

# The Daily COVID-19 Literature Surveillance Summary

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Daily audio summaries of the literature in 10 minutes or less.

<https://www.covid19lst.org/podcast/>



# COVID-19 Daily Literature Surveillance

COVID19LST



Bringing you real time, distilled information for guiding best practices during the COVID-19 pandemic

# LEVEL OF EVIDENCE

**Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence**

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
<b>How common is the problem?</b>	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
<b>Is this diagnostic or monitoring test accurate?</b> (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
<b>What will happen if we do not add a therapy?</b> (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
<b>Does this intervention help?</b> (Treatment Benefits)	Systematic review of randomized trials or n-of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
<b>What are the COMMON harms?</b> (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, n-of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
<b>What are the RARE harms?</b> (Treatment Harms)	Systematic review of randomized trials or n-of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
<b>Is this (early detection) test worthwhile?</b> (Screening)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

\* Level may be graded down on the basis of study quality, imprecision, indirectness (study PICO does not match questions PICO), because of inconsistency between studies, or because the absolute effect size is very small; Level may be graded up if there is a large or very large effect size.

\*\* As always, a systematic review is generally better than an individual study.

## How to cite the Levels of Evidence Table

OCEBM Levels of Evidence Working Group\*. "The Oxford 2011 Levels of Evidence".

Oxford Centre for Evidence-Based Medicine. <http://www.cebm.net/index.aspx?o=5653>

\* OCEBM Table of Evidence Working Group = Jeremy Howick, Iain Chalmers (James Lind Library), Paul Glasziou, Trish Greenhalgh, Carl Heneghan, Alessandro Liberati, Ivan Moschetti, Bob Phillips, Hazel Thornton, Olive Goddard and Mary Hodgkinson

# EXECUTIVE SUMMARY

## Climate

- [How do we prevent inequities in COVID-19 Vaccine Injuries?](#) Health lawyers at Case Western Reserve University School of Law and Harvard Law School advocate that the COVID-19 vaccine should be covered by the National Vaccine Injury Compensation Program (VICP). This would encourage those who are disproportionately impacted by the COVID-19 pandemic, people of color and low-income individuals, to get the vaccine when available as they would be compensated if there are any complications. This study proposes making CDC recommended vaccines immediately fall under the VICP and adding the same 75 cent tax already utilized for childhood vaccines to provide funds for the Vaccine Injury Compensation Trust Fund.

## Understanding the Pathology

- [Shorter telomere lengths are associated with severe COVID-19 disease.](#) Experts in telomere research from the Spanish National Cancer Centre evaluated the telomere length of DNA in mononuclear cells from the peripheral blood of 89 COVID-19 patients from a field hospital in Madrid. They found patients with a higher proportion of short telomeres (<11.68 kb) had higher severity scores than those with longer telomeres ( $p=0.049$ ), with Pearson correlation analysis showing an inverse correlation between mean telomere length and severity score ( $r=-0.405$ ;  $p=0.0001$ ). Because shorter telomeres were associated with more severe disease even between patients of similar age, authors propose short telomeres are associated with more severe COVID-19 independent of age and suggest therapeutics targeting telomerase may help reduce disease severity.
- [Autopsy findings after long-term treatment of COVID-19 patients find microbiological correlation with fungal infections.](#) A study conducted at University Hospital of Regensburg involved autopsy of 4 female and 4 male patients who expired during their hospitalization for COVID-19 treatment in the ICU. Cause of death was determined to be multi-organ failure sepsis in 6/8 patients, 4 of which were due to systemic fungal infection suggesting that 50% of test subjects died of fungal sepsis. Authors suggest that clinically undetected fungal infections are a significant cause of death in COVID-19 patients and emphasize the importance of utilizing autopsies and collaboration between pathologists, microbiologists, and clinicians to guide future diagnostics and therapeutics.

