Covid-19 patients most infectious in 1st week of illness, but odds of transmission significantly reduced after 2nd week: S'pore study

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The findings of the study will help authorities debunk public misconceptions about the infective nature of the coronavirus and "minimise social discrimination of

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in 368 Shares Published 20 JUNE, 2020 UPDATED 20 JUNE, 2020

SINGAPORE — The odds of Covid-19 patients infecting others through the air and

discharged patients", said the researchers.

Singapore study

researchers said.

from nasopharyngeal swabs.

infectious after Day 11 of illness.

contaminated surfaces peak in the first week of illness. But after the second week, the possibility of infecting others becomes negligible, said

patients were treated. These were the findings from a recent study by researchers from the National Centre for Infectious Diseases (NCID), Duke-NUS Medical School and DSO National Laboratories.

Singapore researchers who tested air and surface samples of hospital rooms where Covid-19

The results were published in the Nature Communications scientific journal late last month.

This follows earlier research from Singapore in March, which showed that coronavirus patients widely contaminate their bedrooms and bathrooms.

in a press statement released on Friday (June 19) — is only the second in the world to examine particle-size distribution of Sars-CoV-2, the virus that causes Covid-19, in the air surrounding patients. Read also: Coronavirus lingers in rooms and toilets but disinfectants kill it:

The latest study — the findings of which were announced



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Researchers tested surface samples in 30 negative-pressure hospital rooms that are designed to isolate airborne infectious diseases.

More than 200 surface samples were taken from the rooms — three in the intensive care unit (ICU) and 27 in the general ward.

using bio-aerosol samplers at different heights — 1.2m, 0.9m and 0.7m — near the air exhaust in the wards for four hours. To test surface contamination, samples were collected from surfaces that were frequently

Air samples were taken from three of the general wards, where Covid-19 patients in various

stages of illness were treated. To test air contamination, researchers collected particles

FINDINGS The study found that the presence of contamination on high-touch surfaces was

Also sampled were toilet seats and automatic flush buttons in the general ward rooms.

touched, including bed rails, bedside lockers, bed control panels and call bells.

significantly higher in the rooms of patients during their first week of illness.

symptoms. The floor was most likely to be contaminated (65 per cent), followed by the air exhaust vent

The toilet seats and flush buttons of rooms housing five patients were found to be

(60 per cent), bed rail (59 per cent) and bedside locker (47 per cent).

showed that patients could shed high virus loads on surfaces, irrespective of their

Although seven of the 30 patients were asymptomatic during the sampling, the study

The extent of contamination declined over time.

sampling. No surface contamination was detected in the three ICU rooms, indicating that patients in intensive care shed less virus as they are usually in the second week of illness, the

contaminated. All five occupants had reported gastrointestinal symptoms within a week of

The three rooms in the general wards that were tested for air contamination also showed varying results. Sars-CoV-2 particles, between 1 and 4 micrometres (or microns) in diameter, were reported

There was no sign of the coronavirus in the air samples of the third room. The patient was on the ninth day of illness, with lower nasopharyngeal viral loads.

Dr Kalisvar Marimuthu, a senior consultant at NCID and the study's principal investigator,

said these findings supported other studies, which showed that Covid-19 patients are not

in two rooms. Both patients were on the fifth day of illness with high viral loads derived

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said these findings supported other studies, which showed that Covid-19 patients are not infectious after Day 11 of illness. The findings, he said, also revealed that the virus is present in a particle size small enough

Dr Kalisvar Marimuthu, a senior consultant at NCID and the study's principal investigator,

is airborne, as "the viability of the virus in the air will need to be proven", he added. Professor Leo Yee Sin, NCID's executive director, said that current epidemiological findings of coronavirus transmission also do not point to airborne transmission on the scale of

to suggest aerosolising potential. But this alone is insufficient to prove that the coronavirus

Dr Kristen Coleman, a research fellow with the emerging infectious diseases programme at Duke-NUS Medical School, said the next step is to determine the proportion of expelled viruses that is infectious.

"This is what the world is waiting to know," she said.

measles and varicella, the virus that causes chickenpox.

NCID, Duke-NUS Medical School and DSO National Laboratories are investigating the distance and duration over which the virus is able to travel in the air to find out its airborne potential.

They also help authorities to debunk public misconceptions about the infective nature of the

The researchers said the findings from their study show not only patterns of air and environmental contamination, which are essential for the improvement of medical standards.

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virus and "minimise social discrimination of discharged patients".