

How to act with books in the face of the risk of COVID-19 contagion

Diseases can be transmitted directly or indirectly. Directly contagion is spread when microorganisms pass from the infected person to the healthy person through direct contact, i.e. when individuals touch, have sex or become contaminated with secretions or wounds of the infected person. This is the case with hepatitis B, HIV/AIDS or genital herpes.

Other diseases do not need direct contact between infected and healthy individuals, but are indirectly transmitted by the spread in the air of microscopic saliva or water particles produced by the infected person by coughing or sneezing. These drops can travel small distances, usually no more than two meters from the emitter. They can also remain suspended in the air for several hours, such as measles. However, most of these microscopic drops come into contact with nearby surfaces such as a mobile phone, a glass, a counter in a bar, or a product placed on a supermarket shelf.

Logically, all objects surrounding sick people can be a focus of infection and viruses pass on to healthy individuals who have come into contact with contaminated objects and then touched their eyes, nose or mouth with their hands. Diseases transmitted through this route include chickenpox, the common cold, conjunctivitis, measles and COVID-19. Being in contact or by a sting from insects hosted by animals are another forms of indirect transmissions, but here we are not interested.

Fortunately, the virus cannot remain active for long outside of the human body. In recent days the first studies on the permanence of COVID-19 in the environment have appeared. A paper published in *The New England Journal of Medicine* [\[1\]](#) analyzes the persistence of the virus on different surfaces and concludes that it can remain viable, in the air, up to 3 hours, 4 on copper, up to 24 hours in the cardboard. In plastics and stainless steel the virus was kept at activity levels up to 72 hours later. However, another recent article [\[2\]](#) raises higher dwelling times depending on the strains. In the case of metal it could last between 5 and 9 days and up to 4 days on paper.

The permanence of the virus depends on the environmental conditions of temperature, humidity and lighting. Therefore, on the outside its behavior can be very different from that produced in the laboratory. The coronavirus TGEV, under laboratory conditions has a stability of 3 to 28 days at 20 °C [68.0 °F], but at 4 °C [**39.2 °F**] its permanence is increased to 28 days. At 30 °C [86°F], it disappears between 4 and 96 hours (Kampf, 2020). It is also logical to think that, in humid environments, the virus would have greater stability than in dry conditions. Finally, the disinfectant effect of ultraviolet radiation is well known: excessive natural lighting on strongly sunny days contributes to reducing viral load in the environment.

In addition to prophylaxis, active measures are the most effective in the fight against COVID-19. Cleaning with disinfectants is very effective and this is continuously affecting the health authorities. Washing your hands with soap for more than 20 seconds is definitely the best personal protective measure. With regard to the cleanliness of contaminated surfaces, diluted domestic bleach solutions, with a minimum sodium hypochlorite content of 0.1%, those containing 0.5% oxygenated water, alcoholic solutions with a content of more than 70% ethanol or isopropyl alcohol and most common household disinfectants registered by the EPA should be effective against coronavirus [\[3\]](#).

At this point, we should consider whether books need to be disinfected to prevent contagion. Our view is in contrary to disinfection. Products that are effective on hard surfaces or to disinfect plastics or clothing are harmful to both paper or inks and could cause oxidation and acidic hydrolysis of cellulose, dissolution of fiber tipped inks and annotations on pen or marker pen in addition to dimming the color. Using water as a vehicle is doubly inappropriate, as they generate weakening of the supports, deformations and solubilization of adhesives in bindings. UV radiation sterilization might seem more harmless, but it would cause strong oxidation in the supports and would only be effective in the parts exposed to radiation, leaving the most hidden ones as the seam area within the books without disinfection in bound materials or inside the lapels of modern rustic bindings. All of these areas are inaccessible to UV radiation and could therefore continue to retain their viral load for hours. Therefore, UV radiation is also not a good solution.

However, since the virus can remain on paper and plastic for days, it is necessary to exercise caution with books that have been exposed to the virus, especially if it is material that has been in direct contact with patients affected by COVID-19. Paradoxically, the most effective disinfection would be to do nothing, wait sometime and keep the books quarantined for at least 14 days. In this way we would safely prevent indirect transmission on any of the materials with which the books are made (i.e. paper, cardboard, cloth or plastic) and would not be at risk of damaging them when applying products that have chemical effects and physical on the documents.

Although COVID-19 has been with us for only a few months, several recommendations on how to act in archives and libraries in the face of the problem of indirect transmission of the virus have already been published. Just a few days ago, Lara Ewen published an excellent summary of the impact of the virus on libraries that impacts the importance of quarantine as a more effective control measure. The full article is available at <https://americanlibrariesmagazine.org/blogs/the-scoop/how-to-sanitize-collections-covid-19/>. In addition, the Northeast Document Conservation Center (NEDCC) has published a brief and clear fact sheet, which is available at <https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.5-disinfecting-books>. Finally, Mary Striegel, conservator scientist at the National Center for Preservation Technology and Training (NCPTT) last week released a video describing the basic care of different cultural materials at the risk of infection Coronavirus. It is available in <https://www.ncptt.nps.gov/blog/covid-19-basics-disinfecting-cultural-resources/>.

Conclusion

Documentary materials can be indirect transmitters of the disease as long as they have been in contact with a sick person. However, the virus cannot remain effective for a long time and the treatment with viricides of contaminated surfaces is an effective measure for its control, although, in practice, it is not recommended for cultural materials. Fortunately, quarantine is effective. Time plays against the stability of the virus and, in the case of paper disappears, according to published studies, in about five days. It is advisable to follow a simple protocol of action for the handling of materials that have been in contact with COVID-19 patients [4]:

- Avoid touching your eyes, nose and mouth with unwashed hands.
- Clean and disinfect frequently touched objects and surfaces such as doorknobs, trays, etc.
- Facemasks should be used by everyone to protect yourself and healthy people. They should be used by infected patients or by people who should care for the sick, as well.
- Do not recycle gloves or masks.

- Do not touch the mask with your hands and remove it safely to discard after use.
- Books that have been used by sick people must be placed in a double self-closing plastic bag. Once inside the book, clean the outside of the bag with a viricidal product (water and bleach). Be careful that the cleaning solution does not penetrate inside. Once clean, keep in a safe area for 14 days.
- Once it has passed its quarantine, the book can be re-consulted without risk.

Finally, just say that public libraries and other cultural institutions where bibliographic material is available must also remain in a minimum quarantine of 14 days. Documents will not need to be sterilized, but proper hygiene will need to be maintained within the recommendations of health authorities.

References

[1] Holbrook Myndi G. et al. (2020) "Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1", in *The New England Journal of Medicine*, available in: <https://www.nejm.org/doi/pdf/10.1056/NEJMc2004973?articleTools=true> (accessed on 31/03/2020).

[2] Kampf, G. (2020), "Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents", in *Journal of Hospital Infection*, available in: [https://www.journalofhospitalinfection.com/article/S0195-6701\(20\)30046-3/pdf](https://www.journalofhospitalinfection.com/article/S0195-6701(20)30046-3/pdf) (accessed on 31/03/2020).

[3] An updated list of products approved by the Ministry of Health can be found at: https://www.mscbs.gob.es/en/profesionales/saludPublica/ccayes/alertasActual/nCov-China/documentos/Listado_virucidas.pdf.

[4] Detailed information in: https://elpais.com/sociedad/2020/03/13/actualidad/1584102347_992993.html (accessed 02/04/2020)

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