



The BMJ

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Cite this as: *BMJ* 2022;378:o1969<http://dx.doi.org/10.1136/bmj.o1969>

Published: 09 August 2022

## COVID PANDEMIC

# Covid-19: What we know about the BA.4 and BA.5 omicron variants

Two omicron subvariants have come to dominate infections worldwide. **Elisabeth Mahase** summarises what we know about them so far

Elisabeth Mahase

### When and where were these subvariants detected?

BA.4 and BA.5 were first detected in South Africa in January and February 2022, respectively.<sup>1</sup> They are offshoots of the omicron variant BA.2, though their additional mutations seem to have given them a transmission advantage.<sup>2</sup>

### What's the difference between BA.4 and BA.5?

The World Health Organization has said that BA.5 now accounts for more than half of the world's cases, while BA.4 accounts for just over one in 10.<sup>3</sup>

Why BA.5 has overtaken BA.4 is a mystery, because they're so similar. Speaking at a Royal Society of Medicine event, Thomas Peacock, a virologist at Imperial College London, said, "They have identical spikes, more or less. So that means it has to be something outside the spike. And really our understanding of that from a virological perspective is very poor."

### Is BA.5 driving up hospital admissions and deaths?

The number of covid patients admitted to hospital rose steadily from around 550 a day at the end of May to more than 2200 in the second week of July. However, this has since begun to drop, to around 1700 in late July. Daily deaths with covid-19 recorded on the death certificate also rose from the beginning of June, from around 30 to a high of 134 in mid-July.<sup>4</sup>

The US Centers for Disease Control and Prevention reported on 22 July that cases, deaths, and hospital admissions were all rising, fuelled by BA.5, which accounted for an estimated 78% of cases. The seven day daily average of new hospital admissions was 6180 (13-19 July), a 4.7% increase from the previous week (5902).<sup>5</sup> It has since started to drop.

In China, reports suggest that the country is bracing for yet more lockdowns as the omicron subvariants continue to spread.<sup>6</sup>

### Do current covid vaccines work against BA.5?

The US Food and Drug Administration has warned that the effectiveness of current vaccines against SARS-CoV-2, which are based on the original virus found in Wuhan, has begun to wane against omicron variants. After a meeting at the end of June the FDA said that its advisory committee had voted in favour of rolling out an updated version of the vaccine for omicron as a booster in autumn 2022.

In a statement the FDA said, "Vaccine manufacturers have already reported data from clinical trials with modified vaccines containing an omicron BA.1 component, and we have advised them that they should submit these data to the FDA for our evaluation prior to any potential authorization of a modified vaccine containing an omicron BA.4/5 component."<sup>7</sup>

### What about BA.2.75?

This subvariant, like BA.4 and BA.5, has evolved from BA.2. First detected in India in May,<sup>8</sup> BA.2.75 has garnered numerous headlines raising concerns over its immune evasion ability. However, despite these worries, it does not appear to have taken hold in any of the countries in which it has been detected.

Eric Topol, professor of molecular medicine at the Scripps Research Institute in California, says, "We've seen BA.2.75 appear in many countries around the world, and in none of those places is there any evidence of spread. The only places are two provinces in India where there hasn't been BA.5. So there's no evidence it can compete with BA.5. It's not trivial to India, but it's just not getting routed anywhere else."

### Why is BA.2.75 being called centaurus?

"Centaurus" has been bandied around by numerous media outlets, mostly with no explanation as to its origin. It seems to have originated in social media and was born out of frustration that these new subvariants were all being referred to as omicron, an umbrella variant that has been associated with the idea of mild covid-19.

### Are more covid restrictions needed?

Stephen Griffin, associate professor in the University of Leeds school of medicine, believes so, although he emphasises that restrictions do not mean lockdowns but rather individual actions such as mask wearing. He said, "Let's remember that the R number is only just above 1 in the UK—for all of our mixing and for all of our ignorance at the moment of what's going on, we're talking 1.3 or 1.4. The effort involved in getting that back down wouldn't be that hard."

Topol says, "We know BA.5 is not where this ends, unfortunately. We have further variants to work through for an indeterminate period of time. It's a matter of when not if at this point. I really liken this to the boiling frog. We keep thinking it's not so bad right now, with BA.5, that we'll get through it. But actually it's worse than any prior variant."

Christina Pagel, professor of operational research at University College London, is most worried about the cumulative effect. “This is our third wave this year. What worries me is that with every wave we take out a few more people, in terms of the people who, sadly, died, which is fewer than it was, but it’s by no means trivial. We’ve still had almost 50 000 deaths since last summer.”

Competing interests: None declared.

Provenance and peer review: Commissioned; not externally peer reviewed.

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