Surface Contamination Of Covid-19: How Long Can The Virus Last?

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The novel coronavirus, which is now known as COVID-19, has caused a global pandemic. It is known that the main transmission routes of the novel coronavirus are through droplets, close human-to-human contact, and contact with inanimate surfaces contaminated by the virus. Thus, it is important to find out how long SARS-CoV-2 can remain viable on different surfaces. A study by van Doremalen et al. (2020) found that SARS-CoV-2 can remain viable for up to 72 hours on plastic and stainless steel surfaces, 4 hours on copper, and 24 hours on cardboard. Chin et al. (2020) reported that SARS-CoV-2 could persist on wood and cloth for 2 days, and could last for 4 days on glass and banknotes. These findings indicate that viral contamination of object surfaces is an important and dangerous factor in spread of disease, emphasizing the urgent need for prevention strategies against transmission of infection through contact with inanimate surfaces.

In December 2019, cases of pneumonia caused by the novel β-coronavirus first occurred in Wuhan, China, and went on to cause a global pandemic. On February 11th 2020, WHO officially named the new coronavirus disease as Coronavirus Disease 2019 (COVID-19).[1] The routes of transmission known are through droplets, direct human-to-human contact, and indirect contact via contaminated surfaces of inanimate objects.[2]

Indirect contact has become one of the most important contributors to disease spread, supported by findings from several studies. A study by Ong et al. (2020) has reported the presence of SARS-CoV-2 in samples from patients' rooms taken before routine cleaning, found especially on air outlet fans and the toilet area (sink, and door handles).[3] Ye et al. (2020) found that the virus could be found on various environmental surfaces throughout the hospital, commonly used hospital objects such as keyboards and doorknobs, medical equipments, and also personal protective equipments, mainly from hand sanitizer dispensers and gloves,[2] while another study have found an especially high positive rate of SARS-CoV-2 from floor swab samples.[4] A study by Chia et al. (2020) reported that the highest concentrations of SARS-CoV-2 in the air and on surfaces in a patient's environment are found during the first week of COVID-19 illness.[5]

Chin et al. (2020) found that the stability of SARS-CoV-2 varies on different types of surfaces and in varying environmental conditions, and is significantly affected by temperature.[6] The virus remained viable for 2 days on wood and cloth, while it could last longer, for up to 4 days, on glass and banknotes. SARS-CoV-2 is very stable in a temperature of 4^{o}C, with an estimated reduction of only 0,7 log unit of its infectious tire by the 14th day, while a temperature of 70^{o}C could shorten its inactivation time into only 5 minutes.[6]

A study by Doremalen et al. (2020) comparing the stability and rate of decay of SARS-CoV-2 and SARS-CoV-1 looked at five different media and environmental surfaces including aerosols, plastic, stainless steel, copper, and cardboard.[7] The results of this study revealed that SARS-CoV-2 could remain viable on plastic and stainless steel surfaces for 72 hours, on cardboard for 24 hours, on copper for 4 hours, and for 3 hours in aerosols.[7] On the other hand, although SARS-CoV-1 remained detectable in aerosols, on plastic, and on stainless steel for a similar duration, the results were different on cardboard and copper, which was 8 hours for both.[7] In comparison, MERS-CoV lasted for 48 hours on steel and on plastic.[8]

Although SARS-CoV-2 share some characteristics with SARS-CoV-1, they are not entirely the same. The same is true as with MERS-CoV. SARS-CoV-2 could remain viable for up to days on inanimate surfaces, highlighting the risk of transmission of the virus through this route.

The importance of through environmental cleaning cannot be underrated. Available evidence has shown that current decontamination measures performed in hospitals are sufficient.[3]

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