Publication: Laudium Sun

Date: Friday, October 29, 2021

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Ebb and flow of Covid-19 tides puzzles top scientists

The period between waves in SA ranges from 94 to 99 days, with high-risk events having little impact on this

SA scientists are puzzled about why high rates of Covid-19 transmission occur in waves three months apart, with apparently risky behaviour between them having little effect on case numbers.

"We have seen that the SARS-CoV-2 epidemic occurs in waves, even when high-risk events occur during low transmission," said infectious diseases expert Prof Salim Abdool Karim, who noted that the period between waves in SA ranged from 94 to 99 days.

However, Covid-19 transmission between waves remained "very low", regardless of viral variants or immunity levels in communities.

"Community immunity levels differed markedly at the end of the first, second and third waves, but all have led to interwave quiescent [inactive] periods," Abdool Karim said.

IN NUMBERS

266,496: SA Medical Research Council estimate of excess deaths by October 16, most of which it attributes to Covid-19

88,587: Official Covid-19 death toll by October 16

"It seems to take a major superspreading event to change this interwave low transmission to high transmission within the three-month interwave period, as we saw with religious festivals in India."

Smaller increases in risk, however, did not have a large effect on the interwave period, though the looting in KwaZulu-Natal in July did cause the downward reduction in case numbers to slow shortly afterwards.

Karim, who holds posts at the University of KwaZulu-Natal (KZN), as well as the US's Cornell, Harvard and Columbia universities, and who has just been elected to the International Science Council, said there was no scientifically evident answer to the question.

"After the first wave, we had low levels of natural immunity, and the Beta variant could break through natural immunity anyway, yet it did not cause the second wave until after the three-month interwave period."

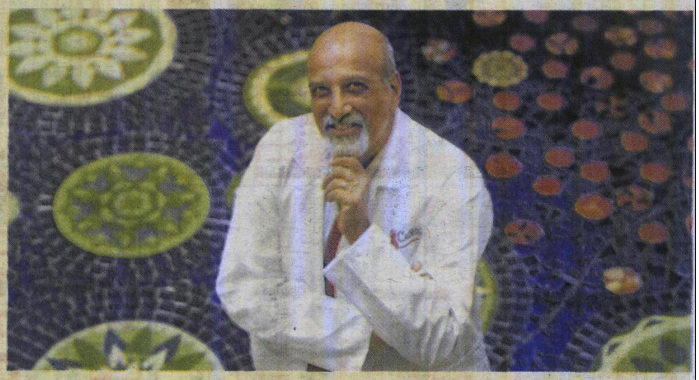
This suggested it was not a simple matter of herd immunity, but a more complex set of biological and behavioural factors involving community immunity, the presence of new variants and population behaviour.

"The truth is we don't yet know the causes," he said.

So what might the fourth wave look like?

According to head of virology at Stellenbosch University Prof Wolfgang Preiser, "the risk of a fourth wave is there and the big holidays in December seem like a possible time period".

He added, "I would hope that its severity in terms of numbers of severe cases and deaths would be lessened, thanks to the vaccination programme. However, there are huge gaps still and many remain unprotected ... plus one hopes there won't be any nasty variants coming our way."



Wits vaccinology professor Shabir Madhi said the fourth wave "will probably start from December onward, [but its] severity is likely to be less than in the past regarding severe cases and deaths".

This would be due to "the high force of past infection coupled with an ongoing increase in vaccine coverage which will induce protection, especially against severe disease and death".

He said SA could, however, "be back to the drawing board" if "major immune-evasive mutations arise".

Even then, however, natural and vaccine-induced immunity could work in our favour.

According to Foster Mohale, on behalf of the department of health, by the end of last Thursday 14,568,927 people were fully vaccinated, with more than 13,000 adolescents aged 12 to 17 having received their first dose of Pfizer.