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 effectiveness and 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, as at 14th September, 94.8% of those aged 60 and over had been vaccinated with 2 doses, and 84% of those under 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 and linkage to vaccination and hospitalisation status are likely to be incomplete.

Table 1: Comparison of confirmed episodes of COVID-19 in fully vaccinated and unvaccinated population from 13/09/2021 up to and including 19/09/2021

Age	Fully vaccinated population in Wales as of 19/09/2021			Unvaccinated population in Wales as of 19/09/2021		
	Denominator	No of confirmed episodes	Rate per 100,000 population	Denominator	No of confirmed episodes	Rate per 100,000 population
Under 60	1,405,457	5,746	409	638,533	7,104	1,113
Over 60	836,944	2,066	247	61,894	84	136
Total	**2,242,401**	**7,812**	**348**	**700,427**	**7,188**	**1,026**

NB: "No of confirmed episodes" include those with dose 2 14 days or more before specimen date

Table 2: Comparison of COVID-19 hospital admissions between fully vaccinated and unvaccinated population in Wales in the four week period from 23/08/2021 up to and including 19/09/2021

Age	Fully vaccinated population in Wales as of 19/09/2021			Unvaccinated population in Wales as of 19/09/2021		
	Denominator	No of hospital admissions	Rate per 100,000 population	Denominator	No of hospital admissions	Rate per 100,000 population
Under 60	1,405,363	181	13	638,450	294	46
Over 60	836,873	529	63	61,889	75	121
Total	**2,242,236**	**710**	**32**	**700,339**	**369**	**53**

NB: "No of hospital admissions" include admissions with dose 2 14 days or more before specimen date

Table 3: Vaccine status in COVID-19 confirmed episodes in week ending 19/09/2021

Vaccine status at specimen collection	All Patients		Patients 60 years of age and older		Patients under 60 years old	
	n	%	n	%	n	%
Unvaccinated	6,321	33.0%	62	2.8%	6,259	37.0%
Vaccinated- first dose only	868	4.5%	26	1.2%	842	5.0%
Vaccinated- Both doses	7,878	41.2%	2,134	95.5%	5,744	34.0%
Unknown	4,073	21.3%	13	0.6%	4,060	24.0%
Total	**19,140**	**100%**	**2,235**	**100%**	**16,905**	**100%**

NB: Of the 7,878 COVID 19 confirmed episodes who were fully vaccinated before testing positive: 7,812 (99%) 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 34 years (range 6-100)

Table 4: Vaccine status in COVID-19 hospital inpatients as of 21/09/2021

Vaccine status at specimen collection	All Patients		Patients 60 years of age and older		Patients under 60 years old	
	n	%	n	%	n	%
Unvaccinated	79	12.9%	33	7.0%	46	31.9%
Vaccinated- first dose only	26	4.2%	12	2.6%	14	9.7%
Vaccinated- Both doses	493	80.3%	423	90.0%	70	48.6%
Unknown	16	2.6%	2	0.4%	14	9.7%
Total	**614**	**100%**	**470**	**100%**	**144**	**100%**

NB: All of the 493 patients who were fully vaccinated before testing positive for COVID-19 had their second vaccine dose 14 days or more before their specimen collection date

The median age of inpatient COVID 19 hospital inpatients, as of 21/09/2021, is 75 years (range 0-98)