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Introduction

The Scottish Government Test and Protect Transition Plan sets out changes to testing, contact tracing and isolation that came into effect on 01 May 2022. Many COVID-19 testing centres have now closed from this date, with testing only remaining in place for certain groups to protect high risk settings and support clinical care.

This planned change to testing policy will lead to a reduction in the quantity and quality of the available daily data. Therefore, caution should be used when making comparisons between metrics and comparing trends over time. This report summarises the current COVID-19 data in Scotland presenting statistics on reported COVID-19 cases, estimated infection levels, COVID-19 hospital and ICU admissions and COVID-19 vaccine effectiveness.

Additional information and supporting data can be found in the following places:

- COVID-19 Statistical Report interactive dashboard
- Public Health Scotland COVID-19 Dashboard updated twice weekly (Monday and Thursday)
- Deaths involving coronavirus in Scotland – National Records of Scotland
- COVID-19 State of the Epidemic Report - Scottish Government
- Enhanced Surveillance of COVID-19 in Scotland
- Hospital Onset COVID-19 Cases in Scotland
New Content

PHS now report on Care Home visiting status by Health Board and outbreak status, previously reported by Scottish Government. These data have been added to the COVID-19 Statistical Report interactive dashboard.
Main Points

- In the week ending 29 May 2022, there were 6,150 reported COVID-19 cases, a decrease of 0.7% from the previous week.

- In the week ending 29 May 2022, 828 (13.5%) of all cases reported that week were determined to be reinfections when applying the 90-day threshold.

- In the latest week ending 24 May 2022, the number of new COVID-19 admissions to hospital fell from 420 to 364 (13.3%) from the week ending 17 May 2022. The highest number of admissions are now in those aged 80+ (25.5%).

- In the week ending 29 May 2022 there were 12 new admissions to Intensive Care Units (ICUs) with a laboratory confirmed test of COVID-19.
**Incidence of Variants of Concern and Variants Under Investigation**

The Omicron variant was originally detected in South Africa and BA.2 now represents the dominant variant in Scotland.

Analysis regarding the Omicron BA.2 variant was last presented in the weekly COVID-19 report published 20 April 2022. Further information on previous Omicron reporting can be found [here](#).

Public Health Scotland (PHS) continues to monitor COVID-19 Variants of Concern, in collaboration with other Public Health Agencies in the UK.

The latest information on the number of such variants detected by genomic analyses across the UK is published by UK Health Security Agency (UKHSA).
Reported COVID-19 Cases and Estimated Infection Levels

Reported COVID-19 cases

The purpose of COVID-19 testing has now shifted from population-wide testing to reduce transmission, to targeted testing and surveillance. Reported cases will no longer be representative of all COVID-19 cases in Scotland, and caution is advised when comparing trends in cases over time.

The Scottish Government Test and Protect transition plan sets out changes to testing, contact tracing and isolation that came into effect on 01 May 2022. Many COVID-19 testing centres have now closed and testing remains in place only for certain groups in order to protect high risk settings and support clinical care.

Lateral Flow Device (LFD) Universal Offer ended on 01 May 2022 but remains in place for specific groups: those visiting a hospital or care home; unpaid carers; those eligible for COVID treatments; and those applying for the self-isolation support grant. Trend data is now only being reported on the COVID-19 Statistical Report interactive dashboard.

In the last week, from the week ending 29 May 2022, there were 6,150 reported positive cases which is a decrease of 0.7% in the number of reported cases from the previous week ending 01 May 2022 (6,195)\(^1\).

In the week ending 29 May 2022 there were 828 COVID-19 reinfections (two or more episodes). This represents 13.5% of all cases reported in that week.
1 Correct as at 30 May, may differ from more recently published data in the previous week’s report and on the COVID-19 Daily Dashboard.

Figure 2 below shows the proportion of COVID-19 cases by age group for the most recent three weeks. In week ending 29 May 2022, the 40-49 age group had the highest proportion of reported cases.

Trend data since the start of the outbreak can be found on the Public Health Scotland COVID-19 Dashboard.
Infection survey

The Office for National Statistics (ONS) publish results from the COVID-19 Infection Survey which aims to estimate how many people test positive for COVID-19 infection at a given point.

The Infection Survey invites private residential households to test whether they have the infection, regardless of whether they have symptoms, using a PCR test. Data are based on confirmed positive COVID-19 test results of those living in private households, excluding those living in care homes or other communal establishments. All data are provisional and subject to revision.

Figure 4 below shows the trend in official weekly reported estimates of the percentage of people living in private residential households in Scotland testing positive for COVID-19. The estimated percentage of people testing positive for COVID-19 peaked in mid-March 2022 (9.00%) and has been decreasing until the latest week.

In the most recent week (15 May 2022 to 21 May 2022), the estimated percentage of the population living in private residential households that had COVID-19 was 2.57% (95% credible interval: 2.17% to 3.01%)\(^1\). There is a degree of uncertainty in these estimates as indicated by the credible intervals; results should be interpreted with caution.