## Transmission & Prevention

- [Environmental virus detection is associated with asymptomatic SARS-CoV-2-infected individuals with positive anal swabs.](#) An observational study conducted by an interdisciplinary group of researchers from Nanjing, China studied certain features of asymptomatic carriers of SARS-CoV-2, and postulated mechanisms by which they possibly might spread the virus. The 19 study patients were recruited from the Nanjing Number 2 Hospital and confirmed SARS-CoV-2 positive via nasopharyngeal swabs. The researchers collected the following samples to measure the possible secretion pathways of the virus: the bedside table, the bedside handrails, the mobile phone screen, the palm of the patient's hand, the double sides of the mask, their fog mask, the cell phone shelves and toilet pads. They found positive environmental samples (via nucleoprotein measurement) on the cell phone screen, the telephone shelf in the patient bathrooms, and the patient bedside rails. Authors suggest that SARS-CoV-2 can be found on external surfaces that have come into contact with carriers of the virus, which can be a means by which asymptomatic carriers are able to spread the virus.
- [Allergic reactions including anaphylaxis are found after receipt of the first dose of Pfizer-BioNTech COVID-19 vaccine.](#) A case series conducted by the Immunization Safety Office at the Centers for Disease Control and Prevention in Atlanta, Georgia and the Office of Biostatistics and Epidemiology at the Food and Drug Administration in Bethesda, Maryland identified 21 cases from December 14-23, 2020 submitted to the Vaccine Adverse Event Reporting System (VAERS) after the first dose of Pfizer-BioNTech COVID-19 vaccine. The cases include 17/21 patients with documented history of allergies/allergic reactions, 4 patients hospitalized, 17 treated in the emergency department with symptoms of urticaria, angioedema, rash, and sense of throat closure, however no deaths were reported. Authors urge that vaccination locations should have access to epinephrine for managing anaphylaxis, screen for contraindications and precautions, observe vaccine recipients for 15 or 30 minutes afterwards, and acknowledge the importance of recognizing/reporting adverse effects of vaccine administration to VAERS.

## Adjusting Practice During COVID-19

- [Hand sanitizer can result in ocular injury in children.](#) Physicians at the Grewal Eye Institute and Postgraduate Institute of Medical Education in Chandigarh, India present cases of toxic keratopathy in two children who were exposed to alcohol-based hand rubs (ABHRs). This study suggests that the ABHR stations used to reduce SARS-CoV-2 transmission are often at eye level for younger children and in order to prevent such injuries, children should be taught how to properly use hand sanitizers and encouraged to wash hands with soap and water. Authors suggest that hand sanitizing stations should have warnings and separate dispensers at a lower level for children.

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### HOSPITAL READMISSION IS COMMON AMONG COVID-19 SURVIVORS

Kuehn BM. JAMA. 2020 Dec 22;324(24):2477. doi: 10.1001/jama.2020.23910.

Level of Evidence: 5 - Opinion

#### BLUF

A science journalist for JAMA reports on a CDC investigation of 126,317 patients with COVID-19 between March and July 2020 which found hospital readmission is a common occurrence in COVID-19 survivors, especially in patients with more than one chronic comorbidity (pulmonary disease, heart failure, chronic kidney disease, diabetes). The author highlights the urgency of halting the spread of COVID-19 as hospitals cannot currently handle continued readmission of patients when they already are functioning at maximum capacity.

## GLOBAL

### THE ESCALATING BIOMEDICAL WASTE MANAGEMENT TO CONTROL THE ENVIRONMENTAL TRANSMISSION OF COVID-19 PANDEMIC: A PERSPECTIVE FROM TWO SOUTH ASIAN COUNTRIES

Shammi M, Behal A, Tareq SM. Environ Sci Technol. 2021 Jan 12. doi: 10.1021/acs.est.0c05117. Online ahead of print.

