

## COMMENTARY

# COVID cleaning

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We don't have a single documented case of COVID-19 transmission from surfaces. Not one. So why, then, are we spending a small fortune to deep clean our offices, schools, subways and buses?

Business leaders, school districts and government officials often ask us whether people are over-cleaning in response to the pandemic. The short answer is yes. The reality is that the novel coronavirus spreads mainly through the air. Especially with regular hand-washing, there's no need to constantly disinfect surfaces. The best analogy we've used for how this virus is spread is to think about a smoker. If you're near a smoker outside, you may not notice the smell, especially if you're not standing too close. But if you're indoors, you could definitely detect it, even if you're across the room, depending on how far away you are and how well-ventilated or filtered the air is. How much could you protect yourself from that smoke by scrubbing down countertops, doorknobs and all the other surfaces in the room? Not much. Shared air is the problem, not shared surfaces.

Transmission of a disease through "fomites" - the name given to any inanimate surface that can be contaminated with a virus - is certainly possible. Many viruses, such as rhinovirus and norovirus, are transmitted through contaminated surfaces. But that's just not really the case for COVID-19. We don't know exactly how much fomite transmission occurs for COVID-19, but evidence suggests it's not common. To see why, let's walk through the steps.

First, the virus must be transmitted to a surface, either by a sick person touching it or a respiratory droplet landing on it. Once on the surface, the virus starts to decay, and the only studies that show that the virus can survive on a surface for a long time used unrealistically large amounts of it - as in, someone spits a blob of saliva on the surface. The coronavirus' genetic material has been found on all kinds of surfaces in hospitals and in the air, but, interestingly, it has only been successfully cultured from the air. No data studies that we are aware of have cultured the virus from surfaces.

Even if you were the unfortunate person who immediately grabbed a door handle right after an infectious person sneezed on it, there would be a significant reduction in how much is transferred from the surface onto your hand. Then, time is your friend again, inactivating the virus, even while on your hand. But what if you touched that contaminated doorknob and then immediately touched your mouth? Not all of the virus on the hand would get transferred to the mouth, and that's not even the end of the story. The virus that did make it into your mouth would need to find an appropriate receptor there or make it to your respiratory tract. Most

important, we can prevent fomite transmission through regular hand-washing or use of hand sanitizer. Cleaning every surface after every touch is an impossible task; the easier and more effective approach is to break the chain at the person.

The intense focus on fomite transmission is a critical issue because organizations are spending massive amounts of time - and money - addressing a ghost problem. An organization one of us has worked with that provides care for the homeless has spent nearly \$150,000 on cleaning costs since July - over and above what it normally spends. A large commercial real estate firm we spoke with said it is spending \$250,000 per month on these extra services. This money and time is better spent elsewhere.

We should continue to wash our hands and pay attention to hygiene, but we only have so much time, energy and money to spend on reducing the risk of transmission. If the vast majority of transmission occurs through the air rather than fomites, and airborne transmission is what is driving super spreading events, then we should shift our effort toward cleaning shared air, not shared surfaces.

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