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## The covid waves continue to come

Omicron continues to drive waves of covid infections, writes Christina Pagel, but let's not give up trying to control transmission

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We are just over five months into 2022 and have already seen two record highs of coronavirus infection in England, with population prevalence peaking at 7% in early January (omicron BA.1) and 8% in late March (omicron BA.2).<sup>1</sup> After eight weeks of declining prevalence, infections have started to increase again with the rise of yet another set of omicron variants. Instead of just one new variant, we currently have four: BA.2.12.1 (dominant in the US), BA.4 and BA.5 (dominant in South Africa), and BA.5.1 (dominant in Portugal). Together, these four variants became dominant in England in early June,<sup>2</sup> and it looks as if BA.5 and BA.5.1 will likely win out to become the overall dominant variants.<sup>3</sup> So what does this mean for the shorter and longer term?

In the short term, we will see another wave of infections here, likely peaking at the end of June/early July. South Africa's BA.4/5 wave has now passed, with fewer hospital admissions and deaths than in their BA.1 wave in December. Portugal's BA.5 wave looks to have just peaked, with a similar magnitude of deaths and hospital admissions to their first omicron BA.1 wave. While omicron BA.2 became dominant in both South Africa and Portugal, it did not result in a second large wave of infections.<sup>4</sup> It did, however, in England and we will be the first (but not the last) big country to have a BA.4/5 wave after having had two previous omicron waves (BA.1 and BA.2). This means that we might get some additional protection from the high number of infections we had in March, which will reduce the size of this coming wave. Nonetheless, a significant proportion of the country will get sick, especially as the population's immunity from boosters is waning.

While omicron might be somewhat less severe than delta, and people have higher immunity through vaccination and previous infection, it is not mild. At a population level, its sheer transmissibility more than compensates for any reduction in experienced disease severity or symptoms for the individual. For instance, in the five months of the omicron era since 1 January 2022, almost 20 000 people have died with covid-19 mentioned on their death certificate.<sup>5</sup> Almost exactly the same number of people had it mentioned on their death certificate in the six months that delta was dominant in England in 2021—but we have just started yet another omicron wave and so deaths from this variant will rise still further.

The high number of infections will also lead to yet more disruption across workplaces as people are off sick. The NHS is already in crisis with long waiting times in A&E,<sup>6</sup> high response times for ambulances,<sup>7</sup> and record numbers of people waiting for routine

treatment.<sup>8</sup> The number of people being admitted to hospital with covid has now started to rise again too.<sup>9</sup> So in the short term, expect further pressure to pile on both secondary and primary care, as more people get sick and need care and more staff are off sick, making it even harder to provide care.

Many people will end up with long covid from this new wave. The Office for National Statistics (ONS) reports that more than 600 000 people already have persistent symptoms after being infected with omicron.<sup>10</sup> The ONS also reports that almost 5% of people working in healthcare report having ongoing symptoms, likely due to higher numbers of them being exposed and infected. While many people will eventually recover, a substantial number are unable to work and leave the workforce. It was reported this month that over 10 000 NHS workers have been off work for more than three months due to long covid.<sup>11</sup>

This is now the third covid wave in six months and omicron appears genuinely different in how it can drive these repeated waves of infection. A paper just out, which looked in detail at a longitudinal cohort of NHS workers, found that omicron is particularly wily in evading the immune system (both antibody and T cell responses).<sup>12</sup> Even infection with omicron does not induce particularly good immunity against future infection with this variant. The initial results from laboratory experiments in Japan show that the latest omicron subvariants (BA.4/5) might cause more severe lung disease than the original omicron strain,<sup>13</sup> so we cannot assume that future waves will necessarily be milder. At least while omicron remains dominant, it seems plausible that large waves of infections every three months or so will be the norm. Even if infections will not be problematic for most people, each wave will nonetheless result in workplace disruption, severe illness and death for some, and long covid for more. For the NHS, which is already facing a workforce crisis that is steadily worsening,<sup>14 15</sup> this could be a disaster.

Unlike previous waves, there are no new vaccine rollouts planned for the population as a whole and initial omicron vaccines are still in the relatively early stages.<sup>16</sup> However, we are not helpless against this virus. In the short term, good quality FFP2 and FFP3 masks will help keep staff and patients safe. In the longer term, however, we need solutions that do not rely so much on individual behaviours. Experts from the US Centers for Disease Control and Prevention recently highlighted how we have “a once in decades opportunity” to improve the indoor air quality of our buildings.<sup>17</sup> And this week saw the release of a comprehensive UK report calling for improved disease

control in public buildings.<sup>18</sup> The authors estimate that up to 50% of airborne transmission could be prevented through better building design. This would help to mitigate not just coronavirus transmission, but any airborne diseases and pollution. Let's not give up trying to control transmission. We have the tools,<sup>19</sup> so let's use them.

