

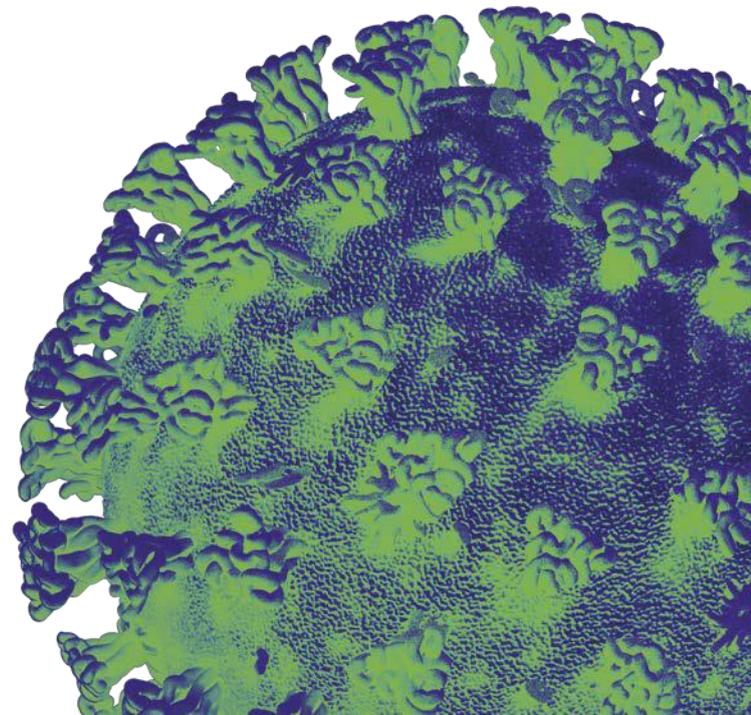
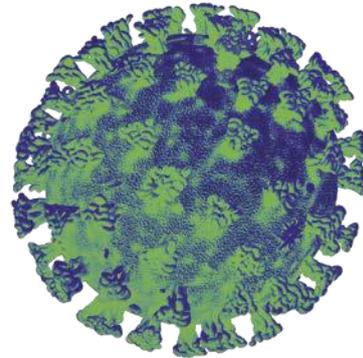
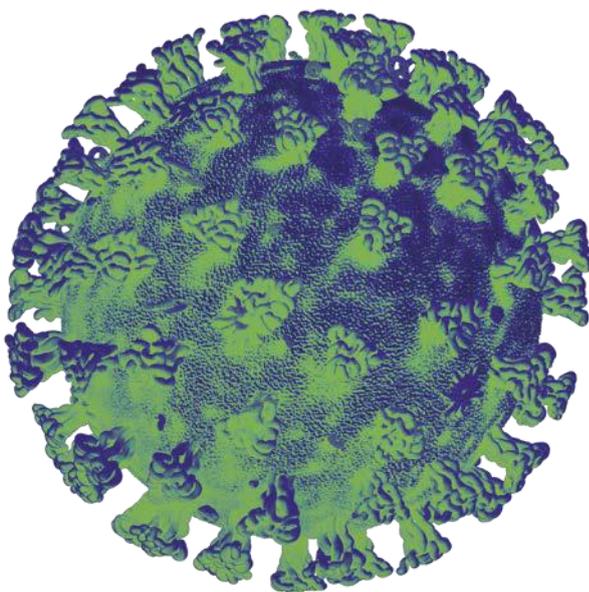


Llywodraeth Cymru
Welsh Government

Technical Advisory Cell

Advice from the Technical Advisory Cell and Chief Scientific Advisor for Health

7 July 2022



This advice has been drafted based on the available evidence at the time of writing and has been assembled to support policy colleagues and Welsh ministers. The purpose of scientific advice is to provide an overview of what we know from scientific and technical investigations, what we can infer indirectly from the evidence base or by a consensus of expert opinion. This is advice, not Welsh Government policy.

Top Line Summary

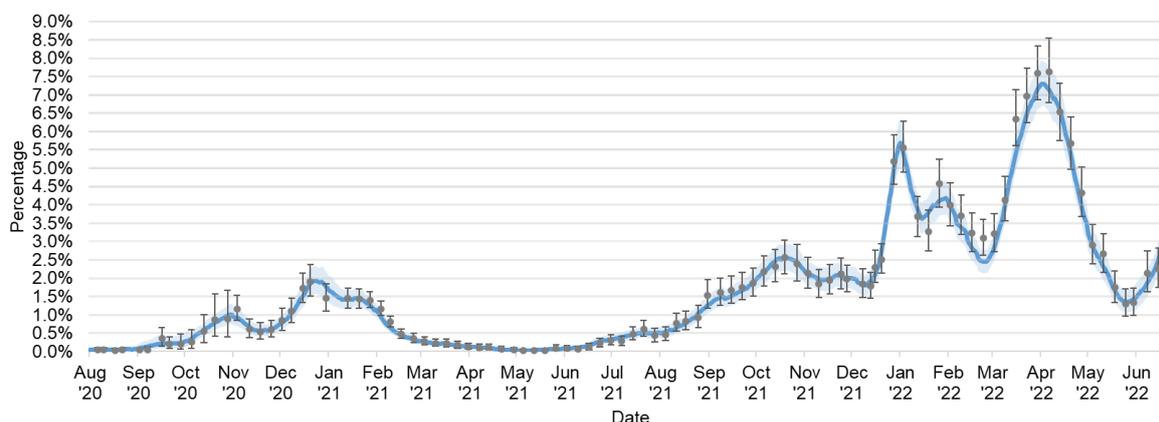
- The most recent ONS estimates suggest the number of COVID-19 infections in the community has increased from 1.33% of the population (1 in 75 people) for the week ending 2 June 2022, to 3.49% of the population (1 in 30 people) for the week ending 24 June 2022.
- Deaths in confirmed COVID-19 cases in hospital, reported by clinicians through PHW mortality rapid surveillance, remain at lower levels compared to previous waves. For the 7-day period ending 22 June 2022 the sum of deaths was 8, a slight decrease compared to the previous weekly sum of 9 deaths.
- COVID-19 NHS admissions (suspected and confirmed) have been increasing, reaching 471 on 29 June, roughly half the maximum occupancy peak level in March 2022 when Omicron BA.1 was dominant. However, evidence does not currently suggest Omicron BA.4 or BA.5 cause more severe illness in people.
- As at the week ending 22 June 2022, 7,354,833 COVID-19 vaccinations had been given in Wales. The spring booster uptake is currently 84.7% for 75+ year olds, 83.9% for care home residents and 58.2% for Immunosuppressed groups.
- As of 28 June, PHW report that the current dominant variant in Wales is Omicron BA.5, which accounted for 50.45% of sequenced cases in the last 14 days.
- The projected future has deteriorated compared to last week's projections. Latest Medium Term Projections (MTPs) suggest NHS pressures will continue to increase in the coming weeks, to a peak in early July. Hospital bed occupancy is projected to peak at just under 1000 beds in mid-July, roughly two-thirds the maximum occupancy levels observed in April during the Omicron BA.2 wave peak.
- Evidence suggests that despite the recent increase in infections, protective measures currently advised continue to fall, there is less awareness of the current state of the pandemic and narratives around the need to 'live with the virus' and variants being 'milder' dominate. Raising awareness on the current increase in infections, alongside messaging on the effectiveness of following the advice in place, would seem a proportionate response.
- The evidence section of the advice summarises a selection of recent COVID-19 or related publications and pre-prints. A number of key papers have been selected that assess a range of risks such as long-distance transmission, protection from hybrid immunity and pandemic policy across the UK.

1. Wales Situation Update (Data cut off: 04 July 2022)

Infections

With the end of widespread community testing from 1 April, there is no longer a reliable case rate based on PCR or LFD test results. As a result, infection surveillance principally relies on the ONS coronavirus infection survey, which takes a weekly swab survey involving thousands of households across Wales, and wastewater surveillance, which samples wastewater from nineteen Wastewater Treatment Works across Wales to detect levels of SARS-CoV-2.

- Recent reporting from the [ONS COVID Infection Survey](#) estimates the number of infections in the community has increased during the period 18 to 24 June 2022. During this time, it is estimated 3.49% of the community population had COVID-19 (95% credible interval: 2.84% to 4.18%).



- This equates to approximately 1 person in every 30 (95% credible interval: 1 in 35 to 1 in 25), or 106,000 people during this time (95% credible interval: 86,400 to 127,100).
- The percentage of people testing positive for COVID-19 in Wales has increased in the most recent week
- [Wastewater surveillance](#) suggests the SARS-CoV-2 signal has increased in all regions in Wales for the week ending 27 June, albeit at small levels which warrants further analysis (low confidence).

