



June 25, 2020

# REALM Project Update

This document synthesizes various studies and data; however, the scientific understanding regarding COVID-19 is continuously evolving. This material is being provided for informational purposes only, and readers are encouraged to review federal, state, tribal, territorial, and local guidance. The authors, sponsors, and researchers are not liable for any damages resulting from use, misuse, or reliance upon this information, or any errors or omissions herein.



# Project overview

OCLC, IMLS, and Battelle are conducting research on how long the COVID-19 virus survives on materials that are prevalent in libraries, archives, and museums.

The project will produce and distribute authoritative, science-based information on how—or if— materials can be handled to mitigate exposure to staff and visitors.

# Project activities

- Review and summarize relevant authoritative research
- Ongoing engagement with representatives and subject matter experts from archives, libraries, and museums
- Laboratory testing of materials
- Create toolkit resources and related programming
- Share news and information with the field

# PHASE 1

**MAY –  
AUGUST 2020**

**Preparing for  
reopened libraries:  
Research on high-priority  
materials and workflows**

# PHASE 2

**JUNE –  
OCTOBER 2020**

**Additional research  
to support operations  
of libraries, archives,  
and museums**

# PHASE 3

**OCTOBER 2020 –  
SEPTEMBER 2021**

**Monitor, update,  
and, communicate**

# Current state of COVID-19 research

- Knowledge about SARS-CoV-2 is a work in progress; scientists are actively working to study and understand the virus. **The amount of virus needed to cause infection is unknown.**
- More empirical studies are needed to verify, expand, and revise results from early studies and fill in the research gaps.
- Research will continue to be pursued and published across the world, so the available published science can be periodically reviewed and cross-walked to library, archives, and museum operations.
- Laboratory testing can help answer research questions that are applicable especially to LAM settings.

# REALM Project research

- Battelle is conducting laboratory studies of how long SARS-CoV-2 survives on materials commonly found in libraries, archives, and museums.
  - Results of test set 1, which studied five library materials, were published on June 22, 2020.
- Battelle will continue to test materials, in sets of five items per test. Results of test set 2 are expected by end of July 2020.
- Battelle reviewed SARS-CoV-2 literature available as of May 2020. The resulting Systematic Literature Review was published June 17, 2020.
- Battelle will conduct a second scientific literature review in Phase 2.

# LITERATURE REVIEWS

# Phase 1 research questions



**How might the virus spread through public library general operations?**



**How long does the virus survive on material surfaces through environmental attenuation?**



**How effective are various prevention and decontamination measures that are readily available to public libraries in the near term?**



# Mitigating virus transmission

From the review of published scientific literature:

- Regular and frequent cleaning of surfaces can destroy the virus immediately. The CDC provides an extensive list of cleaning materials, including bleach and hydrogen peroxide.
  - Areas and objects that have increased contact from people (e.g., check-out kiosks) or increased exposure to bodily substances, such as bathrooms, water fountains, and breakrooms, can spread the virus and would need to be cleaned regularly to prevent spread.
- Handwashing, face masks, and physical distance can also decrease the spread of the virus.



Image: [CDC](#)

# How the virus spreads

From the review of published scientific literature:

- SARS-CoV-2 is generally thought to spread through:
  1. Virus-containing water droplets expelled from infected persons through sneezing, coughing, speaking, and other breathing-related actions, and
  2. Objects (sometimes called fomites) that contain the virus on their surfaces.
- Other possible ways in need of more study are small aerosol particles, fecal matter (in solid and aerosol forms), and other airborne routes.
- Environmental factors such as humidity, temperature, ventilation/air flow, and air conditioning may also affect the spread of SARS-CoV-2. But additional research is needed to verify and/or clarify these ideas.

# Survival of virus on surfaces

From the review of published scientific literature:

- If SARS-CoV-2 gets spread to surfaces or materials, it seems to survive for different amounts of time depending on the type of surface or material, before dying off on its own.
- A few early studies (not peer-reviewed) reported that the virus may survive longer on plastics and stainless steel than on paper products and other metals, such as copper.
- However, it is not possible to draw firm conclusions from the results. There were a small number of studies and differences in the way scientists conducted the studies, as well as other confounding factors.