Level of Evidence: 5 - Opinion

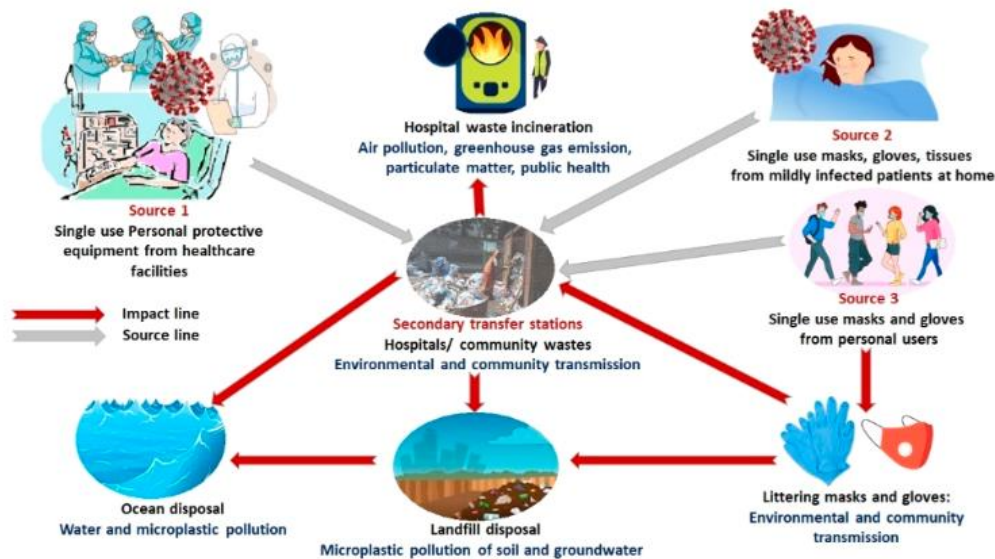
#### BLUF

Members of the Hydrobiogeochemistry and Pollution Control Laboratory at Jahangirnagar University in Bangladesh discuss approaches to management of the increasing amount of biomedical waste (BMW) produced during the COVID-19 pandemic. The authors use India and Bangladesh as examples of countries with minimal ability to properly dispose of this waste and describe the life-cycle of BMW (Figure 1). They recommend revision of outdated BMW policies, training on how to handle BMW, proper management of household infectious waste, and installation of incinerators and infrastructure to manage waste, suggesting proper handling and disposal of BMW can impact transmission rates of COVID-19 while minimizing environmental impact.

#### ABSTRACT

The global pandemic COVID-19 culminated in escalating biomedical waste (BMW) worldwide, and the management authorities are struggling with waste treatment. Bangladesh and India are two densely populated South Asian developing countries with limited resources. Both countries face mass community transmission of the disease, with India facing severe infections and deaths. Predictably, a large population might sum up to a large amount of COVID-19-related BMW. There is also the question of capacity, whether the existing BMW policies and regulations of the regions can manage the BMW strategically driven by the pressure of the pandemic. Here, we have shown a framework leading to further environmental and community transmission of the COVID-19 pandemic if the BMW generated at healthcare facilities and homes is not appropriately managed. The BMW, such as safety suits or personal protective equipment (PPE), masks, gloves, and shields, would likely damage the environment in the long run by creating microplastic pollution. Modification and modernization of the existing policies, plans, and guidelines on the proper management of the hospital and household infectious waste is suggested. Moreover, occupational health and safety assessments for waste management workers at the hospitals are recommended. Installing suitable capacity incinerators and related infrastructures are recommended for appropriate waste management. In the absence of incinerators, the existing industrial furnaces, cement kilns, and mobile incinerators can be used with a rapid impact assessment adhering to the appropriate implementations of the policies and guidelines.





**Figure 1.** Possible fate of BMW during the COVID-19 pandemic in developing countries despite the likelihood of air pollution. The model also shows the possibility of community and environmental transmission of the diseases.

Figure 1. Possible fate of BMW during the COVID-19 pandemic in developing countries despite the likelihood of air pollution. The model also shows the possibility of community and environmental transmission of the diseases.

## DISPARITIES

### COVID-19 VACCINE INJURIES - PREVENTING INEQUITIES IN COMPENSATION

Van Tassel K, Shachar C, Hoffman S. N Engl J Med. 2021 Jan 20. doi: 10.1056/NEJMp2034438. Online ahead of print.  
Level of Evidence: 5 - Opinion

#### BLUF

Health lawyers at Case Western Reserve University School of Law and Harvard Law School advocate that the COVID-19 vaccine should be covered by the National Vaccine Injury Compensation Program (VICP). This would encourage those who are disproportionately impacted by the COVID-19 pandemic, people of color and low-income individuals, to get the vaccine when available as they would be compensated if there are any complications. This study proposes making CDC recommended vaccines immediately fall under the VICP and adding the same 75 cent tax already utilized for childhood vaccines to provide funds for the Vaccine Injury Compensation Trust Fund.

# UNDERSTANDING THE PATHOLOGY

## SHORTER TELOMERE LENGTHS IN PATIENTS WITH SEVERE COVID-19 DISEASE

Sanchez-Vazquez R, Guío-Carrión A, Zapatero-Gaviria A, Martínez P, Blasco MA. Aging (Albany NY). 2021 Jan 11;12. doi: 10.18632/aging.202463. Online ahead of print.

