine effectiveness is lower for the Delta variant than for Alpha. Against Alpha, protection is ~60% after a single dose of either the Pfizer or AstraZeneca (AZ) vaccines, rising to ~80% after a second dose for AstraZeneca and 90% for Pfizer. For Delta, protection is assessed to be ~45% after one dose for AstraZeneca and ~55% for Pfizer. After the second dose this increases to ~70% for AstraZeneca and ~85% for Pfizer. For the moderna vaccine, protection is ~70% after one dose. At this stage, there is uncertainty around the point estimates for Delta and confidence is relatively low.

Severe disease (hospitalisation and mortality). At present, although point estimates vary for hospitalisation with the Alpha and Delta variants, there is substantial overlap between the confidence intervals, and there is no evidence to suggest a statistically significant difference between vaccine effectiveness against the two variants. Based on this, similar levels of protection against hospitalisation and death for both variants are assumed at this stage. For **Hospitalisation**, with both the AZ and Pfizer vaccines, protection is ~80% after one dose and ~95% after the second dose. There is currently a higher degree of confidence with the Pfizer estimates than with the AZ estimates.

Transmission. For the Alpha variant, there is ~40% reduction in onward transmission from vaccinated but infected people after one dose of AstraZeneca, and ~45% for Pfizer. There is no data for second doses. For Delta, there is currently no direct evidence, and therefore, estimates are not provided. However, there is indirect evidence to suggest any transmission blocking may be substantially lower than for Alpha, if at all.

COVID 19 Vaccine Effectiveness Table – 16 July, 2021

Data last updated: 04 August 2021
Consensus agreed: 16th July, DCMO cleared: 20th July

This product captures data agreed by a consensus of experts on one and two dose vaccine effectiveness. Effectiveness is measured against infection, symptomatic disease, hospitalisation, mortality and transmission in relation to major variants in circulation within the UK.

High Confidence	Evidence from studies is consistent and comprehensive	**Medium Confidence**	Evidence is emerging but may be inconsistent requires further analysis	**Low Confidence**	Little evidence is available at present and results are inconclusive

Vaccine Product	Dose Regime	Delta			
		Real World Data			
		Infection	Symptomatic	Severe	Transmission
Oxford/AstraZeneca (Non-replicating viral vector) AZD1222	**1st Dose**	Insufficient data	45% (40-55%)	80% (75-85%) (hospitalisation) 80% (75-85%) (mortality)	Insufficient data
	2nd Dose	Insufficient data	70% (60-75%)	95% (80-99%) (hospitalisation) 95% (80-99%) (mortality)	Insufficient data
Pfizer-BioNTech (RNA) BNT162b2	**1st Dose**	Insufficient data	55% (50-65%)	80% (75-85%) (hospitalisation) 80% (75-85%) (mortality)	Insufficient data
	2nd Dose	Insufficient data	85% (80-90%)	95% (90-99%) (hospitalisation) 95% (80-99%) (mortality)	Insufficient data
Moderna (RNA) mRNA-1273	**1st Dose**	Insufficient data	70% (45-85%)	Insufficient data	Insufficient data
	2nd Dose	Insufficient data	Insufficient data	Insufficient data	Insufficient data

Vaccine Product	Dose Regime	Alpha			
		Real World Data			
		Infection	Symptomatic	Severe	Transmission
Oxford/AstraZeneca (Non-replicating viral vector) AZD1222	1st Dose	60% (55-70%)	60% (55-70%)	80% (75-85%) (hospitalisation) 80% (75-85%) (mortality)	40% (35-50%)
	2nd Dose	80% (65-90%)*	80% (70-85%)	95% (80-99%) (hospitalisation) 95% (80-99%) (mortality)	Insufficient data
Pfizer-BioNTech (RNA) BNT162b2	1st Dose	60% (55-70%)	60% (55-70%)	80% (75-85%) (hospitalisation) 80% (75-85%) (mortality)	45% (45-50%)
	2nd Dose	85% (65-90%)	90% (85-95%)	95% (90-99%) (hospitalisation) 95% (80-99%) (mortality)	Insufficient data
Moderna (RNA) mRNA-1273	1st Dose	Insufficient data	Insufficient data	Insufficient data	Insufficient data
	2nd Dose	Insufficient data	Insufficient data	Insufficient data	Insufficient data

Note on PHE Data: Real world vaccine effectiveness studies undertaken by PHE for all vaccines occurs after the emergence of the Alpha variant as the dominant strain in the UK.
*The estimate for 2-dose VE for AZ against infection is from a single source (ONS infection survey) and may not be directly comparable with other estimates in this summary table.

COVID 19 Vaccine Effectiveness Table – 16 July, 2021

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Vaccine Product	Dose Regime	Alpha (B.1.1.7 - Kent) – Real World Data				Delta (B.1.617.2 - India) – Real World Data			
		Infection	Symptomatic	Severe	Transmission	Infection	Symptomatic	Severe	Transmission
Oxford/AstraZeneca (Non-replicating viral vector) AZD1222	**1st Dose**	60-70%, Source 1 61%, Source 4	55-70%, Source 1 49%, Source 2 71%, Source 4	75-85% (hospitalisation), 75-80% (mortality), Source 1	35-50%, Source 1	Insufficient data	30%, Source 2	71% (hospitalisation), Source 3	Insufficient data
	2nd Dose	79%, Source 4	65-90%, Source 1 75%, Source 2 92%, Source 4	80-95% (hospitalisation), Source 1	Insufficient data		67%, Source 2	92% (hospitalisation), Source 3	
Pfizer-BioNTech (RNA) BNT162b2	**1st Dose**	55-70%, Source 1 66%, Source 4	55-70%, Source 1 48%, Source 2 78%, Source 4	75-85% (hospitalisation), 75-80% (mortality), Source 1 64% (hospitalisation), Source 6	45-50%, Source 1	Insufficient data	36%, Source 2	94% (hospitalisation), Source 3	Insufficient data
	2nd Dose	70-90%, Source 1 80%, Source 4 92%, Source 5	85-90%, Source 1 94%, Source 2 95%, Source 4 97%, Source 5	90-95% (hospitalisation), 95-99% (mortality), Source 1 97% (hospitalisation), 97% (mortality), Source 5 94% (hospitalisation), Source 6	Insufficient data		88%, Source 2	96% (hospitalisation), Source 3	
Moderna (RNA) mRNA-1273	**1st Dose**	88%, Source 7	Insufficient data	Insufficient data	Insufficient data	Insufficient data	72%, Source 8	Insufficient data	Insufficient data
	2nd Dose	100%, Source 7					Insufficient data		

Source Reference	Source	Source URL
1	PHE	Link
2	PHE	Link
3	PHE	Link
4	ONS	Link
5	Ministry of Health of Israel	Link
6	CDC	Link
7	Qatar Ministry of Health	Link
8	PHE	Link

Note on PHE Data: Real world vaccine effectiveness studies undertaken by PHE for all vaccines occurs after the emergence of the Alpha variant as the dominant strain in the UK. Some analysis for both Pfizer and Moderna vaccines has been undertaken internationally, which is recorded here.