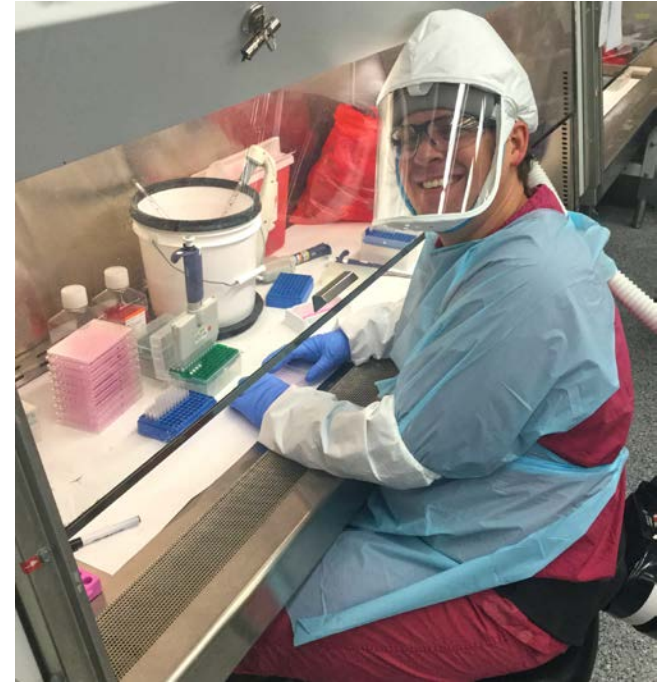


Photo courtesy of Battelle

# Prevention and decontamination

From the review of published scientific literature:

- Researchers suggested several feasible, low-cost options for reducing the presence of SARS-CoV-2, which may help keep people from getting the virus:
  - Cleaning surfaces often. Use cleaning agents such as sodium dichloroisocyanurate, sodium hypochlorite, ethanol, and hydrogen peroxide.
  - Practicing social distancing. This can help stop the virus from spreading between people through sneezing, coughing, speaking, etc.
  - Frequent handwashing. Soap and water or alcohol-based hand sanitizers were recommended.
  - Wearing of personal protective equipment (PPE). PPE that covers the mouth and nose may be most helpful.
- Other ways that need more studies to find out if they work are heat treatment, sunlight and other light-based treatments, ventilation systems, and open spaces.

