**Clinical Librarian Service Search Results**

**Request:** Are there any studies looking at the survival of respiratory viruses (including coronvirus / covid 19 if there are any) on hands vs. non sterile procedure gloves?

**Summary**

A search of bibliographic databases and the internet retrieved no studies comparing survival of coronavirus on hand and gloves. The search also retrieved no information on the survival time of coronavirus on human skin. Literature on survival time on gloves is listed below, taken direct from the articles. Due to the fast developing nature of the covid-19 pandemic, one articles which has not been through the peer review process has been included below (1).

The only study on covid-19 was in a Chinese hospital, and concluded gloves were one of the more contaminated pieces of equipment in a hospital during an outbreak: “*The most contaminated objects and PPE are self-service printers (20.0%), hand sanitizer dispensers (20.3%), and gloves (15.4%)”* (1).

A 2020 literature review on coronaviruses more generally includes the following information on survival (2):

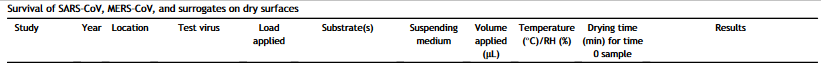
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type of surface** | **Virus** | **Strain / isolate** | **Inoculum (viral titer)** | **Temperature** | **Persistence** |
| Plastic | SARS-CoV | Strain HKU39849 | 105 | 22°-25°C | ≤ 5 d |
| MERS-CoV | Isolate HCoV-EMC/2012 | 105 | 20°C  30°C | 48 h  8–24 h |
| SARS-CoV | Strain P9 | 105 | RT | 4 d |
| SARS-CoV | Strain FFM1 | 107 | RT | 6–9 d |
| HCoV | Strain 229E | 107 | RT | 2–6 d |
| PVC | HCoV | Strain 229E | 103 | 21°C | 5 d |
| Silicon rubber | HCoV | Strain 229E | 103 | 21°C | 5 d |
| Surgical glove (latex) | HCoV | Strains 229E and OC43 | 5 x 103 | 21°C | ≤ 8 h |
| Disposable gown | SARS-CoV | Strain GVU6109 | 106  105  104 | RT | 2 d  24 h  1 h |
| Teflon | HCoV | Strain 229E | 103 | 21°C | 5 d |

MERS = Middle East Respiratory Syndrome; HCoV = human coronavirus; TGEV = transmissible gastroenteritis virus; MHV = mouse hepatitis virus; SARS = Severe Acute Respiratory Syndrome; RT = room temperature.

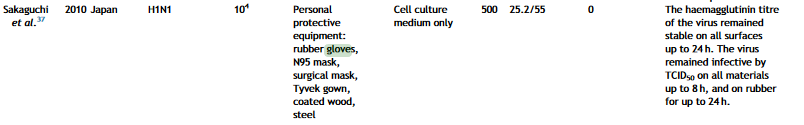
A 2016 literature review on coronaviruses states:

*“Several studies have evaluated the capacity for SARS-CoV (and the surrogate TGEV), and influenza virus to survive on materials widely used as personal protective equipment (PPE) such as gowns, gloves, and respirators. For example, TGEV survived on isolation gowns, nitrile and latex gloves, N95 respirators, and scrubs with a <102 reduction for >4 h, and was detected on some items after 24 h. One study showed that H1N1 influenza virus dried on to various materials could be transferred to the hands of volunteers for at least 24 h following inoculation on some surfaces, with clear implicationsfor the acquisition of viable viruses on the hands of healthcare personnel during the removal of PPE.”* (3)

It also includes this table (3):

And one reference to influenza in a different table (3):



There is limited information on the survival time of coronaviruses on gloves, and none on the survival time of coronaviruses on skin.

**Disclaimer:** Please note that the information supplied by the Library and Knowledge Service in response to a literature search is for information purposes only. Every reasonable effort will be made to ensure that this information is accurate, up-to-date and complete. However, it is possible that it may not be representative of the whole body of evidence. No responsibility can be accepted by the Library for any action taken on the basis of this information.

Guidance or information relating to specific drug queries or procedures should be referred to Medicines Information on [UHDB.MedicinesInformation@nhs.net](mailto:UHDB.MedicinesInformation@nhs.net)​ or RDH ext. 85379 or Burton ext. 5168 or 5101. For local UHDB guidelines and policies please refer to the red / pink Policies button on the Trust intranet, or <https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-main.pl>

**Current at:** 31st March 2020

**Time taken for search:** 3 hours.

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I hope that I have interpreted your request correctly. Please let me know if you would like me to search further.