In the same week, the ONS estimate that 135,400 people (95% credible interval: 114,400 to 158,300)\(^1\) living in private residential households in Scotland at any given time had COVID-19. This represents around 1 in 40 people (95% credible interval: 1 in 45 to 1 in 35 people)\(^1\).

For more details and further breakdowns on the Infection Survey please refer to Coronavirus (COVID-19) Infection Survey, UK - Office for National Statistics.
A credible interval gives an indication of the uncertainty of an estimate from data analysis based on a sample population. 95% credible intervals are calculated so that there is a 95% probability of the true value lying in the interval.

**Reproduction (R) number**

The reproduction (R) number is the average number of secondary infections produced by a single infected person. The R number is a useful measure in assessing if the epidemic is growing or shrinking. If R is greater than one the epidemic is growing, if R is less than one the epidemic is shrinking. The higher the R is above one, the more people an infectious person is likely to further infect.

Please note that R lags by two or three weeks.

Figure 3 below shows the trend of The UK Health Security Agency’s (UKHSA) consensus estimate for R in Scotland. As at 10 May 2022 The UKHSA’s consensus estimate is between 0.7 and 0.9. The lower and upper limits of the R value are unchanged since the previous publication.

UKHSA was unable to form a consensus view on the incidence of new daily infections in Scotland as at 10 May 2022.
For more information please visit the UK Government website.

**Figure 3: R estimate in Scotland over time by reporting date**

![Graph showing R estimate in Scotland over time by reporting date]

Source: COVID-19 Modelling the Epidemic

**Wastewater analysis**

COVID-19 outbreaks and general trends can be monitored by measuring concentrations of the virus in wastewater. Sewage samples are taken from sample sites across Scotland and used to calculate the number of COVID-19 markers, reported as million gene copies per litre (Mgc/p/d). Samples are representative of wastewater from between 70-80% of the Scottish population. Data are adjusted for population and environmental factors such as flow through the sewage works, which is affected by rainfall. See Appendix 3 for more information.

Figure 5 shows wastewater viral levels across Scotland from the beginning of 2022. Wastewater viral levels have been decreasing since the beginning of April. The week ending 24 May 2022 saw levels of around 71.1 Mgc/p/d, compared to 97 Mgc/p/d four weeks prior (week ending 26 April 2022).
COVID-19 Antibody Estimates

Measuring the level of antibodies to COVID-19 is an effective way of identifying individuals who have had COVID-19 infection in the past or have developed antibodies as a result of vaccination. Public Health Scotland publish weekly estimates of the proportion of people who have antibodies to coronavirus (“seroprevalence”) in the general population, based on samples from those attending community healthcare settings (for instance primary care).

From the latest publication, it is estimated that in the week ending 24 April 2022 95.5% (95% CI: 95.3% - 96.6%) of those attending community healthcare settings had antibodies. This estimate has remained stable for the past few months. There is a degree of uncertainty in these estimates as indicated by the credible intervals; results should be interpreted with caution.

Further information on estimates of the adult population with antibodies, based on samples from individuals living in private households, is also published by the Office for National Statistics here.
Severity of Illness

Hospital admissions ‘with’ COVID-19

Since the start of the pandemic Public Health Scotland have been reporting on the number of people in acute hospitals with recently confirmed COVID-19. These admissions are identified from Rapid and Preliminary Inpatient Data (RAPID) and a definition of an admission can be found in Appendix 4.

From Sunday 01 May, most people in Scotland no longer need to take a COVID-19 test. These planned changes to testing policy will lead to a reduction in the quantity and quality of available data, which will in turn limit the utility of reporting. Therefore, COVID-19 hospital admissions data should be interpreted with caution.

It is important to note, that the figures presented below may include patients being admitted and treated in hospital for reasons other than COVID-19. Additionally, these figures are correct as at 30 May 2022 and may differ from data published in previous weeks’ reports.

Figure 6 below shows the weekly trend of hospital admissions with COVID-19 from week ending 05 January 2021 to 24 May 2022.

Figure 6: Trend of hospital admissions ‘with’ COVID-19 in Scotland
Table 1 below shows a breakdown of people admitted to hospital across all ages and by age group for the most recent five weeks. Data from March 2021 are available on the COVID-19 Statistical Report website.