# LAB TESTING

# Summary of Lab Test 1

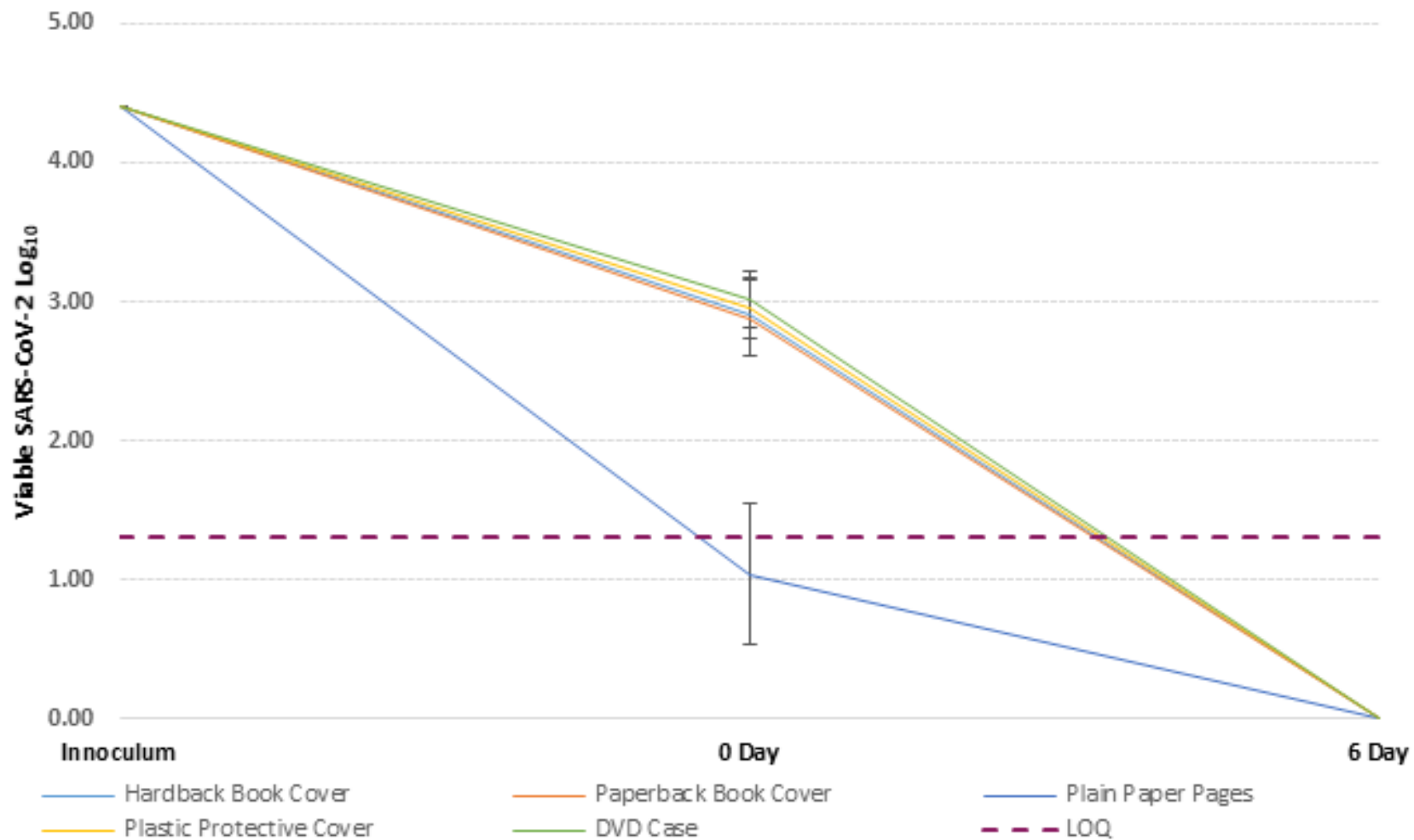
- SARS-CoV-2, the virus that causes the disease COVID-19, was placed on five standard library materials:
  1. hardback book cover (buckram cloth),
  2. paperback book cover,
  3. plain paper pages inside a book,
  4. plastic book covering (biaxially oriented polyester film),
  5. DVD case.
- Materials were provided to the project from the collection of Columbus Metropolitan Library.
- When left alone for three days at room temperature, no virus was detectable on any materials.
  - No virus was detectable on the book covers and DVD case after one day.
  - No virus was detectable on the paper and plastic book covering after three days.