**Accessing Articles**

Links are provided where online access to the full-text is available. An OpenAthens username and password may be required for online access to articles. You can register for one here: <https://openathens.nice.org.uk/>

Unfortunately there may occasionally be some problems accessing the links provided. In this case the items can be accessed via the Library Journals link: <http://journals.nice.org.uk/>. [Log in to OpenAthens via the link in the top tight-hand corner].

If the full-text is not available, you can request an Inter-Library Loan freely and directly via our Inter-Library Loans system: CLIO. Register for CLIO (using your library membership number) at: [https://derbyill.cliohosting.co.uk](https://derbyill.cliohosting.co.uk/). Further information can be found at: <http://www.uhdblibrary.co.uk/ills>.

**Please acknowledge this work in any resulting paper or presentation as:**

Evidence Search: Covid-19 survival gloves (LS405). Lindsay Snell (2019). Derby, UK: University Hospitals of Derby & Burton NHS Foundation Trust Library and Knowledge Service.

**Feedback**

Once you have read this report, I would appreciate it if you would complete our online literature search feedback form at:

<https://www.smartsurvey.co.uk/s/LiteratureSearchFeedback20192020/>

This relates to this specific search and will help us to monitor and improve our service. Many Thanks.

Kind regards,

Lindsay Snell

Clinical Librarian

Email: [Lindsay.snell@nhs.net](mailto:Lindsay.snell@nhs.net)

Tel: Ext. 88156

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**Results**

# 1. Environmental contamination of the SARS-CoV-2 in healthcare premises: An urgent call for protection for healthcare workers

Author(s): Ye, G et al.

Source: MedRxiv (pre-print, not yet peer reviewed)

<https://www.medrxiv.org/content/10.1101/2020.03.11.20034546v1.full.pdf>

Question: What was the hospital setting contamination status, the most contaminated objects and PPE of SARS-CoV-2 during the outbreak of COVID-19 in Wuhan, China? Findings: The most contaminated zones were the intensive care unit for novel coronavirus pneumonia (NCP) (31.9%), Obstetric Isolation Ward specialized for pregnant women with NCP (28.1%), and Isolation Ward for NCP (19.6%). The most contaminated objects and PPE are self-service printers (20.0%), hand sanitizer dispensers (20.3%), and gloves (15.4%). Meaning: The findings may have important implications for modifying and developing urgently needed policy to better protect healthcare workers during this ongoing pandemic of SARS-CoV-2.

# 2. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents

**Author(s):** Kampf, G et al.

**Source:** Journal of Hospital Infection, March 2020 Volume 104, Issue 3, Pages 246–251

<https://www.journalofhospitalinfection.com/article/S0195-6701(20)30046-3/fulltext>

Currently, the emergence of a novel human coronavirus, SARS-CoV-2, has become a global health concern causing severe respiratory tract infections in humans. Human-to-human transmissions have been described with incubation times between 2-10 days, facilitating its spread via droplets, contaminated hands or surfaces. We therefore reviewed the literature on all available information about the persistence of human and veterinary coronaviruses on inanimate surfaces as well as inactivation strategies with biocidal agents used for chemical disinfection, e.g. in healthcare facilities. The analysis of 22 studies reveals that human coronaviruses such as Severe Acute Respiratory Syndrome (SARS) coronavirus, Middle East Respiratory Syndrome (MERS) coronavirus or endemic human coronaviruses (HCoV) can persist on inanimate surfaces like metal, glass or plastic for up to 9 days, but can be efficiently inactivated by surface disinfection procedures with 62–71% ethanol, 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within 1 minute. Other biocidal agents such as 0.05–0.2% benzalkonium chloride or 0.02% chlorhexidine digluconate are less effective. As no specific therapies are available for SARS-CoV-2, early containment and prevention of further spread will be crucial to stop the ongoing outbreak and to control this novel infectious thread.

