

Surveillance of vaccine status in confirmed COVID-19 episodes and hospital inpatients

Notes on interpretation

The best way to understand vaccine effectiveness is to look at population level epidemiological studies, using adjustments for other effects and confounders, rather than routine descriptive data. Vaccine efficacy/ effectiveness estimates from trials and post-implementation studies are summarised in the Vaccine Effectiveness Expert Panel table (<https://www.gov.uk/government/publications/veep-vaccine-effectiveness-table-16-july-2021>). **Protection against hospitalisation is estimated at around 95% after the second dose of vaccine.**

The data presented here should not be interpreted as measures of vaccination effectiveness. In the context of very high vaccine coverage in the population, even with a highly effective vaccine, it is expected that a large proportion of cases would occur in vaccinated individuals, simply because a larger proportion of the population are vaccinated than unvaccinated. For context, after 3rd October 2021, over 95% of those currently aged 60 and over had been vaccinated with 2 doses, and over 78% of those currently aged 18- 60 had been vaccinated with 2 doses.

This may be even more notable if vaccination has been prioritised to individuals who are more susceptible or more at risk of severe disease, as in the COVID-19 vaccination programme, in particular when looking at severe disease outcomes such as hospitalisations or deaths. Individuals in risk groups prioritised for vaccination may also be more at risk of hospitalisation or death from non-COVID-19 causes, and thus may be hospitalised or die with COVID-19 rather than because of COVID-19.

COVID-19 hospital admissions are defined as patients who tested positive for COVID-19 in the community up to 28 days prior to admission to hospital, or up to one day after admission. COVID-19 hospital inpatients are defined as patients who tested positive for COVID-19 in hospital or in the community up to 28 days prior to the date specified, who were admitted to hospital on or prior to the date specified and had not yet been discharged. It excludes patient discharged on the date specified. Data is from Patient Administration Systems via ICNet.

The individuals admitted to hospital with a positive COVID-19 test may have been admitted for a reason unrelated to their positive COVID-19 test. The reason for the test is not recorded within the datasets available and may have been taken as part of an asymptomatic screening test. Data from patients in the community also include results from asymptomatic screening activities. This report only includes data from PCR testing and not results from lateral flow devices.

Data and linkage to vaccination and hospitalisation status are likely to be incomplete.

From December 2021 this report will be updated on a monthly basis.

Table 1: Comparison of confirmed episodes of COVID-19 from 01/11/2021 up to and including 14/11/2021 between fully vaccinated population and not fully vaccinated population in Wales. Vaccination status is as per the beginning of this period (01/11/2021).

Age	Fully vaccinated population in Wales as of 01/11/2021			Unvaccinated population in Wales as of 01/11/2021		
	Denominator	No of confirmed episodes	Rate per 100,000 population	Denominator	No of confirmed episodes	Rate per 100,000 population
Under 18	2,824	14	496	144,427	2,563	1,775
Aged 18-60	1,426,451	13,729	962	308,477	2,373	769
Over 60	839,049	4,327	516	47,686	126	264
Total	2,268,324	18,070	797	500,590	5,062	1,011

NB: A "fully vaccinated" individual is a person who was vaccinated with a full dose course and has had at least 14 days elapsed since their dose 2 day, as of the start of the 2 week period

Table 2: Comparison of Covid 19 hospital admissions from 04/10/2021 up to and including 31/10/2021 between fully vaccinated and not fully vaccinated population in Wales. Vaccination status is as per the beginning of this period (04/10/2021)

Age	Fully vaccinated population in Wales as of 04/10/2021			Unvaccinated population in Wales as of 04/10/2021		
	Denominator	No of hospital admissions	Rate per 100,000 population	Denominator	No of hospital admissions	Rate per 100,000 population
Under 18	2,397	0	0	198,553	44	22
Aged 18-60	1,406,600	251	18	315,264	129	41
Over 60	838,384	688	82	48,103	73	152
Total	2,247,381	939	42	561,920	246	44

NB: A "fully vaccinated" individual is a person who was vaccinated with a full dose course and has had at least 14 days elapsed since their dose 2 day, as of the start of the 2 week period

Hospital admissions do not include Elective, Maternity, Transfer Admissions and those where admission types are not available.

The overall comparative incidence of emergency hospitalisations in vaccinated and unvaccinated individuals should be interpreted with caution, as the age-group specific comparisons all show a higher incidence in unvaccinated individuals.

Table 3: Vaccine status in COVID-19 confirmed episodes in the 2- week period ending 14/11/2021

Vaccine status at specimen collection	All Patients		Under 18		Aged 18-60		Over 60	
	n	%	n	%	n	%	n	%
Unvaccinated	5,152	16.5%	2,597	29.0%	2,413	14.0%	142	2.9%
Vaccinated- first dose only	2,130	6.8%	1,395	15.6%	704	4.1%	31	0.6%
Vaccinated- Both doses	18,576	59.6%	48	0.5%	13,820	80.0%	4,708	95.2%
Unknown	5,307	17.0%	4,902	54.8%	342	2.0%	63	1.3%
Total	31,165	100%	8,942	100%	17,279	100%	4,944	100%

NB: Of the 18,576 COVID 19 confirmed episodes who were fully vaccinated before testing positive: 18,522 (99.7%) had their second vaccine dose 14 days or more before their specimen collection date. The median age (at the point of testing) of COVID 19 confirmed episodes, in the most recent full week, is 42 years (range 3-101)

Table 4: Vaccine status in COVID-19 hospital inpatients as of 09/11/2021

Vaccine status at specimen collection	All Patients		Under 18		Aged 18- 60		Over 60	
	n	%	n	%	n	%	n	%
Unvaccinated	96	12.8%	8	36.4%	52	34.9%	36	6.2%
Vaccinated- first dose only	7	0.9%	0	0.0%	3	2.0%	4	0.7%
Vaccinated- Both doses	625	83.6%	0	0.0%	92	61.7%	533	92.4%
Unknown	20	2.7%	14	63.6%	2	1.3%	4	0.7%
Total	748	100%	22	100%	149	100%	577	100%

NB: All of the 625 patients who were fully vaccinated before testing positive for COVID-19 all had their second vaccine dose 14 days or more before their specimen collection date. The median age of inpatient COVID 19 hospital inpatients, is 74 years (range 0-104)