SARS-CoV-2 on Surfaces, Objects, PPE and Medical Equipment:

As early into the pandemic as March 2020 researchers demonstrated that SARS-CoV-2, the virus that causes COVID-19, can contaminate different materials for hours up to multiple days (including 24 hours for cardboard and 72 hours for plastic and stainless steel). Since this study, even more research has been conducted showing that SARS-CoV-2 contaminates surfaces, PPE, and medical equipment in healthcare settings:

A June 2020 study showed that SARS-CoV-2 can survive for days on PPE and common materials that make up medical equipment:

-14 days on stainless steel
-21 days on plastic face shields
-21 days on N95 respirators
-4 days on chemical resistant gloves
-7 days on nitrile gloves
-14 days on Tyvek coveralls

A July 2020 study found contamination of surfaces and medical equipment with SARS-CoV-2 in nursing homes. Researchers demonstrated contamination at all three facilities they studied, finding SARS-CoV-2 on "surfaces of 5 frequently used medical devices transferred between patient rooms, and 1 high-touch surface used by care staff in the course of providing patient care. The detection of SARS-CoV-2 virus on medical devices, such as blood pressure cuffs, used between residents supports the possibility that environmental contamination may be a route for the spread of COVID-19 disease within health care facilities."

A July 2020 study in hospital wards in China showed "virus was widely distributed on floors, computer mice, trash cans, and sickbed handrails and was detected in air ≈4 m from patients"

An August 2020 study similarly found many surfaces, commonly used objects, medical equipment, and PPE were contaminated with SARS-CoV-2 in multiple areas of a large Chinese hospital.

A September 2020 study, published on the CDC website found SARS-CoV-2 after 96 hours remained on plastic, glass, and aluminum. The study concluded that "a moderate protein concentration in droplets markedly increased the infectivity of SARS-CoV-2, suggesting that a protein-rich medium like airway secretions could protect the virus when it is expelled and may enhance its persistence and transmission by contaminated fomites. Accordingly, it is plausible that fomites infected with SARS-CoV-2 play a key role in the indirect transmission of coronavirus disease (COVID-19). This finding supports surface cleaning as a necessary action that should be enforced and repeated because it may play a key role in halting SARS-CoV-2 transmission and mitigating the COVID-19 pandemic."

The above research clearly demonstrates that SARS-CoV-2 survives on surfaces, materials, and equipment in healthcare settings for long periods of time and is a potential source of virus transmission. Indeed, the CDC and World Health Organization both recognize contact with the virus on surfaces and objects (i.e. fomite transmission) as one of the ways that SARS-CoV-2 spreads. The WHO even cites 11 different studies in its statement on fomite transmission which are all listed below (including some already cited above).

This abundance of scientific evidence, coupled with CDC and WHO guidance, demonstrates that healthcare workers handling equipment and materials that have made contact with suspected and confirmed COVID-19 patients are at risk for exposure to and infection with SARS-CoV-2. Therefore, these workers should receive the same PPE and hazard pay provided to their colleagues engaged in direct patient care.

World Health Organization list of studies on fomite transmission:

Van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. N Engl J Med. 2020;382:1564-7.

Chia PY, for the Singapore Novel Coronavirus Outbreak Research T, Coleman KK, Tan YK, Ong SWX, Gum M, et al. Detection of air and surface contamination by SARS-CoV-2 in hospital rooms of infected patients. Nat Comm. 2020;11(1).

Juo Z-D, Wang Z-Y, Zhang S-F, Li X, Li L, Li C, et al. Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020. Emerg Infect Dis. 2020;26(7).

Zhou J, Otter J, Price JR, Cimpeanu C, Garcia DM, Kinross J, et al. Investigating SARS-CoV-2 surface and air contamination in an acute healthcare setting during the peak of the COVID-19 pandemic in London (pre-print). MedRxiv. 2020 doi: 10.1101/2020.05.24.20110346.

Ma J, Qi X, Chen H, Li X, Zhan Z, Wang H, et al. Exhaled breath is a significant source of SARS-CoV-2 emission (pre-print). MedRxiv. 2020 doi: 10.1101/2020.05.31.20115154

Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, et al. Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. JAMA. 2020 323(16):1610-1612.

Taskforce for the COVID-19 Cruise Ship Outbreak, Yamagishi T. Environmental sampling for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during a coronavirus disease (COVID-19) outbreak aboard a commercial cruise ship (pre-print). MedRxiv. 2020.

Döhla M, Wilbring G, Schulte B, Kümmerer BM, Diegmann C, Sib E, et al. SARS-CoV-2 in environmental samples of quarantined households (pre-print). MedRxiv. 2020 doi: 10.1101/2020.05.02.20088567.

Cheng VCC, Wong SC, Chen JHK, Yip CCY, Chuang VWM, Tsang OTY, et al. Escalating infection control response to the rapidly evolving epidemiology of the coronavirus disease 2019 (COVID-19) due to SARS-CoV-2 in Hong Kong. Infect Control Hosp Epidemiol. 2020;41:493-8.

Matson MJ, Yinda CK, Seifert SN, Bushmaker T, Fischer RJ, van Doremalen N, et al. Effect of Environmental Conditions on SARS-CoV-2 Stability in Human Nasal Mucus and Sputum. Emerg Infect Dis. 2020;26(9).

Pastorino B, Touret F, Gilles M, de Lamballerie X, Charrel RN. Prolonged Infectivity of SARS-CoV-2 in Fomites. Emerg Infect Dis. 2020;26(9).