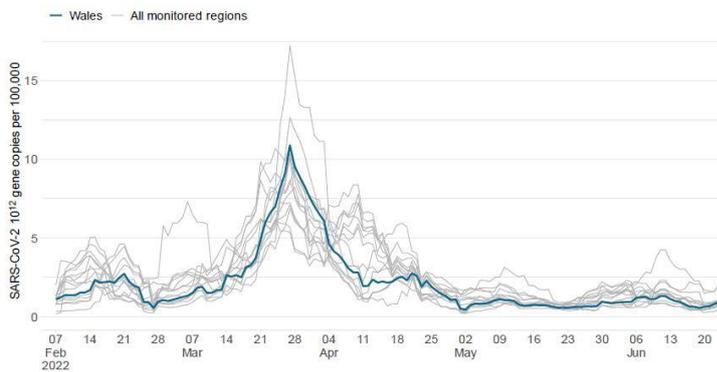


Figure 2 - National (blue lines) and Regions (grey lines)
Rolling Mean SARS-CoV-2 gc/day per 100k

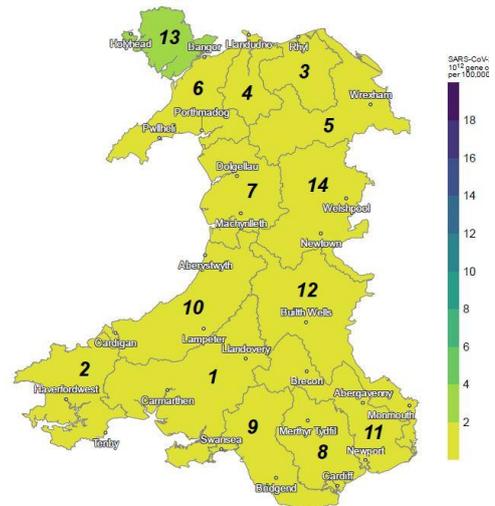
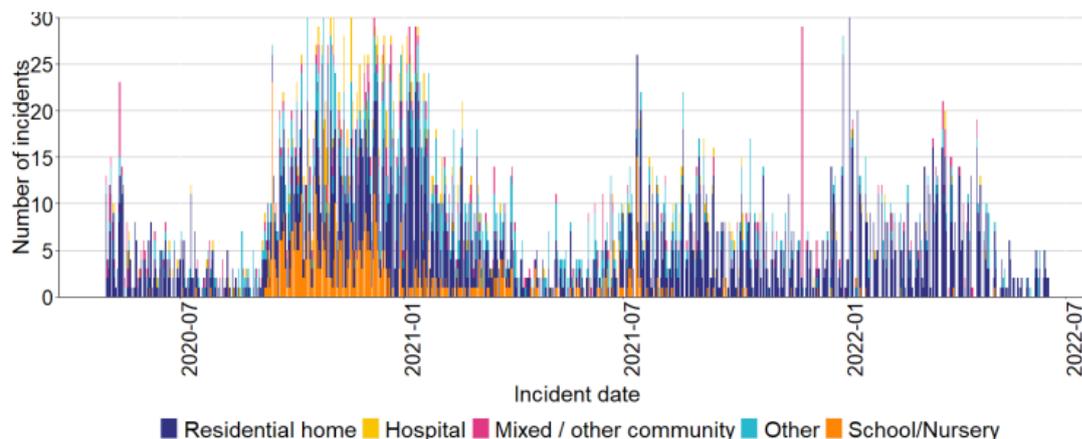


Figure 3 - National Heat Map showing Regional
Mean SARS-CoV-2 gc/day per 100k

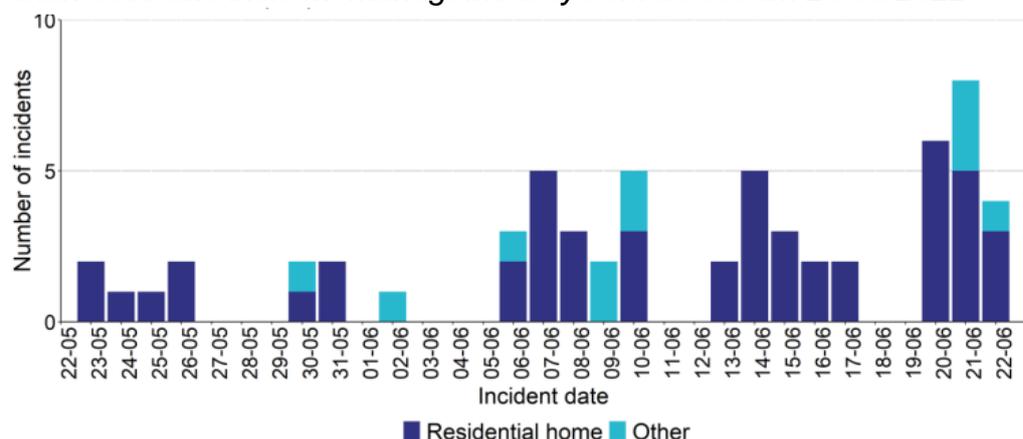
Since 1 April 2022, free NHS lateral flow tests (LFTs) are no longer available for the general public unless they have COVID-19 symptoms, are eligible for COVID-19 treatments or visiting someone in this category, are advised by a GP or healthcare professional to test or are testing for positivity at day 5 of a confirmed infection. As a result, testing data should be interpreted with caution, although it may still be useful to signal wider trends.

- In the latest reporting week (20/06/2022 to 26/06/2022) the number of LFTs reported increased from 54,286 in the previous week to 70,287. 15,408 positive testing episodes (single or multiple tests in a given week de-duplicated by person) were reported, compared to 9,406 in the previous week. The number of positive testing episodes increased from 296.8 positive LFT episodes per 100,000 population to 486.1. The episode positivity rate increased from 25.39% in the previous week to 33.21%.
- [The latest COVID-19 weekly surveillance and epidemiological summary](#) reports that, as at 29 June 2022, the overall GP consultations for any Acute Respiratory Infection (ARI) have decreased in the most recent week and consultations for suspected COVID have increased slightly.
- There were 32 new respiratory incidents recorded in the health protection case and incident management system (Tarian) in week 25 2022, a slight increase compared to the previous week. Of the 32 respiratory incidents, 27 cases were in residential homes and 5 in other settings.

Overall acute respiratory/suspected COVID-19 outbreaks and incidents logged in Tarian case and incident management system

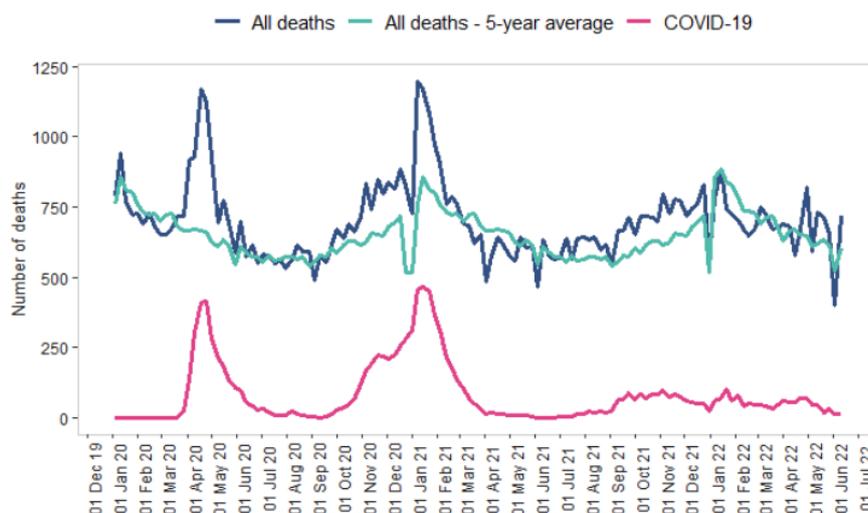


New acute respiratory/suspected COVID-19 outbreaks and incidents logged in Tarian case and incident management system as at 9am 29/06/2022



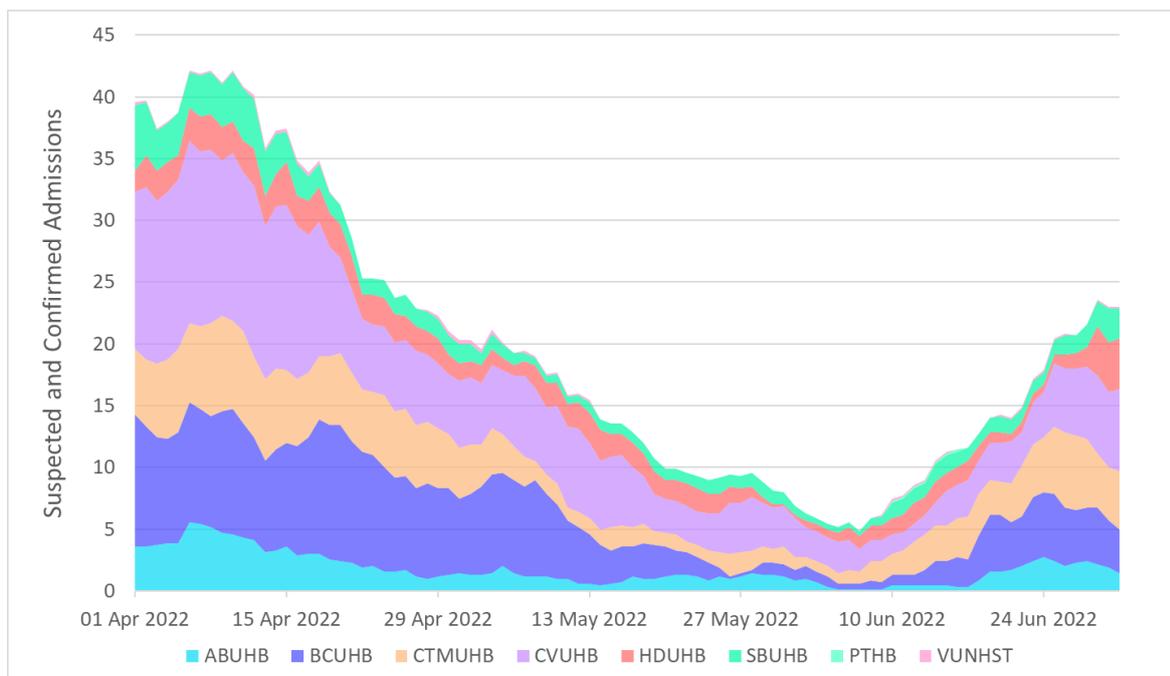
Deaths

- [The latest COVID-19 weekly surveillance and epidemiological summary](#) reports that deaths in confirmed COVID-19 cases in hospital, reported by clinicians through PHW mortality rapid surveillance, remain at lower levels compared to previous waves.
- ONS surveillance data indicate that since the start of 2022, the numbers of deaths from any cause have been oscillating around the 2015-2019 five year average. In the most recent reporting period the numbers were higher than average.