Table 1: COVID-19 hospital admissions$^3$ by age, weeks ending 26 April 2022 to 24 May 2022

<table>
<thead>
<tr>
<th>Age Band</th>
<th>20 April - 26 April</th>
<th>27 April - 03 May</th>
<th>04 May - 10 May</th>
<th>11 May - 17 May</th>
<th>18 May - 24 May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>56</td>
<td>42</td>
<td>38</td>
<td>38</td>
<td>21</td>
</tr>
<tr>
<td>18-29</td>
<td>35</td>
<td>18</td>
<td>19</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>30-39</td>
<td>41</td>
<td>33</td>
<td>29</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>40-49</td>
<td>44</td>
<td>36</td>
<td>32</td>
<td>32</td>
<td>17</td>
</tr>
<tr>
<td>50-54</td>
<td>27</td>
<td>23</td>
<td>15</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>55-59</td>
<td>56</td>
<td>36</td>
<td>28</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>60-64</td>
<td>43</td>
<td>62</td>
<td>40</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>65-69</td>
<td>66</td>
<td>43</td>
<td>46</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td>70-74</td>
<td>78</td>
<td>71</td>
<td>57</td>
<td>45</td>
<td>34</td>
</tr>
<tr>
<td>75-79</td>
<td>82</td>
<td>71</td>
<td>78</td>
<td>45</td>
<td>43</td>
</tr>
<tr>
<td>80+</td>
<td>218</td>
<td>177</td>
<td>146</td>
<td>106</td>
<td>93</td>
</tr>
<tr>
<td>Total</td>
<td>746</td>
<td>612</td>
<td>528</td>
<td>420</td>
<td>364</td>
</tr>
</tbody>
</table>

Source: RAPID (Rapid and Preliminary Inpatient Data)

$^3$ Please refer to Appendix 4 – Hospital Admissions Notes for explanatory notes regarding RAPID Hospital Admissions.

In the latest week ending 24 May 2022, the number of new COVID-19 admissions to hospital fell from 420 to 364 (13.3%) from the week ending 17 May 2022. The highest number of admissions are now in those aged 80+ (25.5%)
Hospital Admissions ‘because-of’ COVID-19

As previously reported, not all people hospitalised with a recent COVID-19 diagnosis will be in the hospital setting because of this infection. It is important, though, to be able to differentiate between patients in hospital who are admitted to hospital ‘because of’ their COVID-19 as opposed to patients who are admitted to hospital coincidentally ‘with’ their COVID-19 diagnosis. Knowing this can help us to predict whether we are likely to see future pressures on hospital systems based on recent patterns of infections in the surrounding community.

SMR01 (acute inpatient and day case activity) analysis

In September 2021 Public Health Scotland developed and reported analysis from SMR01 to calculate the proportion of people in hospital ‘because of’ COVID-19. A limitation of this approach is that there is typically a two-to-three-month lag in receiving SMR01 discharge summaries from NHS boards.

To estimate the proportion of patients in hospital ‘because of’ COVID-19, analysis was carried out using the national SMR01 dataset using the clinical diagnosis information recorded from the patient discharge summary. A hospital admission ‘because of’ COVID-19 is defined as an admission where acute COVID-19 illness is recorded as the main reason that the patient required treatment (including reinfections).

There was a rapid increase in COVID-19 case numbers in Scotland observed at the end of 2021, during this period Omicron rapidly became the dominant variant. At the end of January 2022, Public Health Scotland published a final report of clinical audit data on people with a recent, community-acquired COVID-19 diagnosis admitted to hospital in selected NHS Boards.

Updated SMR01 analysis

The analysis on hospital admissions (Table 2) ‘because of’ COVID-19 is based on data from six NHS Boards, with good quality and complete data. The aggregated data for these six NHS Boards is used as a proxy to represent the Scotland position.
These six NHS Boards are listed in Appendix 6: Hospital admissions 'because of' COVID-19.

Table 2 shows the trend in hospital admissions where COVID-19 is recorded as the main diagnosis.

Between September and December 2021 the percentage of hospital admissions 'because of' COVID-19 has ranged between 60-75%, however this decreased to 37% in February 2022.

The average length of time a patient is spending in hospital 'because of' COVID-19 has decreased from 10.1 days in September 2021 to 5.4 days in February 2022. More detailed information by age group is shown below in Figure 7.

**Table 2: SMR01 COVID-19 Hospital Admissions with a primary diagnosis of COVID-19**

<table>
<thead>
<tr>
<th></th>
<th>Sep-21</th>
<th>Oct-21</th>
<th>Nov-21</th>
<th>Dec-21</th>
<th>Jan-22</th>
<th>Feb-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of hospital admissions 'because of' COVID-19</td>
<td>74%</td>
<td>72%</td>
<td>70%</td>
<td>60%</td>
<td>42%</td>
<td>37%</td>
</tr>
<tr>
<td>Average length of stay 'with' COVID-19 (days)</td>
<td>9.9</td>
<td>10.2</td>
<td>9.7</td>
<td>8.3</td>
<td>7.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Average length of stay 'because of' COVID-19 (days)</td>
<td>10.1</td>
<td>9.3</td>
<td>9.4</td>
<td>7.5</td>
<td>7</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Source: SMR01 (Scottish Morbidity Records - Acute Inpatient & Day Case) & ECOSS. Notes and definitions can be found in Appendix 6: Hospital admissions 'because of' COVID-19.
Figure 7: Percentage of COVID-19 hospital admissions with a primary diagnosis of COVID-19, and average length of stay

Figure 8 below shows a breakdown of the average length of stay in days for February 2022 for COVID-19 hospital admissions with a primary diagnosis of COVID-19.

