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Coronavirus

Stopping coronavirus variants

We failed to prevent the emergence of omicron, but there are things we can do to halt the evolution of more variants, reports **Michael Le Page**

WE ARE witnessing the scenario that many people feared unfold before our eyes. The new omicron variant of the coronavirus can largely evade prior immunity and is spreading with alarming rapidity.

And the really bad news is that there is every reason to think more dangerous variants will emerge in the future. So is there anything we can do to prevent this, or at least to slow the process?

“There is absolutely something that can be done,” says Aris Katzourakis at the University of Oxford.

What needs doing depends on how variants arise, and there are several potential pathways. The first is that the coronavirus can gradually acquire mutations as it spreads from one person to another. This is how the beta and delta variants formed.

In this case, we need to do all we can to keep transmission as low as possible. For starters, that means vaccinating as many people as possible, perhaps with updated vaccines. “Will fully vaccinating everyone reduce the chance of new variants?” says Katzourakis. “I would say almost certainly yes.”

Other measures, such as mask mandates and better ventilation in buildings, will be required, too.

Unfortunately, all this might not prevent variants such as alpha and omicron forming. Both seemed to appear out of nowhere with a whole bunch of mutations. It is possible they evolved undetected in a region without genetic surveillance capabilities, but it is more likely that each evolved over a period of months in an immunocompromised individual.

If that is the case for the omicron variant, that would undercut the suggestion made by many – including the head of the World Health Organization – that

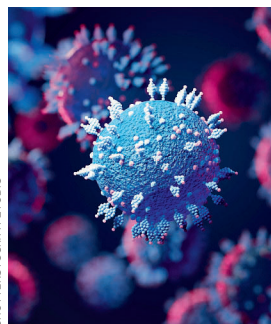


THAGO PRUDENCIO/SOPA IMAGES/SHUTTERSTOCK

Halting the spread of covid-19 is the best way to combat new variants

“Will fully vaccinating everyone reduce the chance of new variants? I would say yes”

An illustration of the delta coronavirus variant



SHUTTERSTOCK/PTZTUDIO

it arose because of the failure to distribute vaccines fairly.

“It’s uncertain whether vaccination would have prevented this,” says Deepti Gurdasani at Queen Mary University of London. “I think global equity is vitally important. But I don’t think there’s necessarily a causal link.”

What we do need to do is to ensure that people who are immunocompromised get at least three vaccine doses, and that those who are HIV positive are getting effective treatment, which ensures they get as much protection from vaccination as anyone else. This is the right thing to do anyway, says Katzourakis, quite apart from combating new variants.

With omicron, it is also possible that the virus jumped to other animals, mutated and then jumped back to people, a phenomenon known as reverse zoonosis. Omicron has some mutations thought to be linked to adaptation to rodents.

Vivek Kapur at Pennsylvania State University, whose team

recently found “gobsmacking” levels of SARS-CoV-2 in deer in the US, thinks it is likely that the virus is circulating undetected in other species, too. You cannot even begin to work out how to prevent spill-back from animal reservoirs if you don’t even know they exist, he says.

There might be another, rather surprising way that a variant could suddenly acquire a whole lot of mutations: it could happen in someone being treated with certain drugs. Some virologists think there is a risk with antiviral medication molnupiravir – which is meant to work by inducing so many viral mutations it kills the virus – and that it should be withdrawn.

Finally, in people infected with two viruses at once, there is the possibility of SARS-CoV-2 variants recombining with each other or with other human coronaviruses. There is great scepticism about a claim that omicron acquired one of its mutations this way, but there is evidence of recombination between SARS-CoV-2 variants.

The fewer people that are infected, the lower the chances are of this happening, so measures for minimising transmission will also reduce the risk of recombination. Indeed, however new variants arise, says Katzourakis, if we make it as hard for the virus to spread as possible, they may fizzle out rather than taking off.

What is clear is that none of this will be easy. Several countries that were previously successful in fighting off the coronavirus, such as New Zealand, have been struggling to control delta, let alone omicron. But if we don’t do more, we will soon end up battling rho, sigma and then upsilon. We might not be able to prevent that entirely, but we can at least buy more ourselves time. ■