

## **Critique of REALM and Response – From ALA Connect (some editing for ease of reading)**

From: ALA Connect <[DoNotReply@ConnectedCommunity.org](mailto:DoNotReply@ConnectedCommunity.org)>

Date: September 25, 2020 at 8:02:36 PM EDT

To: [jcabral@mcArthur.lib.me.us](mailto:jcabral@mcArthur.lib.me.us)

Subject: {Disarmed} PLA Public Library Association Digest for Friday September 25, 2020

Reply-To: [DoNotReply@ConnectedCommunity.org](mailto:DoNotReply@ConnectedCommunity.org)

### **Tricia Karlin responding to a post about quarantining**

Sep 24, 2020

Sep 25, 2020 11:06 AM

Tricia Karlin

Hi Lynn,

This is a great question. According to one virologist that I reached out to, it would be unlikely to contract the virus by handling materials. I posted this yesterday on the ALA Members list, so please forgive duplication. There have been some excellent responses to my post there too. The topic heading is Project Realm Test 2 results

Like many other librarians, I am wondering if our current quarantine practices are reasonable given available research about the SARS-CoV-2 virus. So I have been trying to do some research on surface transmission of the virus in addition to following the REALM study. In the course of my investigation, I came across a letter to the Lancet written by virologist Emanuel Goldman at Rutgers University. I reached out to him, asking him for a virologist's take on the REALM study and the test results.

I found his responses to be of interest, and noticed that other librarians had also contacted him, asking him the same questions. So I decided to just share his response here with the wider community. Again, you may or may not find this to be helpful. (By the way, I have permission from Dr. Goldman to share these emails.)

### **Response from Dr. Emanuel Goldman, Professor of Microbiology, Biochemistry & Molecular Genetics, , International Center for Public Health New Jersey Medical School Rutgers, The State University of NJ**

from: Emanuel Goldman <[egoldman@njms.rutgers.edu](mailto:egoldman@njms.rutgers.edu)> to:Tricia Karlin <[tkarlin@lawrence.lib.ks.us](mailto:tkarlin@lawrence.lib.ks.us)> date: Sep 14, 2020, 1:49 PM

Dear Tricia,

You are not the first librarian to contact me regarding the information from REALM.

The following is a long read, but I hope you'll find it worthwhile.

Emanuel

---

Here's what I sent to REALM:

"I am a virologist and microbiologist who published a Comment in Lancet last month concerning the risk (or lack thereof) of transmitting COVID-19 by inanimate objects such as library materials. See <https://www.thelancet.com/journals/laninf/article/>

Numerous librarians worldwide have contacted me because the advice you are providing is in disagreement with the assessment that I published in the Lancet comment. I was asked to look at the research study on which your recommendations are based, and I find that research to be subject to the same criticism of the research I reviewed in my Lancet Comment, namely the work used extraordinarily huge and unrealistic amounts of virus ( $2.6 \times 10^5$ , i.e., 260,000) on the materials tested. This has essentially no relation to a real-life scenario, as discussed in my Lancet Comment.

Even with these large amounts, half of the virus is dead after 1 hour on the surface. With a half-life of 1 hour, 7 hours would be enough to expect no remaining virus on library materials if the amount at the start were 100 virus particles, already a high end start point in itself. In my opinion, the risk of transmission on library materials is negligible, but if you want to play it safe, leave the materials undisturbed for a day. No cleaning would be required in that case.

Let me also point out that there are NO confirmed cases of transmission of this virus by surfaces in the scientific literature, and there is at least one report of lack of transmission by surfaces where it would have been expected had it occurred."

--

I responded to their message with the following:

"Thank you for your very thoughtful and comprehensive response to my message, I will try to address a few issues in this reply.

First, let me describe an old experiment with viruses that cause the common cold, rhinoviruses. A study was done at the University of Wisconsin in 1987, that showed this respiratory virus was transmitted by aerosols but was not transmitted by fomites. Two groups of men played poker for a bunch of hours, one group sick with the common cold (complete with runny noses, coughing and sneezing), the other group healthy. The healthy group was restrained so that the participants could not touch their faces. After a period of time, the cards and chips used in the poker game were transferred to a group of healthy men to play with, and they were instructed to touch their faces during the game. The aerosol-exposed group got sick, while the fomite-exposed group did not. The original peer-reviewed publication can be found at [pubmed.ncbi.nlm.nih.gov/3039011](https://pubmed.ncbi.nlm.nih.gov/3039011)

Of course this was with a different virus -- but the result is quite compelling nonetheless. There is absolutely no reason to expect that SARS-CoV-2 would behave differently. In fact, rhinoviruses are non-enveloped while coronaviruses are enveloped. If anything, enveloped viruses are even more fragile in the environment than non-enveloped viruses.

I mentioned in my message "one report of lack of transmission by surfaces where it would have been expected had it occurred." This report described the experience in a mixed use building in South Korea, where an outbreak in one office did not significantly transmit infections to other occupants of the building -- at most, 3 out of the 927 persons who were not in the office that had the outbreak. This is a surface transmission rate at most of 0.3%. Further, one or two or even all 3 of those non-office cases could have come through breathing

rather than surfaces, which would lower the surface transmission rate even more. See [wwwnc.cdc.gov/eid/article/26/8/20-1274\\_article](http://wwwnc.cdc.gov/eid/article/26/8/20-1274_article)

I am aware of two reports of possible fomite transmission, but even these reports cannot exclude aerosol transmission: [wwwnc.cdc.gov/eid/article/26/9/20-1798\\_article](http://wwwnc.cdc.gov/eid/article/26/9/20-1798_article)

and [pubmed.ncbi.nlm.nih.gov/32192580/](http://pubmed.ncbi.nlm.nih.gov/32192580/)

Many studies of virus presence on surfaces (and even in liquids) are based on detection of viral RNA and not on the presence of infectious viral particles. In cases where infectious virus particles have been measured, results show much less infectious virus compared to the amount of virus predicted from the RNA content. In one study with the original SARS virus, there was no detectable infectious virus found in samples containing considerable viral RNA (reference 7 in my published Lancet Comment).