Figure 8: Average length of stay of SMR01 COVID-19 hospital admissions with a primary diagnosis of COVID-19 by age band; February 2022
Hospital occupancy (COVID-19 patients in hospital)

The number of COVID-19 patients in hospital is an indicative measure of the pressure on hospitals, as these patients still require isolation from other patients for infection control purposes.

Information is collected from NHS Boards on the number of COVID-19 patients in beds at 8am the day prior to reporting.

Figure 9 shows the number of patients in hospital with COVID-19 along with the seven-day average each Sunday. Figure 9 therefore shows a snapshot of the number of beds occupied on every Sunday. Following a peak of 2,377 on 03 April 2022, the number of patients has been decreasing. In the most recent week ending 29 May 2022, on average there were 628 patients in hospital with COVID-19 which is a 13.6% decrease from the previous week ending 22 May 2022, when on average there were 727 patients.

Figure 9: Number of beds occupied with COVID-19 in hospital each Sunday in Scotland from 17 September 2020 to 29 May 2022

Please note that empty entries for NHS Orkney were coded 0.

Alternative breakdowns of this data are available on the COVID-19 Dashboard.
**Intensive Care Unit (ICU) admissions**

The severity of COVID-19 varies from very mild symptoms through to those who require intensive care treatment and supported ventilation. Monitoring the admission frequency to critical care units in Scotland (ICU) is therefore an important measure of the severity of COVID-19.

Figure 10 below shows the weekly trend of admissions to ICU. The number of admissions has generally been decreasing since the beginning of April. In the week ending 29 May 2022 there were 12 admissions to ICU, a decrease of 4 from the previous week (week ending 22 May 2022) when there were 16 admissions.

**Figure 10: Weekly trend of COVID-19 ICU admissions in Scotland**

**Deaths involving COVID-19**

National Records of Scotland publish weekly information on deaths involving COVID-19. These are deaths where COVID-19 has been identified as being involved in the death by a doctor, either as the underlying cause of death or as a contributory cause of death.

In the week ending 22 May 2022, there were 52 deaths where COVID-19 was mentioned on the death certificate (with or without laboratory diagnosis). Of these
deaths, there were 29 (55.8%) deaths where COVID-19 was the underlying cause of death.

The number of deaths where COVID-19 was mentioned on the death certificate has been falling since March 2022. There were 9 fewer deaths in the week ending 22 May 2022 compared to the week prior (61 deaths in the week ending 15 May 2022).

In addition to reporting on the number of deaths involving COVID-19, National Records of Scotland publish excess mortality statistics. This is another important measure as it presents seasonal variation in deaths and describes the difference between the number of deaths in the current year and the ‘expected number of deaths’.

Further breakdowns of deaths involving COVID-19 and excess mortality can be found on NRS website.
COVID-19 Vaccine

On 08 December 2020, a COVID-19 vaccine developed by Pfizer BioNTech was first used in the UK as part of national immunisation programmes. The AstraZeneca (Vaxzevria) vaccine was also approved for use in the national programme, and rollout of this vaccine began on 04 January 2021. Moderna (Spikevax) vaccine was approved for use on 08 January 2021 and rollout of this vaccine began on 07 April 2021. These vaccines have met strict standards of safety, quality and effectiveness set out by the independent Medicines and Healthcare Products Regulatory Agency (MHRA).

For the latest information on COVID-19 vaccines, including information on eligibility, please see our COVID-19 vaccine information and resources pages.

Information on uptake across the vaccine programme is available on a daily basis via the PHS COVID-19 Daily Dashboard, 5 days a week at 2pm (Monday to Friday). This provides a cumulative picture of the position nationally and locally.

The dashboard provides total uptake nationally with breakdowns by Joint Committee on Vaccination and Immunisation (JCVI) age based cohorts and non-age based cohorts for priority groups 1-9.

The vaccination content of this weekly publication is kept under continual review and specific editions have contained more in-depth analyses of uptake by particular groups or characteristics, including uptake by ethnicity and deprivation category, for teachers, for prisoners and for pregnant women.
Vaccine Effectiveness

Public Health Scotland has a COVID-19 vaccine surveillance strategy to monitor the effectiveness, safety and impact of all approved COVID-19 vaccines in Scotland. The key measure of the success of the vaccination programme in protecting against severe disease, hospitalisations and deaths is vaccine effectiveness.

Vaccine effectiveness is a scientific method used to measure how well a vaccine protects people against outcomes such as infection, symptoms, hospitalisation, and death in the ‘real-world’. Vaccine effectiveness analysis accounts for potential biases in the data and risk factors such as age, sex, prior infection, co-morbidities, socio-economic status, and time since vaccination. This method is the most robust way to measure if a vaccine is working.