NHS

- COVID-19 admissions (suspected and confirmed) have been increasing in Wales since 7 June 2022. Wales appears to be 4 days lagged behind England, where admissions (confirmed) started increasing from 3 June 2022.
- As at 1 July, suspected and confirmed admissions (7-day average) had increased to 23 admissions per day, a level last observed in late April, and just over half the maximum number of admissions observed during the BA.2 wave in early April.



- During the rise of BA.2 dominance in March 2022, admissions increased at a slower rate than prevalence. However, in June 2022, admissions increased at

a similar rate to prevalence. This suggests the admission-infection risk has increased in recent weeks.

- The rise of BA.4 and BA.5 dominance in Wales coincided with the increased admission-infection risk observed in June 2022. However, it is unknown whether this is because BA.4 and BA.5 cause more severe disease compared with BA.2, whether BA.4 and BA.5 have greater vaccine escape than BA.2, whether vaccine protection against severe illness is waning in the population, or a combination of these. Since the last vaccination received by a significant proportion of the adult population was from the Autumn 2021 booster around 9 months ago, it is plausible that waning of vaccine protection against severe illness could be contributing to increasing admissions.

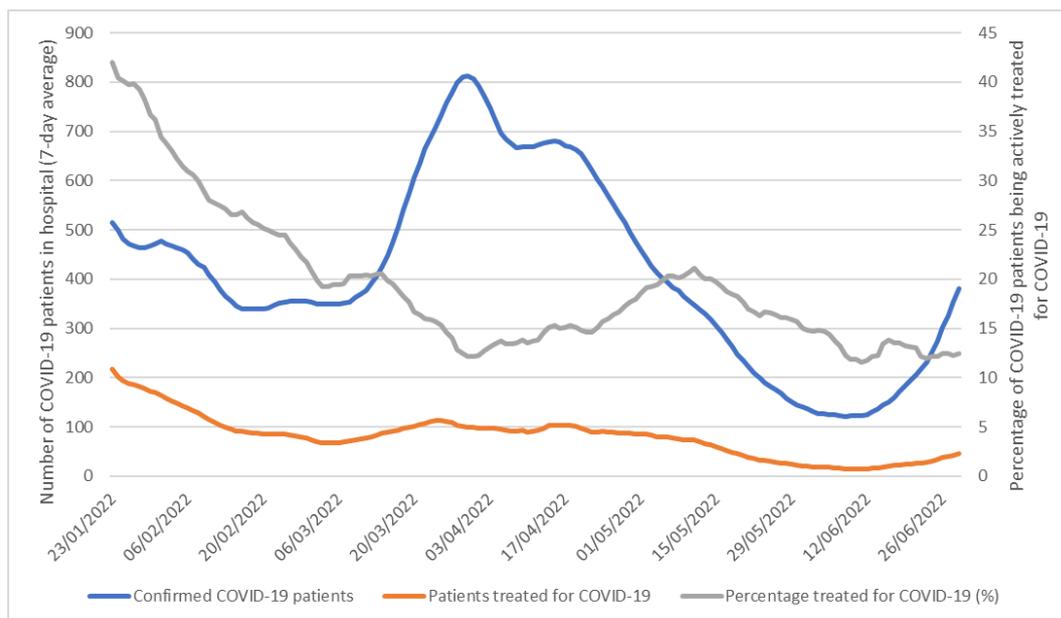


- UKHSA report that the infection hospitalisation risk has been growing in the UK since April 2022.¹ Using PHW confirmed COVID-19 admissions (9-day lag) data and ONS CIS modelled daily incidence data, the admission-infection risk in Wales increased from 0.19% on 22 April to 0.51% on 3 June, before decreasing slightly to 0.42% on 16 June. BA.4 and BA.5 combined prevalence has been increasing since April, but didn't account for the same prevalence as BA.2 until 7 June, and BA.4 and BA.5 prevalence has continued to increase since then. Since the infection hospitalisation risk has not continued to increase since BA.4 and BA.5 combined became dominant in Wales on 7 June, despite continuing to increase in dominance, it is unlikely that this increase in infection hospitalisation risk is solely driven by BA.4 and BA.5 having increased severity compared with BA.2.
- Although admissions have been increasing in Wales in recent weeks, the proportion of patients in hospital with COVID-19 who are being actively

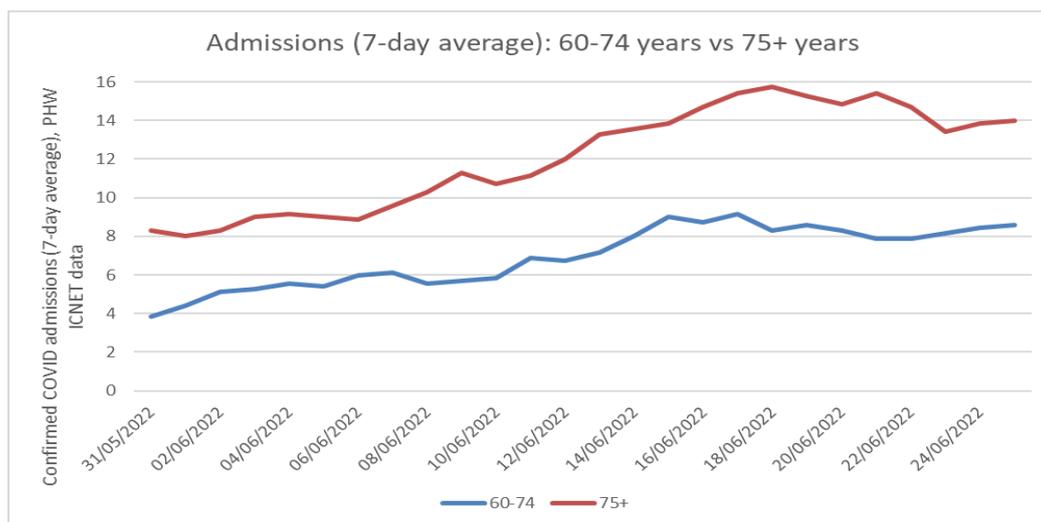
¹ [SARS-CoV-2 variants of concern and variants under investigation \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

treated for COVID-19, as opposed to testing positive for COVID-19 but being primarily treated for other reasons, has remained steady throughout June, at around 13%.

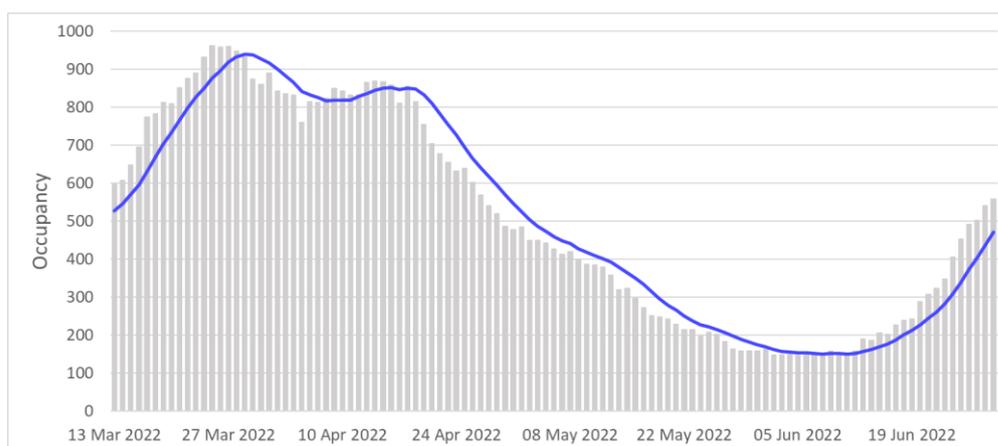
- In comparison, at the earliest date of these measurements, on 17 January, when Omicron BA.1 was dominant, around 40% of COVID-19 patients were being actively treated. So although COVID-19 admissions are increasing, evidence does not currently suggest BA.4 or BA.5, which are increasing in Wales, cause more severe illness in people.



- COVID admissions in individuals aged between 60 and 74 years have been increasing at a faster rate than admissions in individuals aged 75 years and over. Using PHW ICNET data, between 31 May 2022 and 25 June 2022, admissions increased 2.2-fold in individuals aged between 60 and 74 years and 1.7-fold in individuals aged 75 years and over.
- Since individuals aged 75 years and over were eligible for the Spring 2022 booster, of which the uptake was 83.9% as at 27 June 2022, this suggests the increased infection hospitalisation risk could be at least partly due to waning of vaccine protection in individuals who have not had a recent booster.



- Confirmed COVID-19 hospital occupancy in Wales (7-day average) is increasing rapidly, reaching 471 on 29 June, roughly half the maximum occupancy peak level in March 2022 when BA.1 was dominant.



- [NHS staff absence figures](#) up to 27 June show absence due to self-isolation has increased in the most recent two weeks to 0.6% and due to COVID-19 sickness has increased to 1.5%.