# 3. Transmission of SARS and MERS coronaviruses and influenza virus in healthcare settings: The possible role of dry surface contamination

**Author(s):** Otter J.A.; Donskey C.; Yezli S.; Douthwaite S.; Goldenberg S.D.; Weber D.J.

**Source:** Journal of Hospital Infection; Mar 2016; vol. 92 (no. 3); p. 235-250

Available at [Journal of Hospital Infection](https://auth.elsevier.com/ShibAuth/institutionLogin?entityID=https://idp.eng.nhs.uk/openathens&appReturnURL=https%3A%2F%2Fwww.clinicalkey.com%2Fcontent%2FplayBy%2Fdoi%2F%3Fv%3D10.1016%2Fj.jhin.2015.08.027) - from ClinicalKey

Available at [Journal of Hospital Infection](http://www.journalofhospitalinfection.com/article/S0195670115003679/pdf) - from Unpaywall

Viruses with pandemic potential including H1N1, H5N1, and H5N7 influenza viruses, and severe acute respiratory syndrome (SARS)/Middle East respiratory syndrome (MERS) coronaviruses (CoV) have emerged in recent years. SARS-CoV, MERS-CoV, and influenza virus can survive on surfaces for extended periods, sometimes up to months. Factors influencing the survival of these viruses on surfaces include: strain variation, titre, surface type, suspending medium, mode of deposition, temperature and relative humidity, and the method used to determine the viability of the virus. Environmental sampling has identified contamination in field-settings with SARS-CoV and influenza virus, although the frequent use of molecular detection methods may not necessarily represent the presence of viable virus. The importance of indirect contact transmission (involving contamination of inanimate surfaces) is uncertain compared with other transmission routes, principally direct contact transmission (independent of surface contamination), droplet, and airborne routes. However, influenza virus and SARS-CoV may be shed into the environment and be transferred from environmental surfaces to hands of patients and healthcare providers. Emerging data suggest that MERS-CoV also shares these properties. Once contaminated from the environment, hands can then initiate self-inoculation of mucous membranes of the nose, eyes or mouth. Mathematical and animal models, and intervention studies suggest that contact transmission is the most important route in some scenarios. Infection prevention and control implications include the need for hand hygiene and personal protective equipment to minimize self-contamination and to protect against inoculation of mucosal surfaces and the respiratory tract, and enhanced surface cleaning and disinfection in healthcare settings. Copyright © 2015 The Healthcare Infection Society.

**Database:** EMCARE

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**Databases searched:** MEDLINE, EMBASE, Cinahl, Emcare, UpToDate, Google / Scholar.