Level of Evidence: 3 - Local non-random sample

### BLUF

Experts in telomere research from the Spanish National Cancer Centre evaluated the telomere length of DNA in mononuclear cells from the peripheral blood of 89 COVID-19 patients from a field hospital in Madrid. They found patients with a higher proportion of short telomeres (<11.68 kb) had higher severity scores (Summary) than those with longer telomeres ( $p=0.049$ ) (Figure 5), with Pearson correlation analysis showing an inverse correlation between mean telomere length and severity score ( $r=-0.405$ ;  $p=0.0001$ ) (Figure 3). Because shorter telomeres were associated with more severe disease even between patients of similar age (Figure 6), authors propose short telomeres are associated with more severe COVID-19 independent of age and suggest therapeutics targeting telomerase may help reduce disease severity.

### SUMMARY

Patients were assigned a severity score between 1 and 4, with the authors providing the following definitions:

1. Mild COVID-19: low-grade fever, cough, malaise, rhinorrhea, sore throat with or without hemoptysis, nausea, vomiting, diarrhea, but without any radiological features of pneumonia and absence of mental changes.
2. Moderate COVID-19: fever, respiratory symptoms including dry cough and shortness of breath that may emerge along with the radiological features.
3. Severe COVID-19: dyspnea, respiratory frequency  $\geq 30$ /minute, blood oxygen saturation  $\leq 93\%$ ,  $PaO_2/FiO_2$  ratio  $< 300$ , and/or lung infiltrates  $> 50\%$  of the lung field within 24–48h.
4. Acute COVID-19: usually develops after 7 days in patients with mild/moderate/severe COVID-19 with features of Acute respiratory distress syndrome (ARDS) requiring mechanical ventilation along with presence of multiorgan dysfunction failure, metabolic acidosis and coagulation dysfunction."

### ABSTRACT

The incidence of severe manifestations of COVID-19 increases with age with older patients showing the highest mortality, suggesting that molecular pathways underlying aging contribute to the severity of COVID-19. One mechanism of aging is the progressive shortening of telomeres, which are protective structures at chromosome ends. Critically short telomeres impair the regenerative capacity of tissues and trigger loss of tissue homeostasis and disease. The SARS-CoV-2 virus infects many different cell types, forcing cell turn-over and regeneration to maintain tissue homeostasis. We hypothesize that presence of short telomeres in older patients limits the tissue response to SARS-CoV-2 infection. We measure telomere length in peripheral blood lymphocytes COVID-19 patients with ages between 29 and 85 years-old. We find that shorter telomeres are associated to increased severity of the disease. Individuals within the lower percentiles of telomere length and higher percentiles of short telomeres have higher risk of developing severe COVID-19 pathologies.



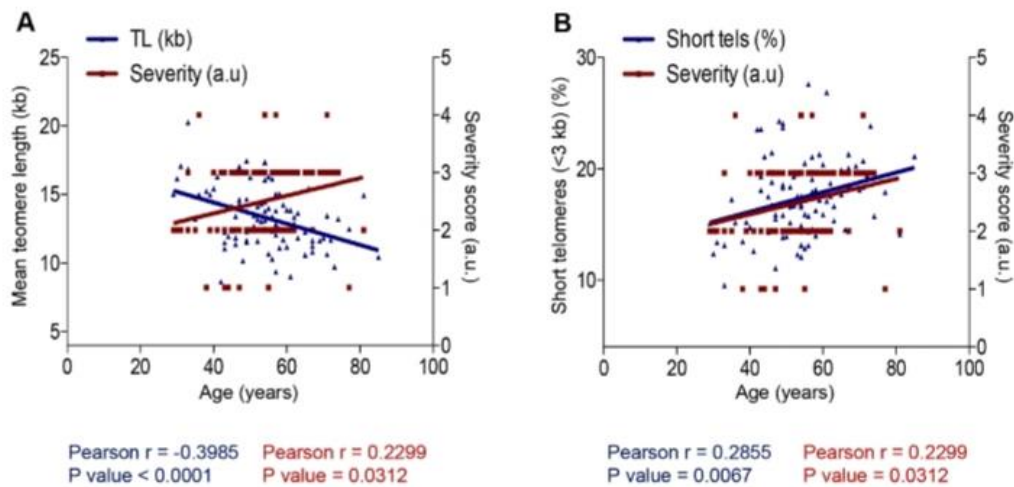


Figure 4: "Correlation between age and COVID-19 severity and telomere length. (A, B) Person correlation analysis between age and telomere length measured by HT Q-FISH in PMBC samples (A) and with percentage of short telomeres (<3 kb). The severity score was established by assigning values of 1, 2, 3, 4 for mild, moderate, severe and acute, respectively (see Materials and Methods). The Pearson  $r$  coefficient and the P values are indicated".