Care homes

- As at 22 June 2022, the number of adult care homes in Wales that have [notified CIW](#) of one or more confirmed cases of COVID-19 in staff or residents in the last 7 days has increased to 74, while this figure has increased to 136 adult care homes in the last 20 days. There are 1,029 adult care homes in Wales.
- CIW has been notified of 2,205 care home resident deaths with suspected or confirmed COVID-19 between 1 March 2020 and 22 June 2022. This makes up 13.0% of all adult care home resident reported deaths (17,012) during this period. In the two weeks ending 22 June, there has been 1 reported death of

care home residents related to suspected or confirmed COVID-19, out of a total of 246 deaths.

Schools (6th September to 24 June)

- An average of 84.8% of all pupils were in attendance in school over the week of 20 to 24 June 2022, down from 85.4% in the previous week.
- 0.7% of pupils were absent due to a known COVID-19 related reason over the week of 20 to 24 June 2022, up from 0.6% the previous week.
- An average of 0.5% of all primary pupils and 1.1% of all secondary pupils were absent due to a known COVID-19 related reason between 20 and 24 June 2022.
- 25.6% of pupils (123,278 pupils) have missed more than a week of face-to-face learning due to a known COVID-19 related reason since 6 September 2021 (5.5 days or more) and 85.4% of pupils (410,939 pupils) have missed more than a week for *any* reason since 6 September 2021.

Vaccination

- [The most recent COVID-19 weekly surveillance and epidemiological summary](#) reports that, as at the week ending 22 June 2022, 7,354,833 COVID-19 vaccinations had been given in Wales.
- [PHW report that](#) the delivery of the 2022 Spring booster continues. As at 22 June 2022, uptake was 83.9% for those aged 75 years and older, 82.8% for people living in residential care homes for older adults and 53.0% of people who are immunosuppressed (the majority of immunosuppressed patients will only recently have been vaccinated with 2021/22 boosters, and will be invited to receive a 2022 Spring booster dose when the appropriate interval has elapsed).

Vaccine uptake by priority group and age, counting individuals in all groups in which they belong (non de-duplicated) - [PHW Covid-19 Vaccination Tableau](#)

Group	Group size (n)	Received 1st dose (n)	Completed primary course* (n)	Received booster dose** (n)	First dose uptake (%)	Primary course uptake* (%)	Booster dose uptake** (%)
Severely Immunosuppressed	51,843	51,358	48,502	41,664	99.1%	93.6%	80.4%
Care home residents	13,265	13,077	12,997	12,601	98.6%	98.0%	95.0%
Care home worker	37,717	35,820	35,208	29,370	95.0%	93.3%	77.9%
80 years and older	175,370	169,029	168,130	163,374	96.4%	95.9%	93.2%
Health care worker	140,873	137,402	136,007	122,453	97.5%	96.5%	86.9%
Social care worker		44,913	44,573	39,697			
Aged 75-79 years	143,479	139,291	138,683	135,046	97.1%	96.7%	94.1%
Clinically extremely vulnerable aged 16-69..	75,739	72,386	71,511	62,170	95.6%	94.4%	82.1%
Aged 70-74 years	177,413	170,927	169,976	164,668	96.3%	95.8%	92.8%
Aged 65-69 years	182,737	173,747	172,371	165,382	95.1%	94.3%	90.5%
Clinical risk groups aged 5-64 years	350,737	313,766	304,369	262,825	89.5%	86.8%	74.9%
Aged 60-64 years	211,735	198,052	195,856	185,021	93.5%	92.5%	87.4%
Aged 55-59 years	235,536	216,367	213,540	197,560	91.9%	90.7%	83.9%
Aged 50-54 years	227,260	204,554	201,156	181,177	90.0%	88.5%	79.7%
Aged 40-49 years	393,484	335,422	326,283	274,846	85.2%	82.9%	69.8%
Aged 30-39 years	435,976	348,696	332,322	246,329	80.0%	76.2%	56.5%
Aged 18-29 years	489,999	396,173	366,924	246,226	80.9%	74.9%	50.3%
Aged 16-17 years	70,928	54,480	45,759	22,888	76.8%	64.5%	32.3%
Aged 12-15 years	149,043	91,607	71,364		61.5%	47.9%	
Aged 5-11 years	253,374	40,707	4,220		16.1%	1.7%	

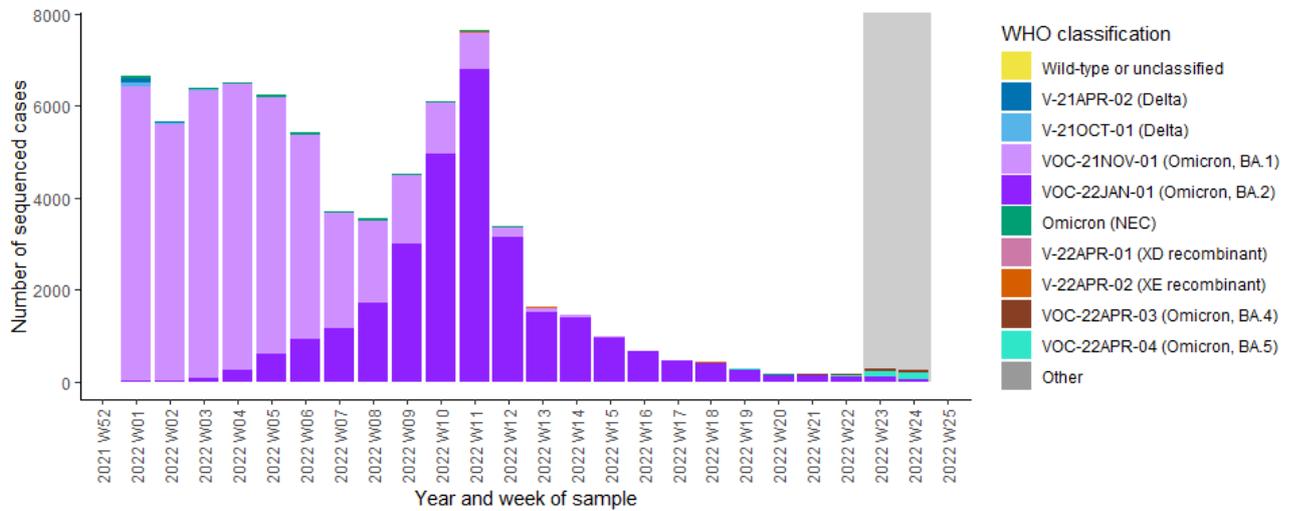
Public Health Wales Variant Surveillance Update

- In the latest three reporting weeks (2022 W23 to 2022 W25):
 - Omicron (NEC) accounted for 2.5% of all sequenced variant cases
 - VOC-22JAN-01 (Omicron, BA.2) accounted for 26.7% of all sequenced variant cases
 - VOC-22APR-03 (Omicron, BA.4) accounted for 22.6% of all sequenced variant cases
 - VOC-22APR-04 (Omicron, BA.5) accounted for 48.1% of all sequenced variant cases
- As of 28 June, the current dominant variant in Wales is VOC-22APR-04 (Omicron, BA.5) which accounted for 50.45% of sequenced cases in the last 14 days. BA.2 was previously the dominant variant in Wales in the previous reporting weeks.

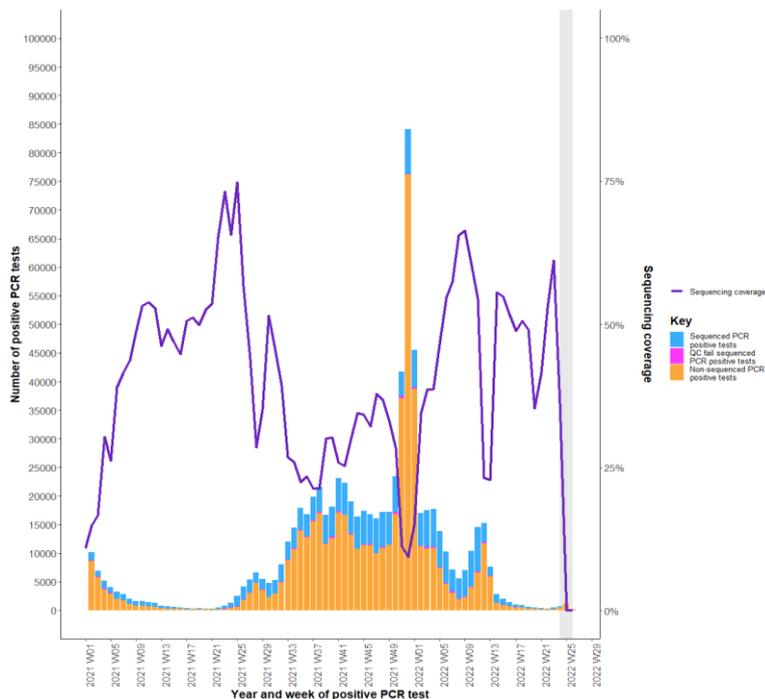
Comparison to the previous week's report.