Vaccinated individuals can still be infected with COVID-19

The current evidence suggests that you may test positive for COVID-19, or be reinfected even if you are vaccinated, especially since the emergence of the Omicron variant in the UK. The major benefit of vaccination against the Omicron variant is to protect from severe disease, see below. For the latest COVID-19 guidance, please visit the NHS Inform website.

COVID-19 vaccines protect most people against severe outcomes, but some people will still get sick because no vaccine is 100% effective

Evidence suggests the COVID-19 vaccines are very effective at preventing a severe outcome of COVID-19. COVID-19 hospitalisations and deaths are strongly driven by older age, with most deaths occurring in those over 70 years old and those with multiple other illnesses. But overall, you are less likely to be hospitalised if you are vaccinated with a booster.

Vaccine effectiveness against symptomatic disease

Analyses from Scotland show that the booster and third dose of the COVID-19 vaccines are associated with 57% reduced risk of symptomatic infection with the Omicron variant compared to those who are more than 25 weeks post-second dose.
of COVID-19 vaccine. Vaccine effectiveness against symptomatic infection for the Omicron variant is thought to wane (reduce) over time.

There has been an increase in the number of cases with the Omicron variant sub-lineage known as BA.2 (VUI-22JAN-01). This variant was identified at the start of January 2022. Recent studies show no apparent reduction in vaccine effectiveness against symptomatic disease when compared to the first Omicron variant (BA.1) (1, 2, 3, 4). To note, the studies described above do not account for severity of symptoms. For example, one person may only have mild symptoms such as a runny nose for one day and another person severe symptoms such as long-term fatigue and breathing issues. These people would have different outcomes of infection, but they would both be recorded as having symptoms. This could result in an under or overestimate of vaccine effectiveness.

**Vaccine effectiveness against hospitalisation**

A number of studies have estimated COVID-19 vaccine effectiveness against hospitalisation and have found high levels of protection against hospitalisation with all COVID-19 vaccines against the Alpha and Delta variants (1, 2, 3, 4).

Vaccine effectiveness against hospitalisation with the Omicron variant is slightly lower than the Delta variant, but the booster or third dose of COVID-19 vaccine still provides excellent protection against COVID-19 related hospitalisation (1).

Everyone who is admitted to hospital for any reason in the UK are tested for COVID-19. A large proportion of people who have a positive COVID-19 test on admission are likely to have COVID-19 as an incidental finding rather than COVID-19 be the primary reason for admission. This causes a problem when trying to calculate vaccine effectiveness estimates against COVID-19 hospitalisation as inclusion of incidental cases may result lower estimates of effectiveness against hospitalisation than reality. To try and account for this issue, UKHSA have conducted studies using stricter definitions of COVID-19 hospitalisation to identify patients hospitalised with severe respiratory disease and found that vaccine effectiveness estimates against COVID-19 hospitalisation are high with less evidence of vaccine waning over time since vaccination.
In Finland, they are able to exclude incidental COVID-19 hospital admissions from their analysis, and a recent study (preprint) of elderly populations over 70 years old found a COVID-19 vaccine effectiveness of approximately 90% against COVID-19 hospitalisation in the first few months following vaccination during the emergence of Omicron.

**Vaccine effectiveness against death**

Evidence has shown that vaccination is highly effective in protecting against death from COVID-19. A study in Israel found that adults who had received their Pfizer (Comirnaty) booster dose five months after their second dose had a 90% lower risk of mortality due to COVID-19 than adults who hadn’t received their booster dose five months after their second dose. Data from UKHSA also shows a vaccine effectiveness of approximately 85-98% against mortality two or more weeks after a COVID-19 booster. A small number of COVID-19 deaths are still expected in vaccinated people, especially in vulnerable individuals where the vaccine or the immune response may not have been effective.

**Vaccine effectiveness in at-risk groups**

A study from England (VIVALDI) found the COVID-19 vaccines were 85% effective against COVID-19 hospitalisations and 94% against COVID-19 death among care home residents between two and 12 weeks after the second dose. This declined to 54% against hospitalisations and 63% against death from 12 weeks after the second dose. However, a booster vaccination restored protection with vaccine effectiveness estimated to be 90% against hospitalisations and 98% against death among care home residents.

Evidence (1, 2, 3, 4) from studies in Israel in over 60s who have had a fourth dose show greater protection than those who have only had three doses, with reduction in severe infection, hospitalisation, and death due to COVID-19.
Other vaccine studies

A review by UKHSA shows that people who have had one or more doses of a COVID-19 vaccine are less likely to develop long COVID-19 than those who remain unvaccinated.

A UK study has investigated how vaccination affects symptoms of long-covid. After an initial dose of vaccine there was a 12.8% decrease in long-covid, with further reductions after a second dose.

Studies from the USA (1, 2) show protection against the Omicron variant in children and adolescents (12-18 years old) following two doses of vaccine. Hospitalisation risk associated with Omicron infection in this group was also reduced following a second dose.