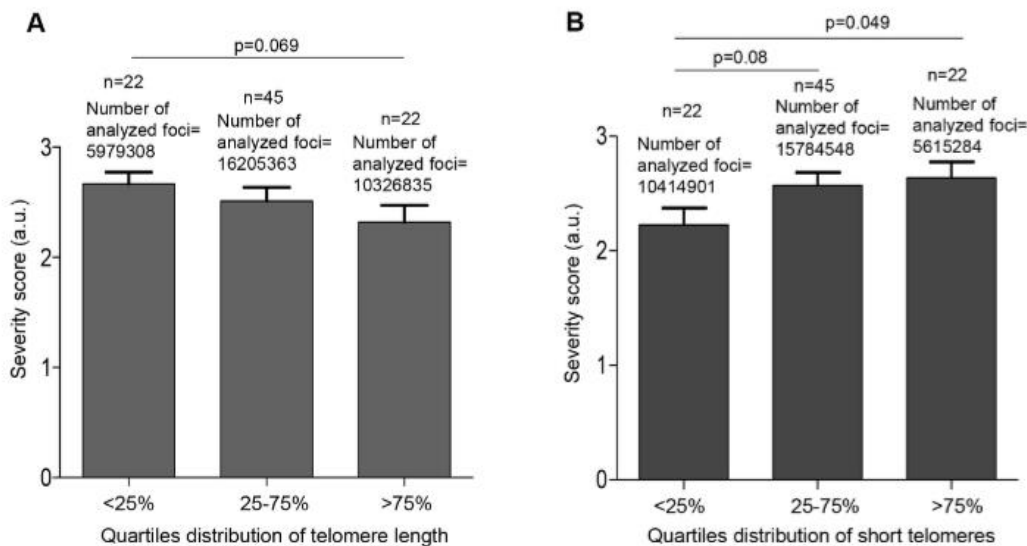


Figure 5: "Patients with shorter telomeres develop more severe COVID-19 disease. (A) The telomere lengths of patients were distributed into the quartiles <25% (<11.68 kb), 25-75% (11.68–14.96 kb) and >75% (>14.96 kb) and correlated with COVID-19 severity. (B) The abundance of short telomeres was distributed into the quartiles <25% (<14.73%), 25-75% (14.73–19.32%) and >75% (>19.32%) and correlated with COVID-19 severity. Data represent mean values  $\pm$  SEM. Statistical significance was assessed using Student's  $t$  test".

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## AUTOPSY FINDINGS AFTER LONG-TERM TREATMENT OF COVID-19 PATIENTS WITH MICROBIOLOGICAL CORRELATION

Evert K, Dienemann T, Brochhausen C, Lunz D, Lubnow M, Ritzka M, Keil F, Trummer M, Scheiter A, Salzberger B, Reischl U, Boor P, Gessner A, Jantsch J, Calvisi DF, Evert M, Schmidt B, Simon M. *Virchows Arch.* 2021 Jan 20. doi: 10.1007/s00428-020-03014-0. Online ahead of print.

Level of Evidence: 4 - Case-series

### BLUF

A study conducted at University Hospital of Regensburg between April and June 2020 involved autopsy of 4 female and 4 male patients who expired during their hospitalization for COVID-19 treatment in the ICU. Cause of death was determined to be multi-organ failure sepsis in 6/8 patients, 4 of which were due to systemic fungal infection suggesting that 50% of test subjects died of fungal sepsis (see summary for details). Authors suggest that clinically undetected fungal infections are a significant cause of death in COVID-19 patients and emphasize the importance of utilizing autopsies and collaboration between pathologists, microbiologists, and clinicians to guide future diagnostics and therapeutics.

### SUMMARY

Main autopsy findings included evidence of thrombosis in 60% of patients (See Figure 1), diffuse alveolar damage and fibrosis in the lungs suspicious for pneumonia in 88% of patients with evidence of invasive mycosis of the lung, aspergillosis, and mucormycosis (See Figure 3), and PCR confirmed presence of *Aspergillus* and mucormycosis species indicated systemic fungal infiltration (See Figure 4).