- In the previous 3 reporting weeks;
 - Omicron (NEC) accounted for 3.7% of all sequenced variant cases
 - Omicron BA.2 accounted for 52.7% of all sequenced variant cases
 - Omicron BA.4 accounted for 17% of all sequenced variant cases
 - Omicron BA.5 accounted for 26.6% of all sequenced variant cases

Epicurve of all sequenced variant cases in Wales, data as at 21/06/2022, Genomic Epidemiology Team, CDSC Weekly Wales Variant Summary



Sequencing coverage in Wales, Genomic Epidemiology Team, CDSC Weekly Wales Variant Summary



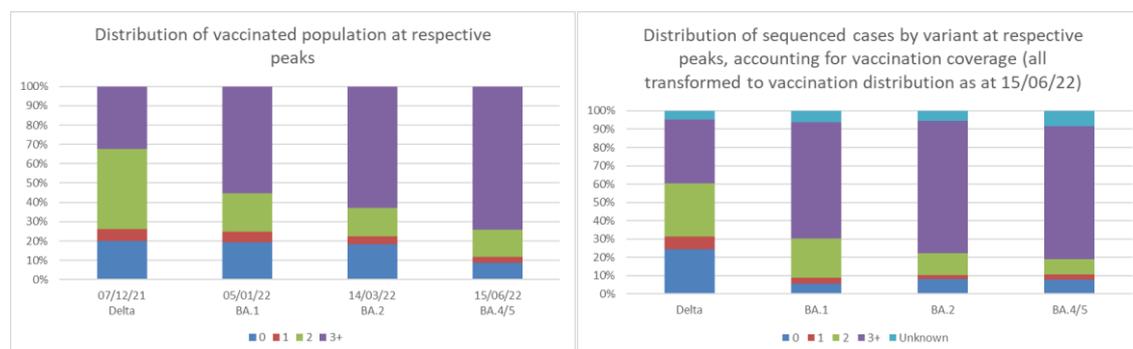
Please note data in the grey shaded region is indicative of a lag in sequencing data and should be interpreted with caution.

BA.4 and BA.5 vaccine escape analysis

- Between 7 December 2021 (Delta peak) and 15 June 2022 (BA.2 dominant, BA.4 and BA.5 increasing), the proportion of the population vaccinated with 3+ doses increased from 32% to 74%. However, the proportion of sequenced cases in individuals vaccinated with 3+ doses increased from 8% to 73%.

- After accounting for the change in vaccination coverage between time periods, the proportion of sequenced cases occurring in individuals vaccinated with 3+ doses increased from 35% in Delta, to 63% in BA.1, to 72% in BA.2, to 73% in BA.4 and BA.5.
- Moving from Delta, to BA.1, to BA.2, to BA.4 and BA.5, this suggests that 3-dose vaccination protection against infection decreased with each successive variant. This suggests that BA.4 and BA.5 have similar vaccine escape compared with BA.2, but that BA.2, BA.4 and BA.5 have greater vaccine escape than BA.1, which in turn had significantly greater vaccine escape than Delta.

Distribution of vaccinated population and sequenced cases, by variant, at respective peaks.



Long COVID

[Prevalence of ongoing symptoms following COVID-19 infection, ONS, 1 June](#)

- According to the ONS, an estimated 2.0 million people living in private households in the UK (3.1% of the population) were experiencing self-reported long COVID (symptoms continuing for more than four weeks after the first suspected coronavirus (COVID-19) infection that were not explained by something else) as of 1 May 2022. For Wales this figure was 96,000 people or 3.16% of the population (95% confidence interval: 2.81% to 3.51%).
- Of people in the UK with self-reported long COVID, 442,000 (22%) first had (or suspected they had) COVID-19 less than 12 weeks previously, 1.4 million people (72%) at least 12 weeks previously, 826,000 (42%) at least one year previously and 376,000 (19%) at least two years previously.
- Long COVID symptoms adversely affected the day-to-day activities of 1.4 million people (71% of those with self-reported long COVID), with 398,000 (20%) reporting that their ability to go about their day-to-day activities had been "limited a lot". Fatigue continued to be the most common symptom reported as part of individuals' experience of long COVID (55% of those with self-reported long COVID), followed by shortness of breath (32%), a cough (23%), and muscle ache (23%).

- In Wales, it was estimated that long COVID symptoms adversely affected the ability to go about day-to-day activities "a lot" for 25,000 people (0.82% of the population).
- As a proportion of the UK population, the prevalence of self-reported long COVID was greatest in people aged 35 to 69 years, females, people living in more deprived areas, those working in social care, teaching and education or health care, and those with another activity-limiting health condition or disability.

[COVID-19 Schools Infection Survey, England: long COVID and mental health, March 2022](#)

- Data from the ONS COVID-19 Schools Infection Survey (SIS) carried out in March 2022 found that nearly 1 in 50 (1.8%) primary school pupils (reception to year 6) and nearly 1 in 20 (4.8%) secondary school pupils (years 7 to 13) had experienced long COVID following their most recent COVID-19 infection.
- The most prevalent symptoms for both primary and secondary school pupils were cognitive disturbance (23.4% primary, 31.0% secondary) and mood (20.8% primary and 29.3% secondary).

[Self-reported long COVID after infection with the Omicron variant in the UK: 6 May 2022](#)

- The odds of reporting long COVID symptoms four to eight weeks after a first coronavirus (COVID-19) infection were 49.7% lower in infections compatible with the Omicron BA.1 variant than those compatible with the Delta variant among adults who were double-vaccinated when infected; this was after adjusting for socio-demographic characteristics.
- However, there was no statistical evidence of a difference in risk between first infections compatible with the Delta and Omicron BA.1 variants among triple-vaccinated adults; the socio-demographically adjusted prevalence of self-reported long COVID was 8.5% for Delta and 8.0% for Omicron BA.1.

[REACT-2 Study, 12 April 2022](#)

- The REACT-2 study used data from random community-based samples of the population in England.
- REACT-2 found that in the period September 2020 – February 2021 (Alpha dominance, before significant vaccination coverage), 37.7% of people continued to experience at least one symptom 12 weeks after confirmed or suspected COVID-19 infection. Female sex, increasing age, obesity, smoking, vaping, hospitalisation with COVID-19, deprivation and being a healthcare worker were associated with higher probability of persistent COVID-19 symptoms. Asian ethnicity was associated with lower probability of persistent symptoms.

- In May 2021 (Alpha dominance, with significant vaccination coverage in the population), 21.6% of people continued to experience at least one symptom 12 weeks after confirmed or suspected COVID-19 infection.
- This suggests that as of May 2021, just over 1 in 5 COVID-19 infections could lead to long COVID, although the risk of developing long COVID may depend on several factors, such as prior protection from vaccination or previous infection.

[Weekly Influenza and Acute Respiratory Infection Report - PHW](#)

- PHW report that influenza case numbers have decreased in recent weeks, while RSV confirmed cases have increased. This is unusually earlier than would be expected for the RSV season in Wales, although it is similar to last year when the RSV season started early. During Week 25 (ending 26/06/2022) there were 7 cases of influenza, with a further 1 case reported late from samples in preceding weeks. COVID-19 cases continue to be detected in symptomatic patients in hospital and in the community. There has been an earlier than usual start of seasonal RSV activity, with current incidence in children under 5 years of age at levels that would indicate medium levels of activity compared to the previous 10 years. Rhinovirus, adenovirus and parainfluenza are the most commonly detected cause of non-COVID-19 ARI, with increasing confirmed cases in recent weeks. There is concern about a large flu season in Australia and whether this means there a larger than average influenza in the northern hemisphere this Winter, including the possibility of an early flu season before the vaccination programme has reached a lot of people.

2. Situation in the UK and international comparators

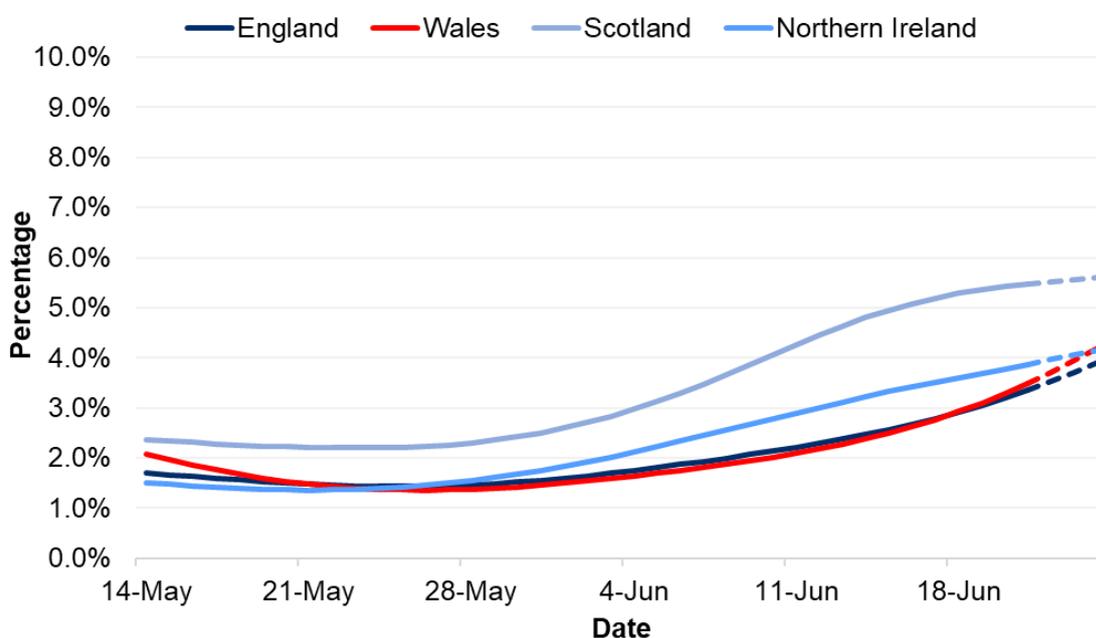
UK Overview

UK Infection positivity – ONS Coronavirus Infection Survey, 1 July

- As of the week ending 24 June, there was an increase in the percentage of people testing positive for COVID-19 in England, Wales, Scotland and Northern Ireland, likely caused by infections compatible with Omicron variants BA.4 and BA.5.
- During the most recent period, it is estimated that an average 106,000 people in Wales had COVID-19 (95% credible interval: 86,400 to 127,100), equating to 1 in 30 people. This compares to 1 in 30 people in England, 1 in 18 in Scotland and 1 in 25 in Northern Ireland.