# Lab Test 1 conditions

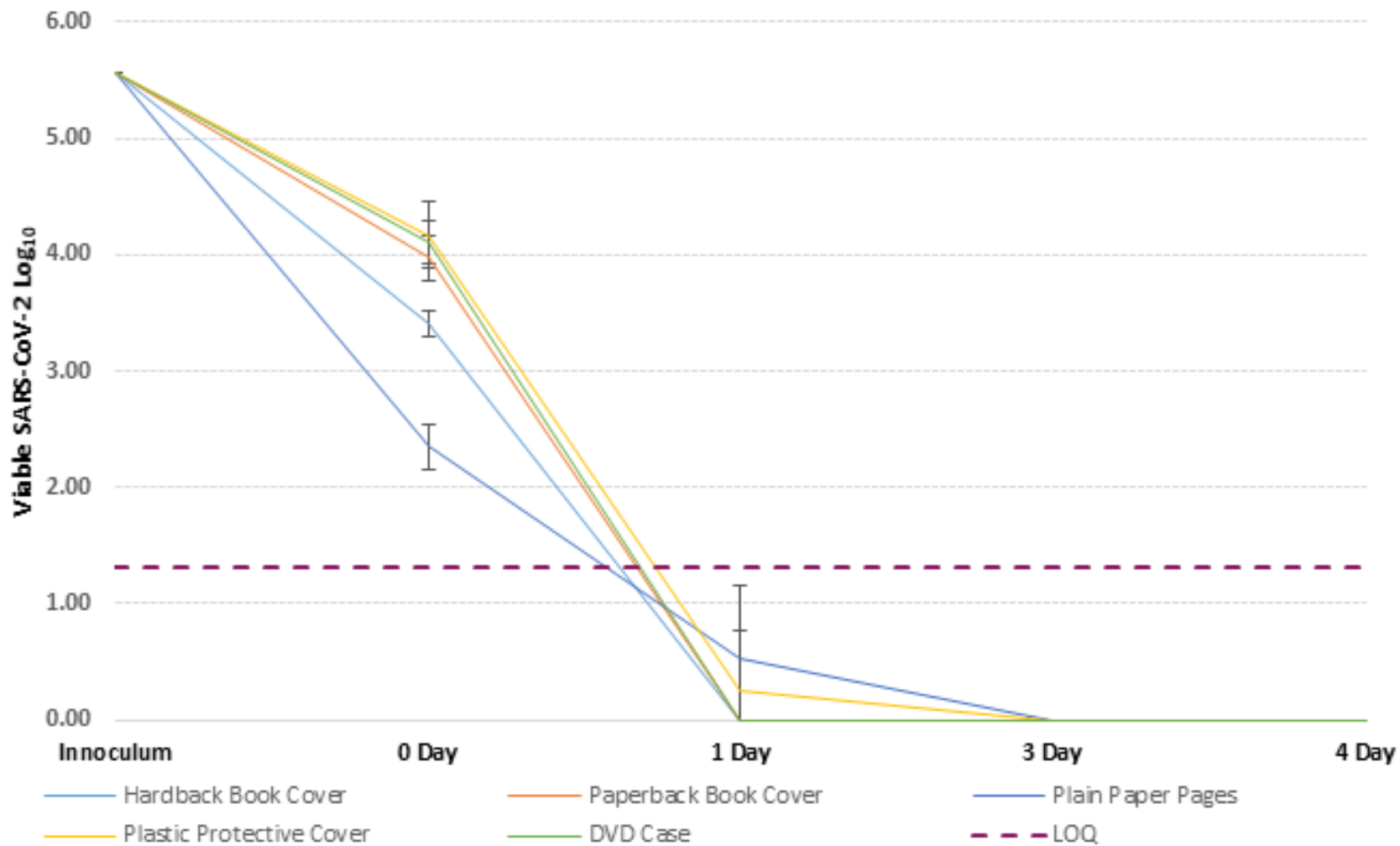
- **Conditions:** standard room temperature ( $22\pm 2^{\circ}\text{C}$ ;  $72\pm 2^{\circ}\text{F}$ ) and relative humidity ( $40\pm 10\%$ ) in a biosafety level (BSL)-3 laboratory.
- **Time Points:** materials were evaluated at days 0, 1, 3, 4, and 6.



