

How worried should I be about news the coronavirus survives on surfaces for up to 28 days?

October 14 2020, by Lara Herrero and Eugene Madzokere



Credit: AI-generated image ([disclaimer](#))

During a typical day, we touch the surfaces of many different objects, often without noticing: money, phones, door handles, elevator buttons, cups, desks, keyboards, petrol pumps and shopping trolleys.

Objects with surfaces that carry pathogens (such as bacteria or [viruses](#)) can pass on infections when we touch them. So it makes sense contact with these contaminated surfaces (often called "fomites") might increase our infection risk.

Now a [study](#) published by CSIRO researchers suggests SARS-CoV-2, the [virus](#) that causes COVID-19, can survive up to 28 days on common surfaces.

So, is this cause for panic? The answer is, not necessarily.

What did the study find?

The researchers applied SARS-CoV-2 to Australian plastic banknotes, paper banknotes, stainless steel, glass, vinyl and cotton cloth.

They exposed the objects to three different temperatures—20 degrees C, 30 degrees C and 40 degrees C—all in the dark and with 50% humidity. They then measured the amount of surviving live virus over time.

At 20 degrees C, the virus survived longer (up to 28 days) on smooth surfaces, such as glass and banknotes (both plastic and paper), than on porous surfaces such as cotton.

At 30 degrees C, the virus was not detected beyond day seven on any surface except paper banknotes, where it survived up to day 21.

At 40 degrees C, the virus was rapidly inactivated, meaning it couldn't cause infection.

What does this mean for our daily routine?

The study was designed to mimic the spread of the virus indoors on surfaces under dark conditions only. In Australia, 28 days of darkness would not be considered normal.

However, this is the first study to show long-term survival (28 days) of the virus on non-porous surfaces such as glass, steel and banknotes.

[Previous studies](#) indicated the virus survives for much shorter periods. This is from a few hours to less than seven days, inside, at temperatures under 25 degrees C, and in lit environments with varying humidity.

Although the CSIRO findings are scientifically significant, their relevance to the everyday transmission of the virus remains uncertain.

Where does this leave us?

Many of the object surfaces we touch certainly deserve consideration as sources of SARS-CoV-2 transmission. However, how long the virus survives on them depends on several environmental and other factors, not all of which researchers have sufficiently studied.

Light

Could exposing the object surfaces to light have affected the results? At this stage, we just don't know.

Other researchers have looked at the ability of a [form of ultraviolet light \(known as UVC\)](#) to inactivate the virus.

However, this form is not abundant in sunlight. So we cannot simply leave objects (possible fomites) [in the sun](#) hoping to deactivate any potential viruses hitching an unwelcome ride.

This and other research means we still don't fully understand the impact of sunlight or other sources of light on the viability of the virus on common objects under everyday conditions. This could be in the home, workplaces or shopping centers, or in enclosed spaces such as in cars or on public transport.

Most of the research so far on using light to inactivate the virus has focused on hospitals or other controlled settings, and using artificial light.

Humidity

Humidity is also likely to play a role in the survival of SARS-CoV-2, but there is no certainty on what the role is.

Most studies analyzing humidity have been [observational](#), meaning researchers are observing the spread of virus in a population under certain weather conditions.

So far observations are that increasing humidity may be worse for virus survival.

This has also been demonstrated in a laboratory, with increasing humidity [decreasing the virus' survival](#) on fomites. However we're not certain whether this is relevant to everyday life.

Type of secretion

We know the virus is mainly transmitted through the air, by inhaling respiratory secretions containing the virus.

While there is [ongoing debate](#) about whether the virus is spread via

droplets or is airborne, this is merely a debate on how small a particle can be while still successfully transferring the virus and causing infection.

Research to conclusively prove SARS-CoV-2 can be transmitted via micro particles (5 micrometers or less, the definition of airborne transmission) is still [ongoing](#).

For now, if a SARS-CoV-2 infected person coughs, sneezes or wipes respiratory secretions onto an object, this object may become a fomite.

In a nutshell

The CSIRO study furthers our understanding of SARS-CoV-2. However, it does not suggest fomites are a significantly greater source of infection than what we are currently managing with existing COVID-19 hygiene practices.

We need to continue frequently washing and sanitizing our hands and surfaces, wearing personal protective equipment such as masks if in high-risk situations or when mandated, and physically distancing.

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