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- 1 Office for National Statistics. Coronavirus (COVID-19) Infection Survey, UK Statistical bulletins. <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveysurvey/pilot/previousReleases>
- 2 COVID-19 Genomics UK Consortium. Public Data & Analysis. <https://www.cogconsortium.uk/priority-areas/data-linkage-analysis/public-data-analysis/#>
- 3 COG-UK/Mutation Explorer. Variants of concern (VOC) and under investigation (VUI) and any other variant by weeks and days. COG-UK/Mutation Explorer. <https://sars2.cvr.gla.ac.uk/cog-uk/>
- 4 Our World in Data. COVID-19 Data Explorer. Number of COVID-19 patients in hospital per million people. [https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2021-10-31.latest&facet=none&uniformYAxis=0&pickerSort=desc&pickerMetric=total\\_cases&Metric=Hospital+patients&Interval=7-day+rolling+average&Relative+to+Population=true&Color+by+test+positivity=false&country=ZAF~PRT](https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2021-10-31.latest&facet=none&uniformYAxis=0&pickerSort=desc&pickerMetric=total_cases&Metric=Hospital+patients&Interval=7-day+rolling+average&Relative+to+Population=true&Color+by+test+positivity=false&country=ZAF~PRT)
- 5 Office for National Statistics. Deaths registered weekly in England and Wales, provisional. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredinenglandandwales>
- 6 NHS England. A&E Attendances and Emergency Admissions. <https://www.england.nhs.uk/statistics/statistical-work-areas/ae-waiting-times-and-activity/>
- 7 NHS England. Ambulance Quality Indicators. <https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/>
- 8 Duncan P, Campbell D. Almost 100 000 facing excessive wait for serious cardiac care in England. *The Guardian*. 16 Jun 2022. <https://www.theguardian.com/society/2022/jun/16/record-6-5-million-people-waiting-for-nhs-hospital-treatment-in-england>
- 9 NHS England. COVID-19 Hospital Activity. Daily Admissions and Beds from 1 April 2022 up to 16 June 2022. <https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-hospital-activity/>
- 10 Office for National Statistics. Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK: 1 June 2022. <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/1june2022>
- 11 Thomas R. Long Covid forces 10 000 NHS staff off sick for longer than three months. *Independent*. 16 June 2022. <https://www.independent.co.uk/news/health/long-covid-nhs-staff-sickness-b2100783.html>
- 12 Reynolds CJ, Pade C, Gibbons JM, et al. COVIDsortium Investigators. COVIDsortium Immune Correlates Network. Immune boosting by B.1.1.529 (Omicron) depends on previous SARS-CoV-2 exposure. *Science* 2022;14:eabq1841. doi: 10.1126/science.abq1841. pmid: 35699621
- 13 Kimura I, Yamasoba D, Tamura T, et al. Virological characteristics of the novel SARS-CoV-2 Omicron variants including BA.2.12.1, BA.4 and BA.5. *bioRxiv* 2022.05.26.493539. doi: 10.1101/2022.05.26.493539
- 14 Providers NHS. NHS workforce shortage has "serious and detrimental" impact on services. 29 Mar 2022. <https://nhsproviders.org/news-blogs/news/nhs-workforce-shortage-has-serious-and-detrimental-impact-on-services>
- 15 Savage M. Paramedics are 'leaving in droves' as ambulance callouts almost double. *The Guardian*. 12 Jun 2022. <https://www.theguardian.com/society/2022/jun/12/paramedics-are-leaving-in-droves-as-ambulance-callouts-almost-double>
- 16 Herper M. Moderna says Omicron-containing booster outperforms current vaccine. *Stat News*. 8 Jun 2022. <https://www.statnews.com/2022/06/08/moderna-says-omicron-containing-booster-outperforms-current-vaccine/>.
- 17 Dowell D, Lindsley WG, Brooks JT. Reducing SARS-CoV-2 in Shared Indoor Air. *JAMA* 2022;7. doi: 10.1001/jama.2022.9970. pmid: 35671318
- 18 Economic Consulting NERA. Infection Resilient Environments: Social Cost Benefit Analysis. Royal Academy of Engineering, Jun 2022. [https://www.raeng.org.uk/publications/other/nera-social-cost-benefit-analysis-\(1\)](https://www.raeng.org.uk/publications/other/nera-social-cost-benefit-analysis-(1))
- 19 Rain A. Eight changes the world needs to make to live with COVID. *The Conversation*. 23 Feb 2022. <https://theconversation.com/eight-changes-the-world-needs-to-make-to-live-with-covid-177678>