Singapore

COVID-19 patients can 'shed high load of virus' in first week, irrespective of symptoms: Singapore study

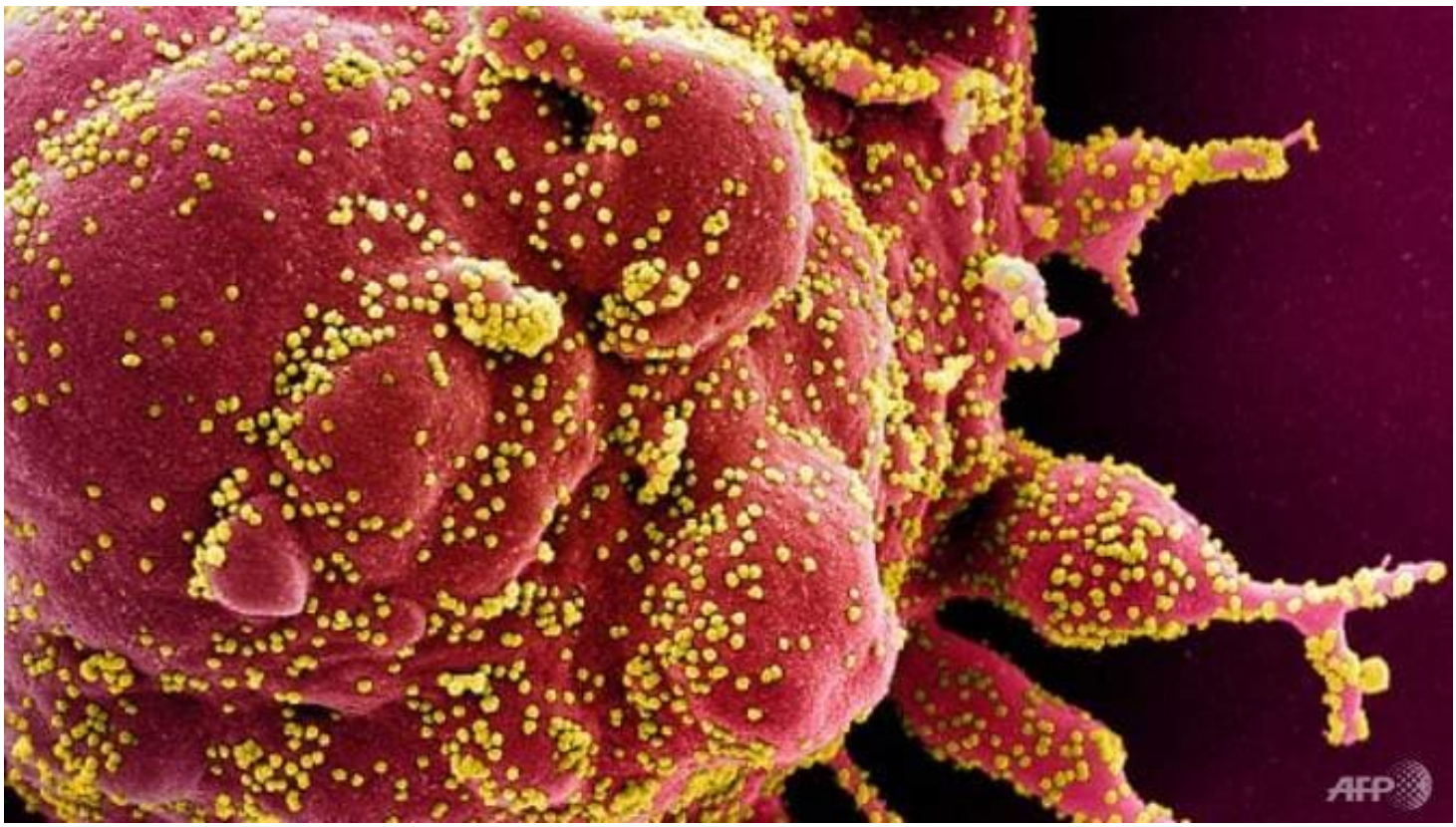

Image from the National Institute of Allergy and Infectious Diseases (NIAID) shows a colorised scanning electron micrograph of an apoptotic cell in red heavily infected with SARS-CoV-2 virus in yellow. The SARS-CoV-2 virus causes COVID-19. (Handout: NIAID via AFP)

By Nicole Chang (/author/7973444)
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SINGAPORE: COVID-19 patients can shed high loads of the novel coronavirus into the air and onto surfaces in their first week of illness, irrespective of their symptoms, according to a recent Singapore study published by the National Centre for Infectious Diseases (NCID).

However, the possibility of a patient infecting others through contaminated surfaces is “negligible” after the second week of illness, said NCID in a media release on Friday (Jun 19).

CNA Article (News Singapore)
COVID-19 patients can 'shed high load of virus' in first week, irrespective of symptoms: Singapore study

The study was published in collaboration with Duke-NUS Medical School and DSO National Laboratories on May 29 in the Nature Communications science journal. It also suggested a further possibility that novel coronavirus could be dispersed as an aerosol.

The new research builds on earlier findings released in March, which showed that people with the novel coronavirus extensively contaminate their bedrooms and bathrooms.

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In the latest study, researchers sampled negative pressure rooms of 30 patients - three in the intensive care unit (ICU) and the rest in the general ward.

Samples were collected from high-touch surfaces including bed rails, bedside lockers, and electrical switches in all rooms. Researchers also took samples from surfaces of toilet seats and automatic flush buttons in the general ward rooms.

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Results showed that high-touch surface contamination was "significantly higher" in the rooms of patients in their first week of illness.

However the extent of contamination declined as the duration of the illness increased, while no surface contamination was found in any of the three intensive care rooms.

"This could be an indication that patients in ICU shed less virus as they are usually in their second week of illness," said NCID.

SARS-COV-2 DETECTED IN AIR SAMPLES

Air samples at different heights were also taken from three rooms in the general ward.

Results showed that small SARS-CoV-2 particles were present in the air in two of the three rooms tested.

Both patients were on day five of their illness with high viral loads, while the third patient was on day nine of the illness and had a lower viral load concentration.

This suggests that "the presence of SARS-CoV-2 in the air is possibly highest in the first week of illness", said NCID.

In addition, the size of the particles found were small enough to suggest that they could be dispersed as an aerosol, said researchers, adding that this warranted further study.

"However, in our opinion, this finding alone is insufficient to prove that SARS-CoV-2 is airborne as the viability of the virus in the air will need to be proven," said Dr Kalisvar Marimuthu, senior consultant at NCID and principal investigator of the study.

Particles were detected in aerosols about one to two metres from the head of patient's hospital bed, said Dr Kristen Coleman, research fellow from the emerging infectious diseases programme at Duke-NUS Medical School

"Our next step is to determine the proportion of expelled viruses that are infectious. This is what the world is waiting to know," she added.

The findings come after other research suggested a similar dispersal method, with researchers citing a study from Wuhan, China which sampled three different environmental settings and "detected aerosol size range particles".

Additionally, a recent laboratory study in the New England Journal of Medicine demonstrated the ability of SARS-CoV-2 to remain viable in aerosols for up to three hours.

The World Health Organization has said COVID-19 is spread mainly through droplets. It has also noted (https://www.who.int/news-room/commentaries/detail/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations) that airborne transmission may be possible in certain procedures in healthcare settings.

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