### ABSTRACT

Between April and June 2020, i.e., during the first wave of pandemic coronavirus disease 2019 (COVID-19), 55 patients underwent long-term treatment in the intensive care unit at the University Hospital of Regensburg. Most of them were transferred from smaller hospitals, often due to the need for an extracorporeal membrane oxygenation system. Autopsy was performed in 8/17 COVID-19-proven patients after long-term treatment (mean: 33.6 days). Autopsy revealed that the typical pathological changes occurring during the early stages of the disease (e.g., thrombosis, endothelitis, capillaritis) are less prevalent at this stage, while severe diffuse alveolar damage and especially coinfection with different fungal species were the most conspicuous finding. In addition, signs of macrophage activation syndrome was detected in 7 of 8 patients. Thus, fungal infections were a leading cause of death in our cohort of severely ill patients and may alter clinical management of patients, particularly in long-term periods of treatment.

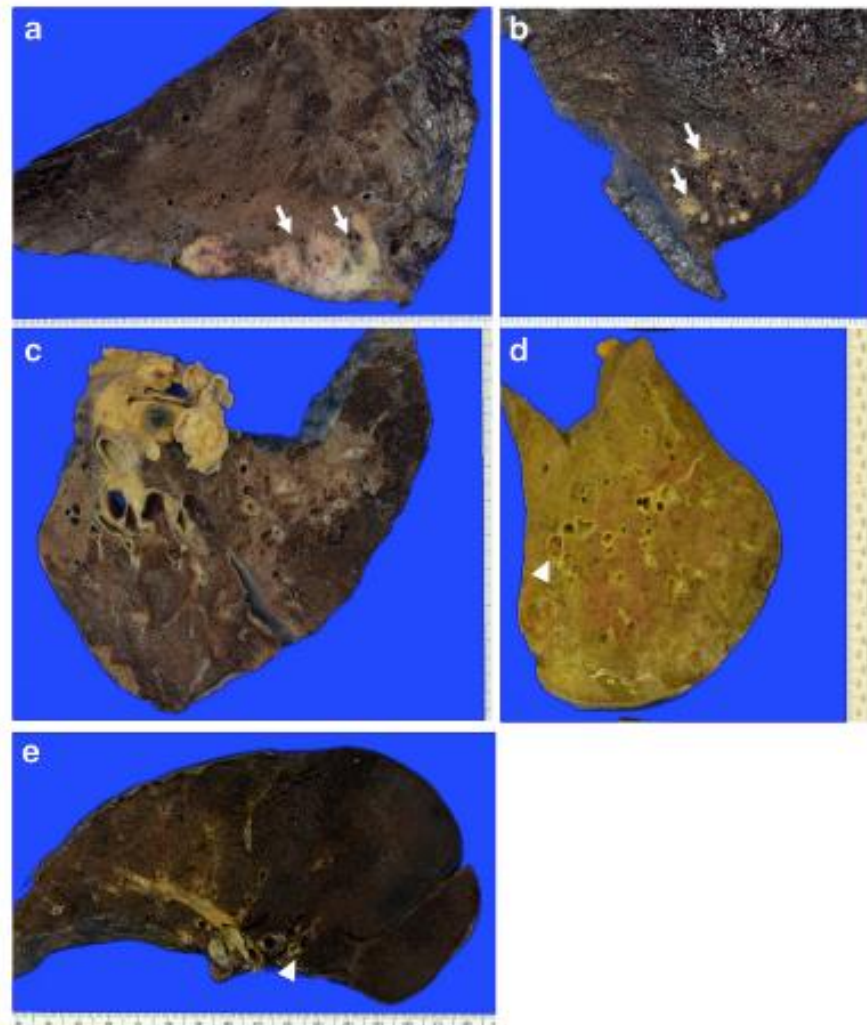


Fig. 1 Macroscopical lung pathology: White nodules with sharply demarcated borders (a P1, b P2, arrow). In c, a mixture of dark red and paler brown lung parenchyma is visible (P5). Thrombi within peripheral branches of the pulmonary artery (arrowhead d P7, e P4). D Additional icteric changes (P7). In e, the thrombus is accompanied by a hemorrhagic infarction of the lung (P4)