Vaccine effectiveness summary

UKHSA publish a summary of current vaccine effectiveness in their weekly COVID-19 vaccine surveillance report. The latest evidence can be found below, which suggests the COVID-19 booster/third dose vaccine lowers your risk of a severe outcome compared to the second dose.

The Office for National Statistics (ONS) has also published research into the risk of testing positive for COVID-19 by vaccination status and deaths involving COVID-19 by vaccination status.
Table 3: UKHSA consensus estimates of vaccine effectiveness against the Omicron variant

<table>
<thead>
<tr>
<th>Vaccine product for primary course</th>
<th>Outcome</th>
<th>Second dose: 0 to 3 months</th>
<th>Second dose: 4 to 6 months</th>
<th>Second dose: 6+ months</th>
<th>Booster dose: All Periods</th>
<th>Booster dose: 0 to 3 months</th>
<th>Booster dose: 4 to 6 months</th>
<th>Booster dose: 6+ months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AstraZeneca</strong></td>
<td>All Infection</td>
<td>30% (20 to 40%)</td>
<td>0 to 30% (range only)</td>
<td>0% (0 to 10%)</td>
<td>See Individual Periods</td>
<td>45% (35 to 55%)</td>
<td>15% (0 to 30%)</td>
<td>Insufficient Data</td>
</tr>
<tr>
<td></td>
<td>Symptomatic</td>
<td>40% (30 to 50%)</td>
<td>20% (5 to 30%)</td>
<td>5% (0 to 5%)</td>
<td>See Individual Periods</td>
<td>60% (50 to 70%)</td>
<td>40% (30 to 50%)</td>
<td>Insufficient Data</td>
</tr>
<tr>
<td></td>
<td>Hospitalisation</td>
<td>85% (60 to 90%)</td>
<td>70% (50 to 75%)</td>
<td>65% (45 to 85%)</td>
<td>See Individual Periods</td>
<td>90% (85 to 95%)</td>
<td>85% (85 to 95%)</td>
<td>Insufficient Data</td>
</tr>
<tr>
<td></td>
<td>Mortality</td>
<td>Insufficient Data</td>
<td>Insufficient Data</td>
<td>Insufficient Data</td>
<td>See Individual Periods</td>
<td>90% (85 to 98%)</td>
<td>Insufficient Data</td>
<td>Insufficient Data</td>
</tr>
<tr>
<td></td>
<td>Transmission</td>
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<td><strong>Moderna</strong></td>
<td>All Infection</td>
<td>30% (20 to 40%)</td>
<td>0 to 30% (range only)</td>
<td>Insufficient Data</td>
<td>See Individual Periods</td>
<td>45% (35 to 55%)</td>
<td>15% (0 to 30%)</td>
<td>Insufficient Data</td>
</tr>
<tr>
<td></td>
<td>Symptomatic</td>
<td>55% (35 to 75%)</td>
<td>30% (15 to 35%)</td>
<td>15% (10 to 20%)</td>
<td>See Individual Periods</td>
<td>65% (55 to 75%)</td>
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<tr>
<td></td>
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<td>85 to 95% (range only)</td>
<td>75 to 85% (range only)</td>
<td>55 to 90% (range only)</td>
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<td>85 to 95% (range only)</td>
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<td>Insufficient Data</td>
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<td>Transmission</td>
<td>Insufficient Data</td>
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<td>Insufficient Data</td>
<td>Insufficient Data</td>
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</tr>
<tr>
<td><strong>Pfizer</strong></td>
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<td>0 to 30% (range only)</td>
<td>20% (10 to 30%)</td>
<td>See Individual Periods</td>
<td>45% (35 to 55%)</td>
<td>15% (0 to 30%)</td>
<td>Insufficient Data</td>
</tr>
<tr>
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<td>Symptomatic</td>
<td>50% (30 to 65%)</td>
<td>20% (15 to 30%)</td>
<td>15% (10 to 15%)</td>
<td>See Individual Periods</td>
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<td>45% (35 to 55%)</td>
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<tr>
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<td>80% (75 to 85%)</td>
<td>70% (55 to 90%)</td>
<td>See Individual Periods</td>
<td>90% (85 to 95%)</td>
<td>85% (85 to 95%)</td>
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<td>Mortality</td>
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<td>Insufficient Data</td>
<td>Insufficient Data</td>
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<td>90% (85 to 98%)</td>
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<tr>
<td></td>
<td>Transmission</td>
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<td>Insufficient Data</td>
<td>Insufficient Data</td>
<td>0 to 25% (range only)</td>
<td>Insufficient Data</td>
<td>Insufficient Data</td>
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</tr>
</tbody>
</table>

**Key: Confidence rating scale**

<table>
<thead>
<tr>
<th>Confidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Evidence from multiple studies which is consistent and comprehensive</td>
</tr>
<tr>
<td>Medium</td>
<td>Evidence is emerging from a limited number of studies or with a moderately level of uncertainty</td>
</tr>
<tr>
<td>Low</td>
<td>Little evidence is available at present and results are inconclusive</td>
</tr>
</tbody>
</table>
Wider Impact of COVID-19

The COVID-19 pandemic has direct impacts on health as a result of illness, hospitalisations and deaths due to COVID-19. However, the pandemic also has wider impacts on health, healthcare, and health inequalities. Reasons for this may include:

- Individuals being reluctant to use health services because they do not want to burden the NHS or are anxious about the risk of infection.

