

Coronavirus Pandemic

Aerosol and surface persistence: Novel SARS-CoV-2 versus other coronaviruses

Kewal Krishan¹, Tanuj Kanchan²

¹Department of Anthropology, Panjab University, Chandigarh, India

²Department of Forensic Medicine and Toxicology, All India Institute of Medical Sciences, Jodhpur, India

Abstract

The present communication emphasizes on a very pertinent issue of aerosol transmission, persistence and surface viability of novel SARS-CoV-2. Studies in this regard have been conducted on previously known human coronaviruses, and similarities have been drawn for novel SARS-CoV-2. The communication highlights that caution should be exercised while drawing inferences regarding the persistence and viability of the novel SARS-CoV-2 based on the knowledge of already known human coronaviruses.

Key words: COVID-19; Novel coronavirus; SARS-CoV-2; Human coronaviruses; Aerosol and surface stability.

J Infect Dev Ctries 2020; 14(7):748-749. doi:10.3855/jidc.12887

(Received 24 April 2020 – Accepted 08 July 2020)

Copyright © 2020 Krishan *et al.* This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Coronavirus disease 2019 (COVID-19) caused by novel coronavirus SARS-CoV-2, has so far infected more than 15 million people and is responsible for the death of about 0.64 million people globally [1]. It is a well-established fact that the novel coronavirus is a highly contagious virus [2] that is transmitted from human to human through aerosols generated during sneezing, coughing, speaking as well as through the virus contaminated surfaces [3,4]. Knowledge about the aerosol transmission, persistence and surface stability of novel SARS-CoV-2 is vital for containment of the rapidly transmitting SARS-CoV-2. Studies in this regard have been conducted on previously known human coronaviruses, and similarities have been drawn for novel SARS-CoV-2 [5,6]. At room temperature, the other human coronaviruses may remain viable between 2 and 9 days on various surfaces. The SARS-CoV may remain infectious for about 4 to 5 days on metal, wood, paper, glass, plastic surfaces [5,6]. It is pertinent to mention that the observations made for the already known group of coronaviruses may not apply to novel SARS-CoV-2, that is shown to be genetically, epidemiologically and clinically different from other coronaviruses [7]. SARS-CoV-2 differs from other coronaviruses in terms of severity, endemicity, transmission and viral shedding. In light of the above, variance in its persistence, tenacity and the environmental distribution with the other coronaviruses is quite likely. The significant differences between the

stability and persistence of novel coronavirus SARS-CoV-2 in comparison with the other human coronaviruses, thus, need to be emphasized.

One of the recent studies [8], emphasizes that the novel SARS-CoV-2 is more stable on smooth surfaces. No viable virus was found on treated wood and cloth on the second day, none on glass and bank note on the fourth day, and none on stainless steel and plastic surfaces on the seventh day. The virus was not found on printing and tissue papers after 3 hours. Another research [9] shows that the SARS-CoV-2 may remain infectious in the air for up to 3 hours, up to 3 days on plastic and stainless steel. Copper may retain the virus up to 4 hours, and the virus stays on the cardboard for one day.

In the present times, there is an urgent need to develop an understanding of the perseverance and tenacity of SARS-CoV-2 on various surfaces and in the aerosol so that necessary precautions can be recommended for the health care workers and general public as well. In this regard, it would not be incorrect to suggest that, one should exercise caution while applying inferences drawn on previously existing coronaviruses to novel SARS-CoV-2.

Acknowledgements

Kewal Krishan is supported by a DST PURSE grant and UGC Center of Advanced Study, CAS II awarded to the

Department of Anthropology, Panjab University,
Chandigarh, India.

References

1. Coronavirus Disease (COVID-19), WHO Situation report no. 188 (2020), Available: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200726-covid-19-sitrep-188.pdf?sfvrsn=fl77c3fa_2. Accessed 27 July 2020.
2. Kelvin DJ, Rubino S (2020) Fear of the novel coronavirus. *J Infect Dev Ctries* 14: 1-2. doi: 10.3855/jidc.12496.
3. Ralph R, Lew J, Zeng T, Francis M, Xue B, Roux M, Toloue Ostadgavahi A, Rubino S, Dawe NJ, Al-Ahdal MN, Kelvin DJ, Richardson CD, Kindrachuk J, Falzarano D, Kelvin AA (2020) 2019-nCoV (Wuhan virus), a novel Coronavirus: human-to-human transmission, travel-related cases, and vaccine readiness. *J Infect Dev Ctries* 14: 3-17. doi: 10.3855/jidc.12425.
4. Contini C, Di Nuzzo M, Barp N, Bonazza A, De Giorgio R, Tognon M, Rubino S (2020) The novel zoonotic COVID-19 pandemic: An expected global health concern. *J Infect Dev Ctries* 14: 254-264.
5. Kampf G, Todt D, Pfaeder S, Steinmann E (2020) Persistence of coronaviruses on inanimate surfaces and its inactivation with biocidal agents. *J Hosp Infect.* 104: 246-251.
6. Fathizadeh H, Maroufi P, Momen-Heravi M, Dao S, Köse Ş, Ganbarov K, Pagliano P, Esposito S, Kafil HS (2020) Protection and disinfection policies against SARS-CoV-2 (COVID-19). *Infez Med.* 28: 185-191.
7. Ceccarelli M, Berretta M, Venanzi Rullo E, Nunnari G, Cacopardo B. (2020) Differences and similarities between Severe Acute Respiratory Syndrome (SARS)-CoronaVirus (CoV) and SARS-CoV-2. Would a rose by another name smell as sweet? *Eur Rev Med Pharmacol Sci*, 24: 2781-2783.
8. Chin AWH, Chu JTS, Perera MRA, Hui KPY, Yen HL, Chan MCW, Peiris M, Poon LLM (2020) Stability of SARS-CoV-2 in different environmental conditions. *The Lancet Microbe*, 1:e10 Available: [https://www.thelancet.com/pdfs/journals/lanmic/PIIS2666-5247\(20\)30003-3.pdf](https://www.thelancet.com/pdfs/journals/lanmic/PIIS2666-5247(20)30003-3.pdf). Accessed 27 July 2020.
9. Van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, Tamin A, Harcourt JL, Thornburg NJ, Gerber SI, Lloyd-Smith JO, de Wit E and Munster VJ (2020) Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *New Eng J Med.* 382: 1564-1567.

Corresponding author

Kewal Krishan, PhD, FRAI
Associate Professor and Former Chair,
Department of Anthropology,
Panjab University, Sector-14,
Chandigarh-160 014, India
Phone: +91-9876048205 (Mobile)
Fax +91 172 254 1022
E-mail: gargkk@yahoo.com, kewalkrishan@pu.ac.in

Conflict of interests: No conflict of interests is declared.