I'm not saying fomite transmission is impossible. But it would require a short time frame (1-2 hrs) between contamination of the surface and someone else touching it, and that someone else not washing their hands and touching their eyes, nose or mouth very soon after having touched the surface.

I would compare the assertions of risk of transmission on fomites to the wildly misleading studies around 1980 that led to the view that saccharine is a carcinogen. In those studies, the rats that got cancer were given an amount of saccharine that in humans would equal hundreds of cans of diet soda per day over an entire lifetime. No relation to reality, and ultimately discredited. With that in mind, I would be interested to hear if you get an answer as to why the tests were done with such a high inoculum of virus.

Minimal risk of transmission of coronavirus by fomites does not mean that we stop washing hands or other routine hygiene practices that we should be doing even if there were no pandemic. You describe in your message all kinds of unsavory secretions on returned library materials that require cleaning and disinfection. Be that as it may, this has no bearing on Covid-19 transmission. Normal routine protocols by libraries for returned materials are more than sufficient to protect against coronavirus transmission. In view of the severity of the disease, adding an extra step of leaving returned materials undisturbed for a day does not seem unreasonable to me. However, no extra disinfection or decontamination is needed.

Even though you state you are not offering advice to librarians, the information you are sending them is being interpreted as advice, judging from the emails I have been getting from librarians. Thus, I urge you to tone down any conclusions suggesting virus transmission on surfaces. You could refer to my Lancet Comment, or even to the CDC's latest guidelines, which do not place a lot of weight on surface transmission (e.g., <https://www.cdc.gov/coronavirus/2019-ncov/faq.html>)

I am still waiting for a reply to this last message.

---

Emanuel Goldman, PhD  
Posted on Sep 15

**Response from REALM manager, Nate Hill, Chair of the Operations Working Group of the REALM study and Executive Director Metropolitan New York Library Council.  
This was posted to ALA Connect at his request.**

September 28, 2020 5:18 PM

**Note: The sentences bolded and in italics are information pertinent to better understanding of the REAL Project**

The REALM project set out with a very specific scope: to test the rate at which the virus 'dies' on different surfaces commonly found in libraries, archives, and museums. At the time the project began, we had no idea whether or not transmission via fomites was common or rare but it was determined to be a realistic, industry specific scope we could focus on. Yes, now it does seem clear that the virus is mainly (but not exclusively) spread via airborne droplets.

***This project was never meant to tell you how many days you should quarantine for.*** That is for you to decide. It was never within the scope to tell anyone that one specific cleaning product was *\*the one\** you should use, or that one other sterilizer solution is *\*the one\** you should use. ***The project generates data via the experiments which can be used in concert with other research so that folks can make their own decisions about what is right in their context, in their community.***

Here are three unknowns:

We don't know how many virus cells an infected person will leave on an object.  
We don't know how many virus cells you can pick up from an object. We don't know how many virus cells are needed to cause infection.

It is true that it is hard to make use of the experiment data as long as we do not know these things. Please consider that everyone on the planet would like to have answers to these questions, and then think about this project within the context of all the other work going on.

I read a comment from Dr. Goldman that continuing to do this research and publish the results amounts to "scare tactics." That is misinformation. It is a shame that we don't have answers to the unknowns, because this would make it easier to make those reopening decisions. But publishing the results of these tests is anything but scare tactics, ***it is simply more data available for everyone to use in their decision making.***

Regarding the "huge and unrealistic amount of virus" as well as the studies of other viruses from the past... I'd respond that we do not actually know how much of this virus is present in a real human sneeze or cough (though my understanding is that Battelle has constructed something of a 'sneeze machine' (gross) and is looking at this), and I'd respond that comparing different viruses and infectious viral load is deeply fraught. That said, I'll admit that I am a librarian, not a virologist :)

If there's anything I can say or do to help, please tell me. I'm looking forward to the upcoming literature review from Battelle (coming mid-October) as well as resource kits being assembled by OCLC.

I think it can be frustrating that the scope of the project doesn't provide the clear answers everyone wants. ***I assure you that the REALM partners are working on it.***

--

Nate Hill

Chair of the Operations Working Group of the REALM study Executive Director Metropolitan New York Library Council [nhill@metro.org](mailto:nhill@metro.org)

## Posted by Tricia as follow-up

Lastly, as part of my research, I also reworked the Log10 graphs into a chart that used raw numbers (I don't really know how to read a Log10 chart). I calculated (hopefully correctly with the help of Google!) the graph for raw numbers, for example, translating the test 4 innoculum of 4.85 (log10) into the raw number of 70,704.58 viruses. One hour later (dry time), the total viruses on the softcover book cover dropped to 870.96, or a 98.7697% decrease. (Again, a caveat that I am not an expert here and would welcome any correction. I have \*just now\* sent in a request to the REALM project asking if they can release information in raw numbers in addition to Log10 numbers).

All views expressed in this email are my own and do not necessarily represent the views of my employer. - Tricia Karlin

-----  
Tricia Karlin  
Director of Collections and Technology  
Lawrence Public Library  
Lawrence KS  
[tkarlin@lawrence.lib.ks.us](mailto:tkarlin@lawrence.lib.ks.us)