**Search History:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Database** | **Search term** | **Results** |
| 1 | Medline | (coronavir\*).ti,ab | 11566 |
| 2 | Medline | (corona ADJ vir\*).ti,ab | 273 |
| 3 | Medline | (covid-19).ti,ab | 1049 |
| 4 | Medline | (sars-cov\*).ti,ab | 2603 |
| 5 | Medline | (wuhan ADJ2 corona\*).ti,ab | 35 |
| 6 | Medline | ("2019-ncov").ti,ab | 314 |
| 7 | Medline | exp CORONAVIRIDAE/ OR exp "CORONAVIRIDAE INFECTIONS"/ | 16310 |
| 8 | Medline | (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7) | 20161 |
| 9 | Medline | (glove\*).ti,ab | 10217 |
| 10 | Medline | exp "GLOVES, PROTECTIVE"/ | 4863 |
| 11 | Medline | (nitrile).ti,ab | 4498 |
| 12 | Medline | (9 OR 10 OR 11) | 15861 |
| 13 | Medline | (8 AND 12) | 41 |
| 14 | EMBASE | (coronavir\*).ti,ab | 12696 |
| 15 | EMBASE | (corona ADJ vir\*).ti,ab | 347 |
| 16 | EMBASE | (covid-19).ti,ab | 997 |
| 17 | EMBASE | (sars-cov\*).ti,ab | 2808 |
| 18 | EMBASE | (wuhan ADJ2 corona\*).ti,ab | 18 |
| 19 | EMBASE | ("2019-ncov").ti,ab | 308 |
| 20 | EMBASE | exp CORONAVIRIDAE/ OR exp "CORONAVIRIDAE INFECTION"/ | 19164 |
| 21 | EMBASE | (14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20) | 24298 |
| 22 | EMBASE | (glove\*).ti,ab | 13584 |
| 23 | EMBASE | exp "GLOVES, PROTECTIVE"/ OR GLOVE/ | 9134 |
| 24 | EMBASE | (nitrile).ti,ab | 5571 |
| 25 | EMBASE | (22 OR 23 OR 24) | 20936 |
| 26 | EMBASE | (21 AND 25) | 78 |
| 27 | CINAHL | (coronavir\*).ti,ab | 1263 |
| 28 | CINAHL | (corona ADJ vir\*).ti,ab | 27 |
| 29 | CINAHL | (covid-19).ti,ab | 156 |
| 30 | CINAHL | (sars-cov\*).ti,ab | 95 |
| 31 | CINAHL | (wuhan ADJ2 corona\*).ti,ab | 22 |
| 32 | CINAHL | ("2019-ncov").ti,ab | 66 |
| 33 | CINAHL | exp CORONAVIRIDAE/ OR exp "CORONAVIRIDAE INFECTIONS"/ | 3106 |
| 34 | CINAHL | (27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33) | 3575 |
| 35 | CINAHL | (glove\*).ti,ab | 3885 |
| 36 | CINAHL | GLOVES/ | 3154 |
| 37 | CINAHL | (nitrile).ti,ab | 123 |
| 38 | CINAHL | (35 OR 36 OR 37) | 5302 |
| 39 | CINAHL | (34 AND 38) | 23 |
| 40 | EMCARE | (coronavir\*).ti,ab | 1258 |
| 41 | EMCARE | (corona ADJ vir\*).ti,ab | 31 |
| 42 | EMCARE | (covid-19).ti,ab | 56 |
| 43 | EMCARE | (sars-cov\*).ti,ab | 209 |
| 44 | EMCARE | (wuhan ADJ2 corona\*).ti,ab | 5 |
| 45 | EMCARE | ("2019-ncov").ti,ab | 51 |
| 46 | EMCARE | exp CORONAVIRIDAE/ OR exp "CORONAVIRIDAE INFECTION"/ | 4196 |
| 47 | EMCARE | (40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46) | 4442 |
| 48 | EMCARE | (glove\*).ti,ab | 3701 |
| 49 | EMCARE | exp "GLOVES, PROTECTIVE"/ OR GLOVE/ | 3376 |
| 50 | EMCARE | (nitrile).ti,ab | 195 |
| 51 | EMCARE | (48 OR 49 OR 50) | 4489 |
| 52 | EMCARE | (47 AND 51) | 43 |
| 53 | EMCARE | (skin OR hands OR hand).ti,ab | 190799 |
| 54 | EMCARE | EPIDERMIS/ | 2819 |
| 55 | EMCARE | SKIN/ | 27624 |
| 56 | EMCARE | "HAND PALM"/ | 521 |
| 57 | EMCARE | FINGER/ | 3628 |
| 58 | EMCARE | HAND/ | 3844 |
| 59 | EMCARE | (53 OR 54 OR 55 OR 56 OR 57 OR 58) | 196514 |
| 60 | EMCARE | (47 AND 59) | 89 |
| 63 | EMBASE | EPIDERMIS/ | 34741 |
| 64 | EMBASE | SKIN/ | 155376 |
| 65 | EMBASE | "HAND PALM"/ | 2710 |
| 66 | EMBASE | FINGER/ | 24361 |
| 67 | EMBASE | HAND/ | 27049 |
| 68 | EMBASE | (skin OR hand OR hands).ti | 221115 |
| 69 | EMBASE | (63 OR 64 OR 65 OR 66 OR 67 OR 68) | 396154 |
| 70 | EMBASE | (21 AND 69) | 61 |
| 71 | CINAHL | (skin OR hands OR hand).ti,ab | 151964 |
| 72 | CINAHL | EPIDERMIS/ | 928 |
| 73 | CINAHL | SKIN/ | 13289 |
| 76 | CINAHL | exp HAND/ | 16839 |
| 77 | CINAHL | (71 OR 72 OR 73 OR 76) | 165546 |
| 78 | CINAHL | (34 AND 77) | 62 |
| 80 | Medline | EPIDERMIS/ | 20871 |
| 81 | Medline | SKIN/ | 188471 |
| 83 | Medline | FINGERS/ | 29702 |
| 84 | Medline | HAND/ | 41901 |
| 85 | Medline | (skin OR hand OR hands).ti | 206170 |
| 86 | Medline | (80 OR 81 OR 83 OR 84 OR 85) | 388687 |
| 87 | Medline | (8 AND 86) | 36 |

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