Photos courtesy of Battelle



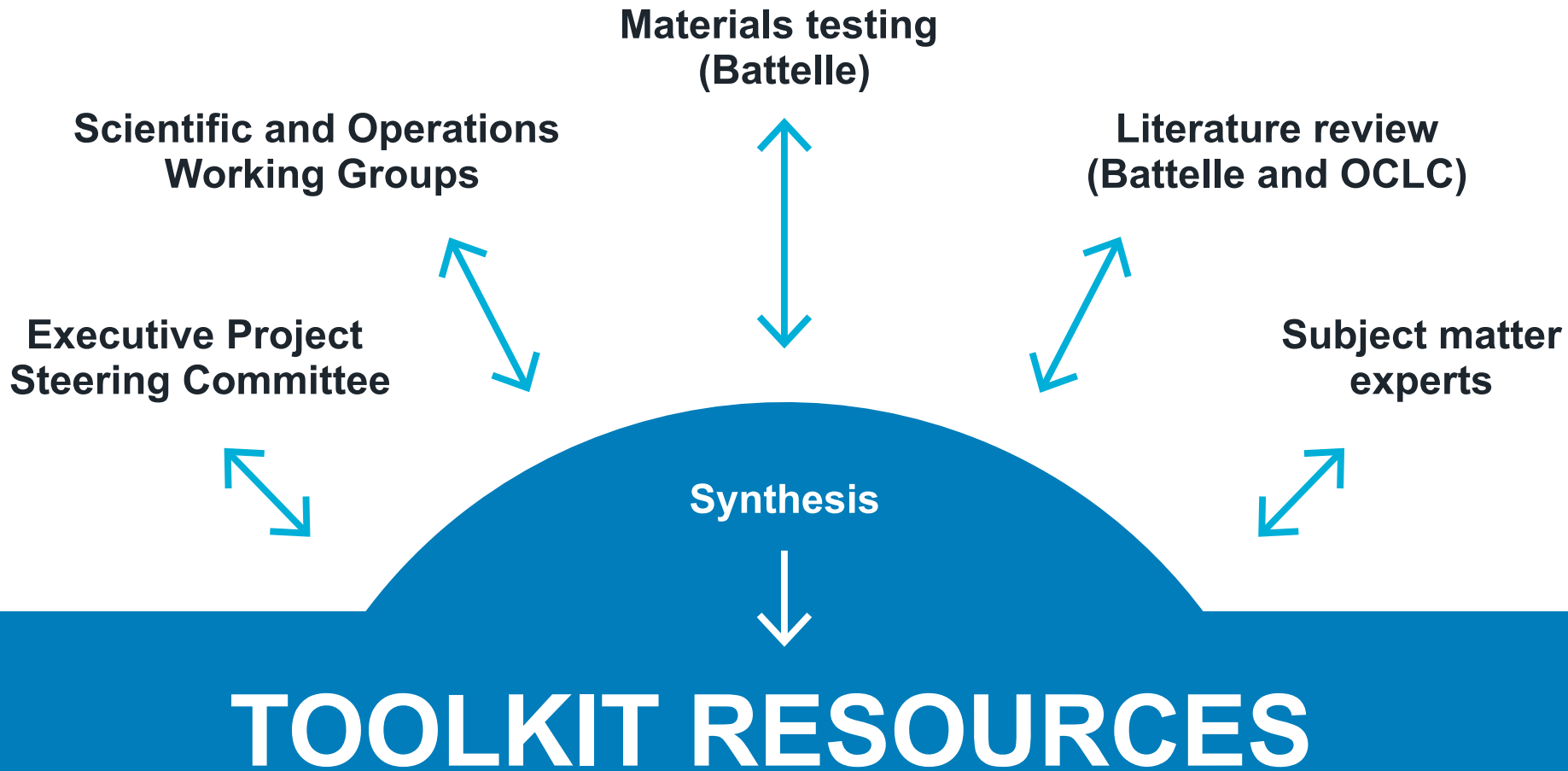




# Lab Test Set 2

SARS-CoV-2 virus was placed on five paper-based materials:

- braille paper pages (closed in the book)
- glossy paper pages (closed in the book)
- magazine pages (closed in the magazine)
- children's board books (closed in the book)
- archival folders (stacked together)



# The toolkit may include:



**Webinars**



**Downloadable templates**



**Schematic diagrams**



**Short demonstration videos**



**Posters**



**Infographics**



#REALMproject [oc.lc/realm-project](https://oc.lc/realm-project)

**REALM**  
PROJECT

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