Note that there is uncertainty around the estimates and credible intervals are provided in the figures above to indicate the range within which we may be confident the true figure lies. Since the estimates are based on a relatively low number of positive tests, there is some uncertainty and the results should be interpreted with caution.

Positivity rates (%) across UK countries since 14 May 2022



International overview – World Health Organisation and ECDC update

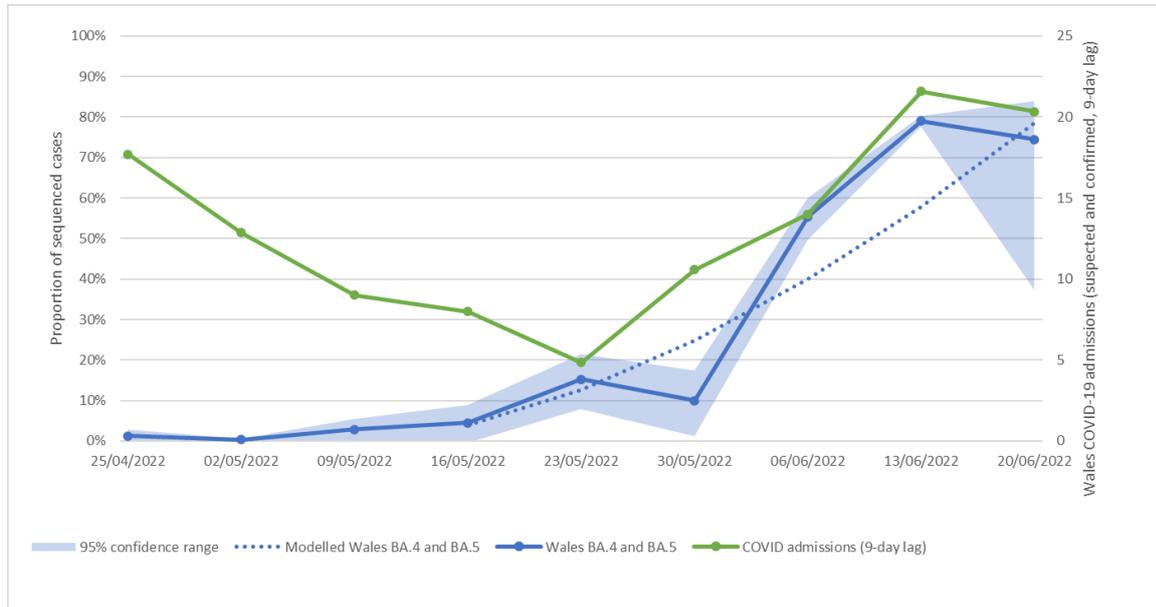
- As of 29 June, [WHO reports](#) that globally, the number of weekly COVID-19 cases has increased for the third consecutive week, after a declining trend was observed since the last peak in March 2022. During the week of 20 to 26 June 2022, over 4.1 million cases were reported, an 18% increase as compared to the previous week. The number of new weekly deaths remained similar to that of the previous week, with over 8500 fatalities reported.
- WHO reports that the number of new weekly cases increased in the Eastern Mediterranean Region (+47%), the European Region (+33%), the South-East Asia Region (+32%), and the Region of the Americas (+14%), while it decreased in the African Region (-39%) and the Western Pacific Region (-3%). The number of new weekly deaths increased in the Eastern Mediterranean Region (+22%), the South-East Asia Region (+15%), and the Region of the Americas (+11%), while decreases were observed in the Western Pacific Region (-6%), the European Region (-5%) and the African Region (-1%).
- There continues to be a decline in the number of SARS-CoV-2 sequences submitted to GISAID, as compared to January 2022 when 1,248,906 sequences were submitted. From 27 May to 27 June 2022, 146,183 SARS-CoV-2 sequences were submitted to GISAID. Among these sequences, the Omicron VOC remains the dominant variant circulating globally, accounting for 94% of sequences reported in the past 30 days.
- Among Omicron sequences, as of epidemiological week 24 (13 to 19 June 2022) BA.2 represents 25%, while BA.2.12.1 represents 11%, BA.4 represents 12%, and BA.5 represents 43%. Comparing the proportion of Omicron sequences submitted during epidemiological weeks 23 (6 to 12 June) and 24, BA.2 declined from 30% to 25%, BA.2.12.1 declined from 18% to 11%, while BA.4 increased from 9% to 12% and BA.5 increased from 28% to 43%.
- [ECDC reports](#) that the end of week 25 (week ending 26 June 2022), case rates among people aged 65 years and above, increased in 21 out of the 26 countries reporting these data. This corresponds to a 27% increase compared to the previous week at the EU/EEA level, reaching 42.8% of the pandemic maximum. These increases are still relatively recent, beginning in the last four weeks in the affected countries.
- This signals the start of a widespread wave driven by the BA.4 and BA.5 variants of concern, with BA.4/BA.5 being the dominant variants in 7 out of the 10 countries reporting adequate sequencing volumes.
- These trends should be interpreted with due consideration of the limitations of surveillance systems, including differences in sequencing capacity and

sampling strategies between countries, as well as changes in sampling and sequencing strategies in multiple countries.

3. Variant update – BA.4 and BA.5

- In combination, BA.4 and BA.5 are now dominant and COVID-19 incidence is increasing. As of 24 June, [UKHSA estimates](#) that 22.28% and 39.46% of cases in the UK are currently BA.4 and BA.5, respectively.
- Updated modelling shows that BA.4 and BA.5 continue to demonstrate a growth advantage over BA.2 with a relatively high degree of certainty. The relative growth advantage for BA.5 is larger than BA.4. It is most likely that BA.5 will become the dominant variant in the UK.
- Countries which have experienced BA.4 and BA.5 waves have not experienced apparent high severity of disease and hospitalisation rates have tended to remain lower than previous waves.
- There has been an increase in people admitted to hospital with COVID-19 in England. Whilst this accompanies an increase in incidence generally, early analysis suggests that the infection hospitalisation rate may be increasing from its low base of approximately 0.3% across all age groups.
- Sequencing from wastewater in Wales and England has also captured the rise of BA.4 and BA.5 as a proportion, similar growth in both countries. For the week beginning 12 June 2022, 63% of sequenced SARS-CoV-2 in English wastewater were BA.4 and BA.5.
- For the week beginning 13 June 2022, 79% of sequenced SARS-CoV-2 in Welsh wastewater was either BA.4 and BA.5, although there is significant variation week to week. Modelling Welsh wastewater sequence distribution from 16 May and extrapolating, it is estimated that 81% of sequenced SARS-CoV-2 in Welsh wastewater will be BA.4 and BA.5 for the week beginning 20 June.
- Hospital admissions in England and Wales started increasing around the same time BA.4 and BA.5 started increasing as a proportion of sequencing. It is unknown whether BA.4 and BA.5 cause more severe disease compared with BA.2, or whether BA.4 and BA.5 have greater vaccine escape than BA.2, or whether vaccine protection against severe illness is waning in the population, or a combination of these.

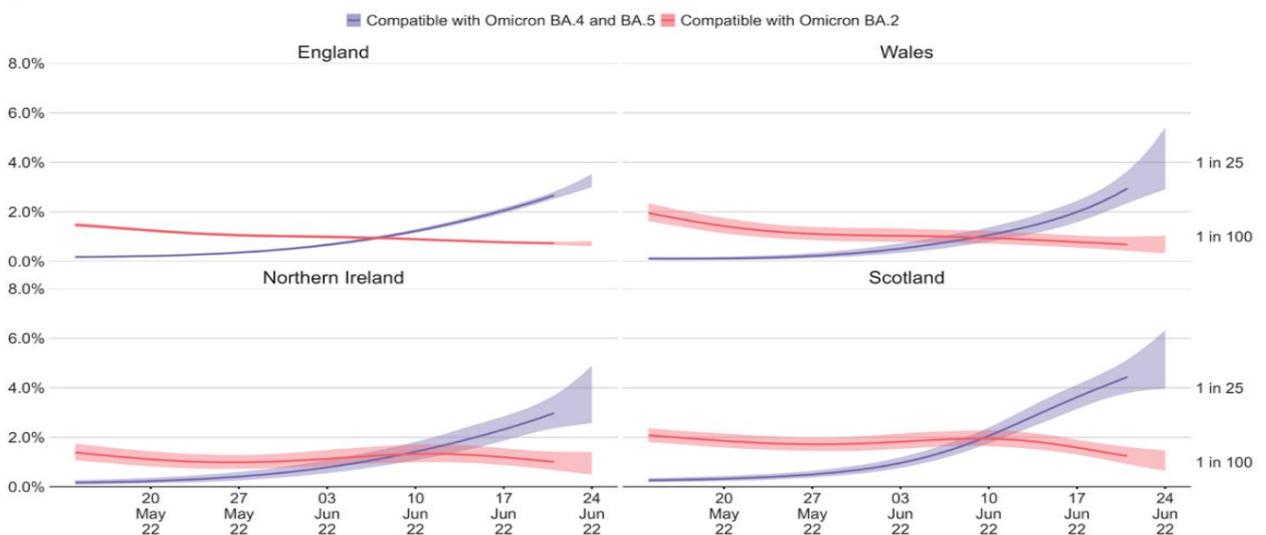
1 Modelled vs observed wastewater sequencing distribution of BA.4 and BA.5 vs Wales COVID-19 admissions (9-day lag), Wales



- The ONS Coronavirus infection survey also monitors the spread of the Omicron BA.4 and BA.5 variants via both modelled variant estimates and whole genome sequencing:
 - Compatible with Omicron BA.4 and BA.5: The percentage of people testing positive has increased across all countries of the UK in the most recent week.
 - Compatible with Omicron BA.2: The percentage of people testing positive has decreased in all countries of the UK in the most recent week.