- The health service delaying preventative and non-urgent care such as some screening services and planned surgery.

- Other indirect effects of interventions to control COVID-19, such as changes to employment and income, changes in access to education, social isolation, family violence and abuse, changes in the accessibility and use of food, alcohol, drugs and gambling, or changes in physical activity and transport patterns.

More detailed background information on these potential impacts is provided by the Scottish Public Health Observatory in a section on Covid-19 wider impacts.

The surveillance work stream of the Public Health Scotland social and systems recovery cell aims to provide information and intelligence on the wider impacts of COVID-19 on health, healthcare, and health inequalities that are not directly due to COVID-19. The wider impact dashboard can be viewed online and includes the following topics:

- Hospital and unscheduled care
- Accident and Emergency attendances
- NHS 24 completed contacts
- Out of hours cases
- Scottish Ambulance Service
• Excess deaths
• Outpatient appointments
• Healthcare for cardiovascular disease
• Healthcare for mental health
• Women booking antenatal care
• Healthcare for birth and babies
• Termination of pregnancy
• Child health
• Cancer
• Substance use
• Injuries

These analyses are based on a selected range of data sources that are available to describe changes in health service use in Scotland during the COVID-19 pandemic. More detailed information is available at NHS Board and Health and Social Care Partnership (HSCP) level.
Contact

Public Health Scotland

phs.covid19data&analytics@phs.scot

Further Information

COVID surveillance in Scotland

Scottish Government

Daily Dashboard by Public Health Scotland National Records of Scotland

Daily Dashboard by Public Health Scotland National Records of Scotland

UK and international COVID reports

Public Health England

European Centre for Disease Prevention and Control

WHO

European Centre for Disease Prevention and Control

WHO

Weekly National Seasonal Respiratory Report:

Weekly national seasonal respiratory report - Week 20 2022 - Weekly national seasonal respiratory report - Publications - Public Health Scotland

Next Release

The next release of this publication will be 08 June 2022.
Open Data

Data from this publication is available to download from the Scottish Health and Social Care Open Data Portal.

Rate this publication

Let us know what you think about this publication via the link at the bottom of this publication page on the PHS website.
Appendices

Appendix 1: Background information

In late December 2019, the People's Republic of China reported an outbreak of pneumonia due to unknown cause in Wuhan City, Hubei Province.

In early January 2020, the cause of the outbreak was identified as a new coronavirus. While early cases were likely infected by an animal source in a ‘wet market’ in Wuhan, ongoing human-to-human transmission is now occurring.

There are a number of coronaviruses that are transmitted from human-to-human which are not of public health concern. However, COVID-19 can cause respiratory illness of varying severity.

On the 30 January 2020, the World Health Organization declared that the outbreak constitutes a Public Health Emergency of International Concern.

Extensive measures have been implemented across many countries to slow the spread of COVID-19.

Further information for the public on COVID-19 can be found on NHS Inform.

Appendix 2: Testing policy in 2022

Please note the following changes to testing policy in 2022:

• Prior to 05 January 2022, reported cases consisted only of positive Polymerase Chain Reaction (PCR) tests

• From 05 January 2022, reported cases included both PCR and Lateral Flow Device (LFD) positive tests. See here for more information

• From 01 March 2022, reported cases included episodes of reinfection at least 90 days after initial infection. Prior to this date, COVID-19 cases were based
on an individual's first positive test only. More information is available on the PHS website [here](#).

- From mid-April 2022, as part of the Scottish Government’s [Test and Protect transition plan](#), asymptomatic testing was no longer recommended.

- From mid-April 2022, as part of the Scottish Government’s [Test and Protect transition plan](#), asymptomatic testing was no longer recommended.

- Symptomatic PCR testing was still available, and LFD testing was still encouraged for hospital and care home visitors, those who had been in close contact with a case and to allow cases to finish their isolation after 7 days.

- 01 May 2022 marks the beginning of updated testing policy. The purpose of COVID-19 testing has now shifted from population-wide testing to reduce transmission, to targeted testing. Therefore, reported cases will primarily include clinical care settings, health and social care workforce, surveillance and outbreak response.

