Vaccines that are under 100% effective can curb outbreaks

Ref Kamhl

A Covid-19 vaccine that is effective for just 80 per cent to 95 per cent of people should be good enough to keep the outbreak in check, if everyone is vaccinated.

In fact, 70 per cent efficacy would be very good because even recovery from the infection will not give a patient 100 per cent protection, said Professor Ooi Eng Ying, deputy director of Duke-NUS Medical School's emerging infectious diseases programme.

"Whether Covid-19 gives you lifelong protection or short-lived protection, that is something that is being debated," she said.

"Obviously, there is still some tiny minority that, despite having had a natural infection in the past, they go on to get it again."

"Not everyone will have that, but that hardly tells you that there is no such thing as imperfect protection. So, having 70 per cent efficacy is good enough," she said.

Dr Ooi also noted that if 70 per cent of the population is vaccinable, this means three out of 10 who receive the vaccine will be susceptible to the virus.

But Prof Ooi said this would be good enough as vaccines do not just work on the individual.

Those who are vaccinated will also protect others around them who are not immune simply by not becoming carriers, he pointed out, adding that this is the concept of herd immunity.

Under normal circumstances, he explained, one infected person will pass the virus to two or three people because of the contacts they make in daily lives.

With physical distancing, these contacts are removed, so a person would pass the virus to fewer than one other person, and the outbreak would die.

"Now, in a vaccinated population even if you don't have the social contacts, one person will come in contact with those people and exponentially pass on, but two of those people are already immune, so you can only pass it on once," he added.

"This would have a big impact on reducing the outbreak and keeping it well below the kind of transmission needed for the virus to cause these pandemics."

Vaccines are typically more effective among young people, but Covid-19 tends to be more severe among older patients.

Asked if older people are more likely to remain vulnerable even after being vaccinated, Prof Ooi said it would be good enough for the younger people to be "safely immune," as they would then not pass the virus on.

"Herd immunity is so effective that it has helped humanity eradicate smallpox, Prof Ooi said.

"You just have to vaccinate 80 per cent of the population and the virus will not have the chance of causing an epidemic," she said.

"Likewise, how we keep measles, mumps, rubella, chickenpox, and that at bay so far is to keep a high level of herd immunity vaccinated."

"Not 100 per cent, but about 90 per cent of the population is vaccinated with the MMR vaccine. This 90 per cent will protect the remainder 10 per cent," she added.

Singapore, therefore, does not need to have 100 per cent immunity to Covid-19 in the population, said Ooi, adding that the country just needs enough people to be immune to stop the virus from replicating.

"Given that this virus spreads from one person to three others, I say 50 per cent is about 50 per cent of the population, if we vaccinate everyone, we will be just sufficient to completely eliminate outbreaks in Singapore."