Percentage of people testing positive for COVID-19 in the four nations

Modelled daily estimates



The area to the right of the mid-point estimate has a lower level of certainty due to lab results still being processed for this period
 Compatible with Omicron BA.4 and BA.5 variant = gene pattern ORF1ab + N
 Compatible with Omicron BA.2 variant = gene pattern ORF1ab + N + S, N + S and ORF1ab + S

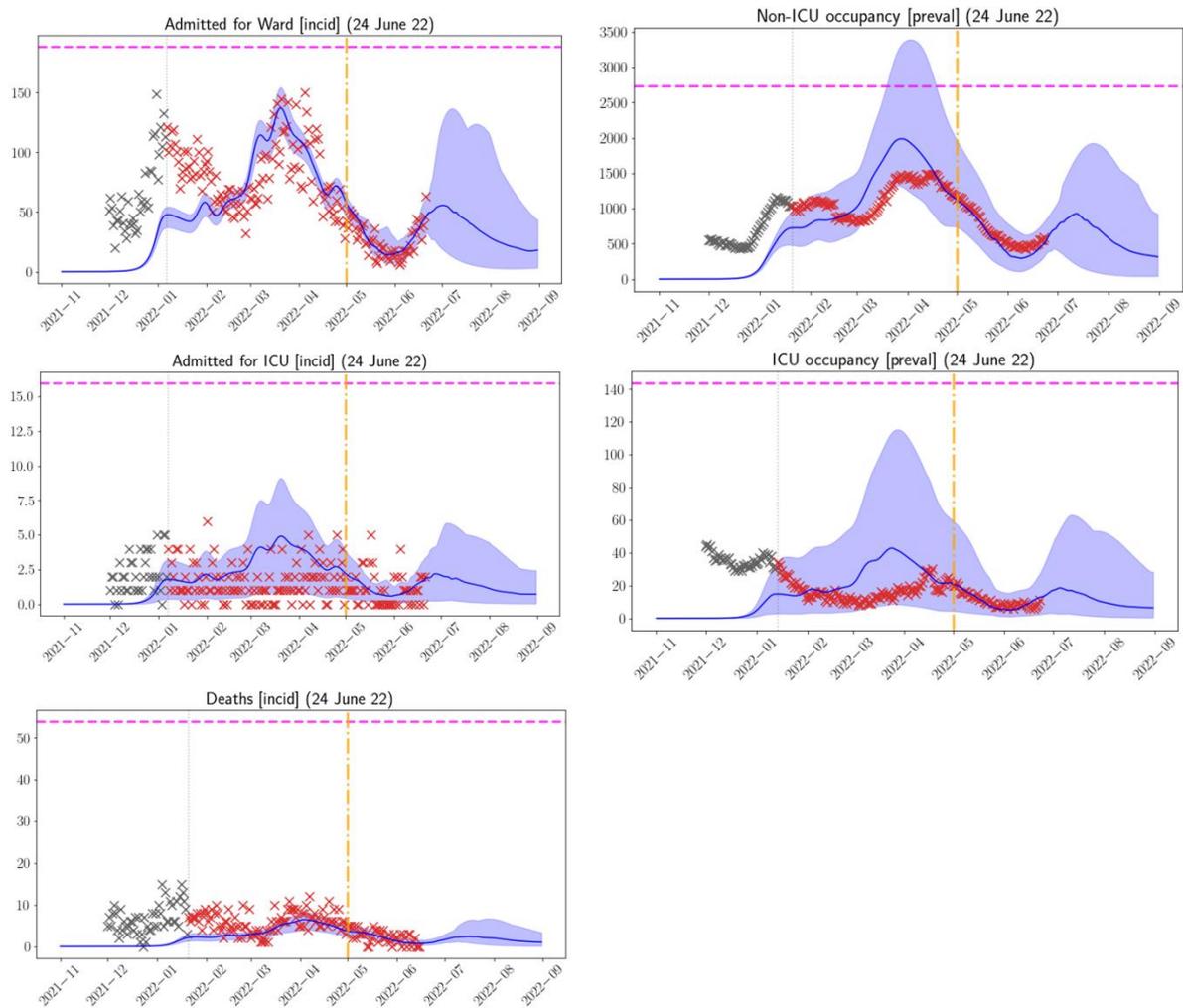
Data from 14 May 2022 to 24 June 2022

4. COVID-19 Medium Term Projections

- Swansea University (SU) regularly produces medium-term projections (MTPs) for Wales. The SU projections are also combined with other models to go into a consensus MTP for admissions and deaths which is agreed every two weeks by the UKHSA Epidemiological Modelling Review Group (EMRG), which has taken over from COVID-M-O in agreeing these MTPs.
- The SU projections are typically more up to date but may be less robust as they are based on one model only. Both MTPs are based on projecting forward from current data and do not explicitly factor in policy changes, changes in testing, changes in behaviour, or rapid changes in vaccinations.

Swansea University MTPs, 24 June

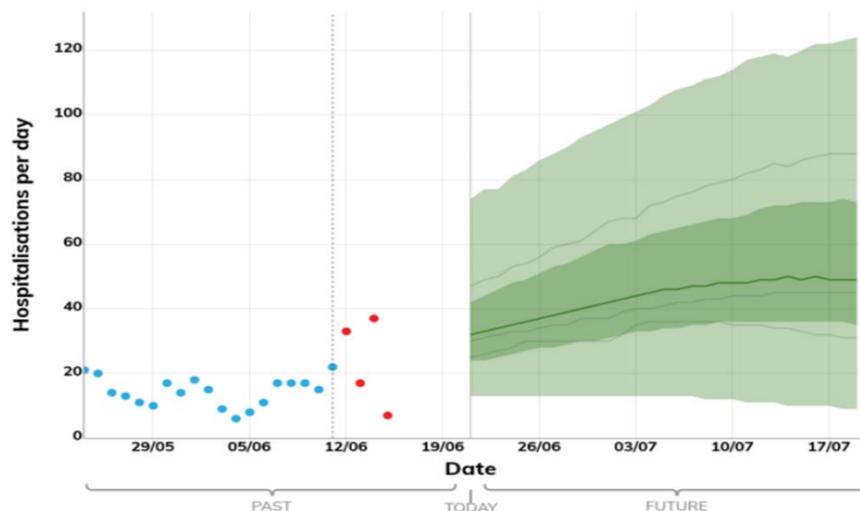
- In the charts below, crosses represent actual data, while the blue line represents the central modelling estimate and blue highlight indicates confidence intervals. The pink dotted line represents pre-Omicron peaks. Red actuals represent Omicron cases, which the model is fitted to, while the black actuals are from the Delta period.
- In recent weeks, MTPs have been fitted to a shorter period than normal (indicated by the vertical orange line) since this improved model fit to admissions and occupancy considerably. It is likely that either the admission/infection ratio has decreased (consistent with reduced severity of disease due to increased proportion of reinfections) or that length of hospital stay has increased recently, impacting model fitting.
- The projected future has deteriorated compared to last week's projections. MTPs project that NHS pressures will continue to increase in the coming weeks, to a peak in early July.
- COVID-19 admissions have been increasing throughout June, and MTPs project admissions to continue to increase to around 50 admissions per day in early July. However, there is high uncertainty, with the upper range peaking at around 130 admissions per day. Since the model was run on data to 24 June, admissions have continued to increase, so it is anticipated that next week's MTPs will project a higher peak than currently indicated.
- COVID-19 hospital occupancy (excluding ICU) has started increasing in recent weeks. MTPs project bed occupancy to peak at just under 1000 beds in mid-July, roughly two-thirds the maximum occupancy levels observed in April during the BA.2 wave peak.
- Similarly, MTPs project ICU admissions and occupancy will increase slightly, admission peaking at the end of June and occupancy peaking in early July.
- Deaths continue to decline slightly and remain at very low levels. MTPs project a slight increase to mid-July but remaining under 5 deaths per day.



UKHSA EMRG Consensus MTPs, 21 June – [Available here](#)

- These Medium-Term Projections (MTPs) for COVID-19 hospitalisations and deaths are not forecasts or predictions. They represent a scenario in which the trajectory of the epidemic continues to follow the trends that were seen in data available to 21 June 2022.
- The most recent MTPs suggest admissions in Wales will continue to increase in the coming weeks before plateauing at around 45 admissions per day in mid-July. Note that this is more optimistic than the above MTPs produced by SU. However, SU's MTPs use more recent data (to 24 June, vs 21 June) in which admissions continued to rapidly increase, which may explain why UKHSA's MTPs project a lower maximum peak height.
- The number of deaths has fallen to very low levels in Wales making forward projection difficult, therefore UKHSA has not produced projections for deaths in Wales at this time. However, the consensus view is that the number of deaths will remain low over the next four weeks.

Wales



5. Behavioural

Limited behavioural data is currently being collected. Latest findings from the ONS' Opinions and Lifestyle Survey² (at GB level for the period 8 to 19 June 2022) suggest around one in three (32%) remain worried about the impact of COVID-19 on their life and two in five (41%) are concerned about the emergence of new variants. In terms of protective behaviours, three in four (75%) wash their hands when returning from a public place, two in five (38%) wore face coverings when outside their home and one in four (27%) maintained social distance when meeting up with people outside their home. While the proportion reporting hand washing has remained stable in recent months, reported use of face coverings and distancing continues to fall (**medium to high confidence**).