### Appendix 3: Wastewater Analysis Notes

In May 2020, the Scottish Environment Protection Agency (SEPA) began exploratory work to pinpoint fragments of coronavirus’ ribonucleic acid (RNA) in local wastewater samples. In contrast to COVID-19 case records, virus shedding into wastewater is a biological process, meaning wastewater data is unaffected by factors that impact whether testing is done. Sewage samples are taken by Scottish Water from 141 sample sites across Scotland from the sewage network (wastewater treatment works). Composite samples are built up over a period of time. The amount of unique fragments of viral DNA within known volumes of the sample is calculated, outputting a number which can be used to calculate the number of COVID markers in each sample which is reported as million gene copies per litre (Mgc/p/d). Site level wastewater level can show substantial degree of variability, especially when prevalence of COVID-19 is high. An average and standard deviation is taken for three samples. Household drainage water is mixed with water from other urban areas.
sources, meaning composite samples will contain rainwater which dilutes the sample. Therefore, this variability is accounted for by controlling for rainfall.

**Appendix 4: Hospital Admissions Notes**

**RAPID (Rapid and Preliminary Inpatient Data)**

From 01 March 2022, PHS now include episodes of reinfection within COVID-19 reporting. Prior to this date COVID-19 cases were based on an individual’s first positive test result only. The new daily calculation includes both new infections and possible reinfections. Possible reinfections are defined as individuals who tests positive, by PCR (polymerase chain reaction) or LFD (lateral flow device), 90 days or more after their last positive test. This update to reporting will ensure that PHS’s surveillance data reflects underlying transmission rates. More information is available on the PHS website here.

The number reported does not take into account the reason for hospitalisation. Therefore, people that were admitted for a non COVID-19 related reason (and tested positive upon admission) may be included.

RAPID is a daily submission of people who have been admitted and discharged to hospital. These data include admissions to acute hospitals only and do not include psychiatric or maternity/obstetrics specialties. Figures are subject to change as hospital records are updated. It can take 6-8 weeks or longer before a record is finalised, particularly discharge details.

In the data presented here, an admission is defined as a period of stay in a single hospital. There may be multiple admissions for a single patient if they have moved between locations during a continuous inpatient stay (CIS), or if they have been admitted to hospital on separate occasions.

**Hospital Inpatients (Scottish Government Data)**

Number of patients in hospital with recently confirmed COVID-19, identified by their first positive LFD test (from 5 January 2022) or PCR test. This measure
from 11 September 2020 and first published 15 September 2020) includes patients who first tested positive in hospital or in the 14 days before admission. Patients stop being included after 28 days in hospital (or 28 days after first testing positive if this is after admission). Further background on this new approach is provided in this Scottish Government blog.

This is based on the number of patients in beds at 8am the day prior to reporting, with the data extract taken at 8am on the day of reporting to allow 24 hours for test results to become available. Where a patient has not yet received a positive test result they will not be included in this figure. Patients who have been in hospital for more than 28 days and still being treated for COVID-19 will stop being included in this figure after 28 days.

All patients in hospital, including in intensive care, and community, mental health and long stay hospitals are included in this figure.

Appendix 5: Early access details

Pre-Release Access: Under terms of the “Pre-Release Access to Official Statistics (Scotland) Order 2008”, PHS is obliged to publish information on those receiving Pre-Release Access (“Pre-Release Access” refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access:

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication leads
Appendix 6: Hospital admissions ‘because of’ COVID-19

The SMR01 dataset comprises episode-based patient records relating to all inpatients and day cases discharged from non-obstetric, non-psychiatric specialties and excluding geriatric long stay records. Data are updated on a monthly basis and include clinical and non-clinical data.

Analyses are based on month of admission.

Average length of stay is the mean length of stay (in days) of a patient's entire continuous inpatient stay (CIS). A CIS is an unbroken period of time that a patient spends as an inpatient. However, a patient may change consultant, significant facility, specialty, and/or hospital during a continuous inpatient stay.

A COVID-19 hospital admission ‘with’ COVID-19 is defined as: A patient’s first positive PCR test for COVID up to 14 days prior to admission to hospital, on the day of their admission or during their stay in hospital.

A hospital admission ‘because of’ COVID-19 is defined as an admission with a diagnosis of laboratory confirmed (U07.1) or clinically diagnosed COVID-19 illness (U07.2) in the primary diagnostic position of the SMR01 record, within the first episode of the Continuous Inpatient Stay. As SMR coding is done on discharge, ‘main condition’ reflects that which is considered retrospectively to be primarily responsible for the patient’s need for treatment, rather than necessarily the condition with which they presented. Data using this definition prior to 1st June 2021 will include a greater proportion of COVID-19 admissions, as prior to this date COVID-19 was more likely to be assigned to the ‘main condition’ position due to the coding guidance at that time.

ICD-10 COVID-19 diagnostic codes used: U07.1 and U07.2.

The six NHS Boards included in the analysis are: NHS Ayrshire & Arran, NHS Dumfries & Galloway, NHS Grampian, NHS Greater Glasgow & Clyde, NHS Lothian and NHS Tayside.