

Vaccine effectiveness against Variants of Concern

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Key points

- Some licensed vaccines might have a reduced efficacy against certain variants, especially after the first dose (for those vaccines where two doses are foreseen.
- Vaccines with reduced effectiveness against symptomatic disease due to variants may still provide adequate protection against severe disease.
- The emergence of such variants requires the continuation of rapid roll-out of COVID-19 vaccines to reach full vaccination with two doses (for those vaccine products where two doses are foreseen) at least of all groups at increased risk of COVID-19-related hospitalisation, severe disease and death.
- Variants with ability to escape immunity will probably continue to emerge in the future but this may depend on vaccination coverage globally.
- This should be mitigated by designing updated COVID-19 vaccines with mutated spike sequences or using alternative viral antigens.

WHO label	Lineage	Moderna (1 dose)	Moderna (2 doses)	Comirnaty (1 dose)	Comirnaty (2 doses)	Vaxzevria (1 dose)	Vaxzevria (2 doses)	Janssen
Original strain	**D.614**		94.1% (89.3-96.8), as per SmPC (symptomatic disease)		95.0% (90.0-97.9), as per SmPC (symptomatic disease)		59.5% (45.8-69.7). as per SmPC (symptomatic disease)	66.9% (59.0-73.4), as per SmPC (symptomatic disease)
Alpha	**B.1.1.7**	60% (57-64) (pooled analysis of Moderna and Comirnaty) (symptomatic disease) [12] 70% (60-77) (pooled analysis of Moderna and Comirnaty) (severe disease) [12]	91% (89-93) (pooled analysis of Moderna and Comirnaty) (symptomatic disease) [12] 98% (88-100) (pooled analysis of Moderna and Comirnaty) (severe disease) [12]	49.2% (42.6-55.0) (symptomatic disease) [1] 83% (62-93) (hospitalisation) [2]	93.4% (90.4-95.5) (symptomatic disease) [1] 92% (90-93) (symptomatic disease) [3] *89.5% (85.9 to 92.3) (symptomatic disease) [6] 95% (78-99) (hospitalisation) [2] 96.7% (96.0-97.3) (death) [11]	51.4% (47.3-55.3) (symptomatic disease) [1] 76% (61-85) (hospitalisation) [2]	66.1% (54.0-75.0) (symptomatic disease) [1] 86% (53-96) (hospitalisation) [2] 73% (66-78) (symptomatic disease) [3]	76.7% (30.3–95.3) (symptomatic disease) [10]
Beta	**B.1.351**	No data available	No data available	No data available	100% (53.5-100) (efficacy against symptomatic disease) [4] 75.0% (70.5 to 78.9) (effectiveness against symptomatic disease) [6] *97.4% (92.2 to 99.5) (severe disease and death) [6]	No data available	10.4% (-76.8-54.8) (symptomatic disease) [5]	64.0% (41.2–78.7) (moderate to severe/critical disease), 81.7% (46.1 – 95.4) (severe to critical disease) [7]
Gamma	**P.1**	No data available	No data available	No data available	No data available	No data available	No data available	68.1% (48.8–80.7) (moderate to severe/critical disease). 87.6% (7.8–99.7) (severe/critical disease), phase 3 results, gamma was detected in 30.6% of sequences and P2 was detected in 69.4% of sequences. [7]
Delta	**B.1.617.2**	No data available	No data available	33.2% (8.3-51.4) (symptomatic disease) [1] 94% (46-99) (hospitalisation) [2]	87.9% (78.2-93.2) (symptomatic disease) [1] 96% (86-99) (hospitalisation) [2] 79% (75-82) (symptomatic disease) [3]	32.9% (19.3-44.3) (symptomatic disease) [1] 71% (51-83) (hospitalisation) [2]	59.8% (28.9-77.3) (symptomatic disease) [1] 92% (75-97) (hospitalisation) [2] 60% (53-66) (symptomatic disease) [3]	No data available

SmPC: EU summary of product characteristics; *Effectiveness: real world evidence; Efficacy: clinical trial evidence

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