The latest round of ongoing qualitative research carried out by Swansea University³ (UK adults, 15 to 30 June 2022) suggests a majority of participants report feeling 'back to normal' in terms of pre-pandemic behaviour and have not thought about COVID-19 recently. Overall, worry about COVID-19 was low, except among those with concerns around vulnerable or elderly friends and relatives. One of the main drivers of this sense of normality was COVID-19 no longer being in the news, with the current focus on other issues, notable the position in Ukraine and cost of living concerns. Two common narratives were the need to 'live with the virus' and that current strains were 'milder', with COVID-19 being 'just like flu'. Symptom appraisal is vague but most report they would test and/or isolate or work from home (where feasible) if symptomatic or unwell. The use of face masks has been de-normalised, with few reporting to wear one now, although many suggested they would use one if required to or if they were aware cases were rising steeply.

² [Public opinions and social trends, Great Britain - Office for National Statistics](#)

³ [PsyArXiv Preprints | Navigating the 'new normal': Public attitudes and behaviours two years into the COVID-19 pandemic in the UK](#)

In terms of future intentions, most participants suggested they would adapt their behaviour in the future if required to, although there was variation in what would trigger this (e.g. rising cases would be sufficient for some but evidence of more severe outcomes was noted by others). While there were differences of opinion on whether rules or guidance would be preferable in future waves, most would prefer guidance. Where eligible for a second booster vaccination (i.e. already received initial booster) if criteria were opened to all adults, participants were favourable or at least open to the idea in order to 'maintain their immunity'. Some suggested they would only do so if recommended through an official invitation (e.g. from government or the NHS) (**medium confidence**).

Given rising case numbers and the associated disruption to the economy and public service delivery, including the NHS and education settings, as well as the implications for long COVID, it would seem appropriate to reinforce messaging⁴ on current Welsh Government advice and support around risk management. This is consistent with previous SPI-B^{5,6} and TAG advice⁷, acknowledging the ongoing uncertainty but balanced by a narrative of hope to provide motivation for behaviour change and emphasising the collective response seen in Wales throughout the pandemic. Clear risk communication that a range of protective measures, when combined, can still provide an effective means of reducing the risk of infection remains key, including a clear rationale for each measure (**medium confidence**).

Evidence from the qualitative research noted above would also suggest value in raising public awareness on the current state of the pandemic, given for many COVID-19 will not have been visible in the media. Providing accurate information on the ongoing level of risk is critical to explaining why the measures⁸ still being advised remain effective and proportionate, whether, for example, encouraging vaccination uptake ('getting all your vaccinations'), the use of well fitted face masks⁹, preferably FFP2 or better, in busy indoor spaces and on public transport and meeting others outdoors where possible (**high confidence**). Ensuring people have the means to do what they are being advised also continues to be critical, and arguably more so now given cost of living challenges (**high confidence**). Further work to explore this should be considered.

As per previous advice, the role of businesses and other organisations is important, and this will continue to be the case. For example, in addition to messaging on the value of face masks, visibility and availability, where feasible, could be enhanced by provision of a supply of face masks and hand sanitisers at entry points, supported by

⁴ [Together we'll keep Wales safe | GOV.WALES](#)

⁵ [SPI-B: Sustaining behaviours to reduce SARS-CoV-2 transmission, 22 April 2021 - GOV.UK \(www.gov.uk\)](#)

⁶ [SPI-B: Behavioural considerations for maintaining or reintroducing behavioural interventions and introducing new measures in autumn 2021, 14 October 2021 - GOV.UK \(www.gov.uk\)](#)

⁷ [Technical Advisory Group: Living safely with COVID-19 in Wales: risk communication and behavioural science perspectives | GOV.WALES](#)

⁸ [Public health guidance for the general public | GOV.WALES](#)

⁹ [Technical Advisory Group: Consensus statement on face masks for the public | GOV.WALES](#)

environmental cues such as signage to encourage use. Similarly, supporting people around self-isolation when unwell and to encourage testing behaviour and a period of self-isolation will remain important to promote adherence to current advice (**medium confidence**). Enhancing ventilation in settings including the workplace, schools and homes, also remains important and in common with the measures above, would contribute to reducing risk for other respiratory diseases (**high confidence**).

6. Evidence roundup:

This section aims to summarise a selection of the recent COVID-19 and relevant communicable disease papers, reports and articles that are relevant to a Welsh context or contain new data, insights or emerging evidence. It may contain pre-print papers, which should be interpreted with caution as they are often not yet peer-reviewed and may be subject to change when published. The exclusion of any publication in this section should not be viewed as a rejection by the Technical Advisory Cell.

Paper 1 - Age and sex-specific risks of myocarditis and pericarditis following Covid-19 messenger RNA vaccines – [Available here](#)

On July 19 2021, the European Medicines Agency advised that myocarditis and pericarditis to be added to the list of adverse effects of both Pfizer–BioNTech and Moderna based vaccines against COVID-19. A recent study dated on the 25th of June 2022, reports that cases of myocarditis and pericarditis have been reported following the receipt of COVID-19 vaccines. The study aimed to provide a comprehensive assessment of the association, by vaccine and across sex and age groups, using nationwide hospital discharge and vaccine data. The authors report that increased risks are found particularly after the second dose, with adjusted odds ratios of myocarditis of 8.1 (95% confidence interval [CI], 6.7 to 9.9) for the Pfizer–BioNTech and 30 (95% CI, 21 to 43) for the Moderna vaccine. The largest associations are observed for myocarditis following Moderna vaccination in persons aged 18 to 24 years.

Estimates of excess cases attributable to vaccination also reveal a substantial burden of both myocarditis and pericarditis across other age groups and in both males and females. The results from the study suggest that the number of excess cases of myocarditis per 100k doses administered to adolescent males 12-17 years was 1.9 (95% CI, 1.4–2.6) for the second dose of the Pfizer vaccine and for young adults 18-24 years of age reached 4.7 (95% CI, 3.8–5.8) for the second dose of the Pfizer vaccine, and 17 (95% CI, 13–23) for the second dose of the Moderna vaccine. The results suggest into 1 case of vaccine-associated myocarditis per 52,300 (95% CI, 38,200–74,100) second doses of the BioNTech, Pfizer vaccine among 12–17 years, and 21,100 (95% CI, 17,400–26,000) second doses of the Pfizer vaccine and

5900 (95% CI, 4400–8000) second doses of the Moderna vaccine among 18–24 years.

Reassuringly, these cases of myocarditis and pericarditis, although requiring hospitalisation, did not result in more severe outcomes than those unrelated to vaccination.

Paper 2 - Effects of Previous Infection and Vaccination on Symptomatic Omicron Infections – [Available here](#)

A recent study suggests that there are no discernible differences in protection against symptomatic BA.1 and BA.2 infection were seen with previous infection, vaccination, and hybrid immunity. Vaccination enhanced protection among persons who had had a previous infection. Hybrid immunity resulting from previous infection and recent booster vaccination conferred the strongest protection.

Paper 3 - COVID-19: How has the pandemic differed across the four UK nations? – [Available here](#)

Although the overall course of the pandemic has been similar across the UK, there have been instances when the countries' trajectory has diverged. In the first wave Northern Ireland had far fewer deaths and hospital admissions. Lockdown restrictions were similar across the UK at this time. From the middle of 2021 to February 2022 Northern Ireland had consistently higher rates of hospital admission for COVID-19 than elsewhere in the UK, although case rates and mortality have been broadly similar. In February and March 2022 Scotland had the highest case rates and a rapid increase in hospital admissions, despite retaining restrictions longest in response to omicron. From the current evidence it is difficult to say whether one UK country's policies worked much better or much worse than the others over the first two years of the pandemic. This could reflect the scale and enforcement needed for interventions to make a difference—or the tendency for behaviour to be consistent across the UK, even without legal requirements.

Paper 4 - Associations of BMI with COVID-19 vaccine uptake, vaccine effectiveness, and risk of severe COVID-19 outcomes after vaccination in England: a population-based cohort study – [Available here](#)

A new study published on the 30 June 2022, aimed to investigate the association between BMI and COVID-19 vaccine uptake, vaccine effectiveness and risk of severe COVID-19 outcomes after vaccination. This was conducted by using a large, representative population-based cohort from England. The study also investigated vaccine effectiveness against infection with COVID-19. The results suggest that overweight and obese people who are vaccinated are more protected against severe COVID-19. Effectiveness was found to be lower in people classified as underweight,

among whom vaccine uptake was also significantly lower. Despite the observed effectiveness of vaccination in people across all BMIs, there were significantly higher risks of severe COVID-19 outcomes in vaccinated people with lower and higher BMIs than in people with a healthy BMI of 23 kg/m², even after the second dose of the vaccine.

Paper 5 - Long distance airborne transmission of SARS-CoV-2: rapid systematic review – [Available here](#)

A recent study published on 30 June 2022, assessed the potential for long distance airborne transmission of SARS-CoV-2 in indoor community settings and investigated factors that might influence transmission. The study found evidence suggesting that long distance airborne transmission of SARS-CoV-2 likely occurs in indoor settings such as restaurants, workplaces, and venues for choirs. The study identified factors such as insufficient air replacement, directional air flow, and activities associated with increased emissions of respiratory particles (e.g. singing or speaking loudly) might contribute to long distance airborne transmission. The results from this study strengthen the need for mitigation measures in indoor settings, particularly the use of adequate ventilation.