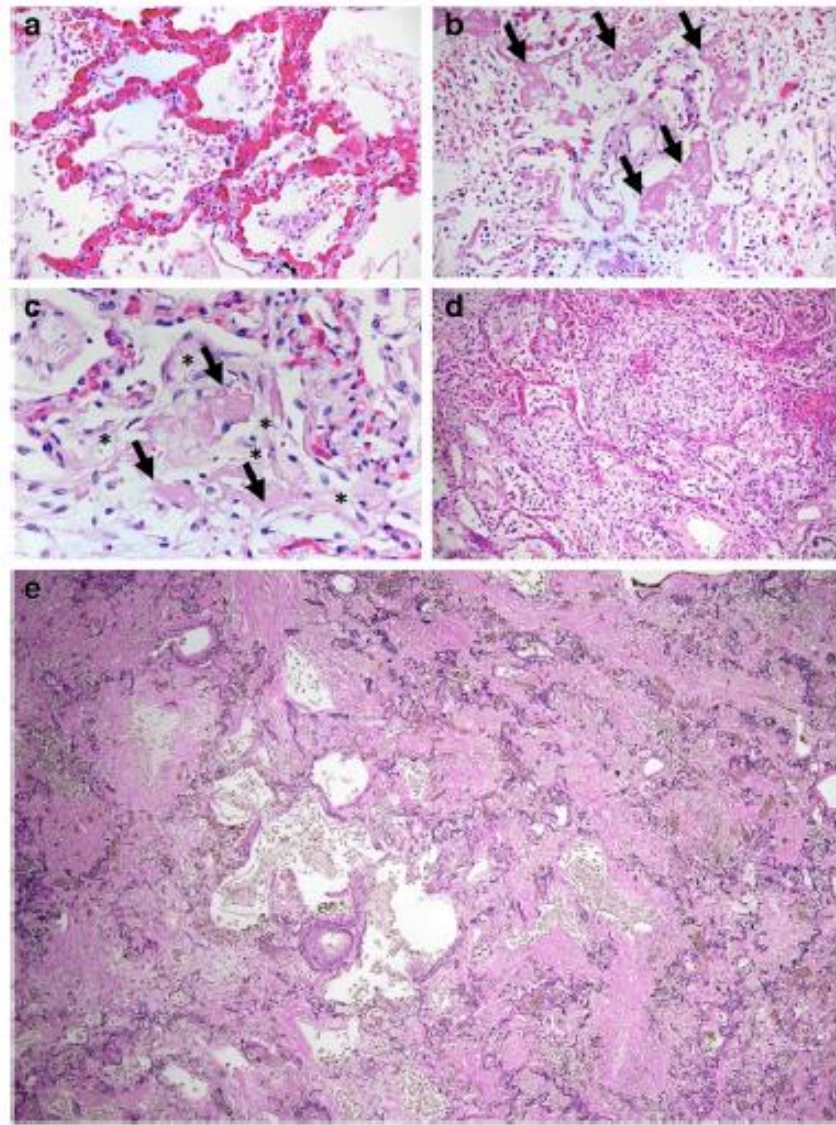


Fig. 3 Histological examples of diffuse alveolar damage (DAD) observed in this study: Very early stages of exudative damage (acute pattern) such as alveolar cell desquamation, congestion, and loss of type 1-pneumocytes were only rarely seen (a). Also, typical hyaline membranes (= alveolar fibrin deposits; arrows), which develop later during the acute (exudative) pattern (b), could only be demonstrated occasionally. In addition, most of these hyaline membranes already showed signs of beginning fibrosis (c; arrows on fibrin, asterisks on organizing foci), classifying these cases as being an intermediate step (= proliferative pattern) to the fibrotic stage. Corresponding to the generally long duration of mechanical ventilation (mean 29 days), DAD in our patients often corresponded to early fibrotic stages, characterized by myofibroblast proliferation with increasing interstitial as well as alveolar collagen deposition (d). Only one patient (patient 8) showed a severe pulmonary fibrosis with dense collagen deposits, large areas of nearly complete loss of normal alveolar architecture and elastic fibers and microcysts as a final and fatal consequence of DAD (e). Respiratory failure was also the main cause of death in this case. Original magnification:  $\times 200$  (a, b),  $\times 400$  (c),  $\times 100$  (d),  $\times 40$  (e). Staining: HE (a–d), elastic van Gieson (e)



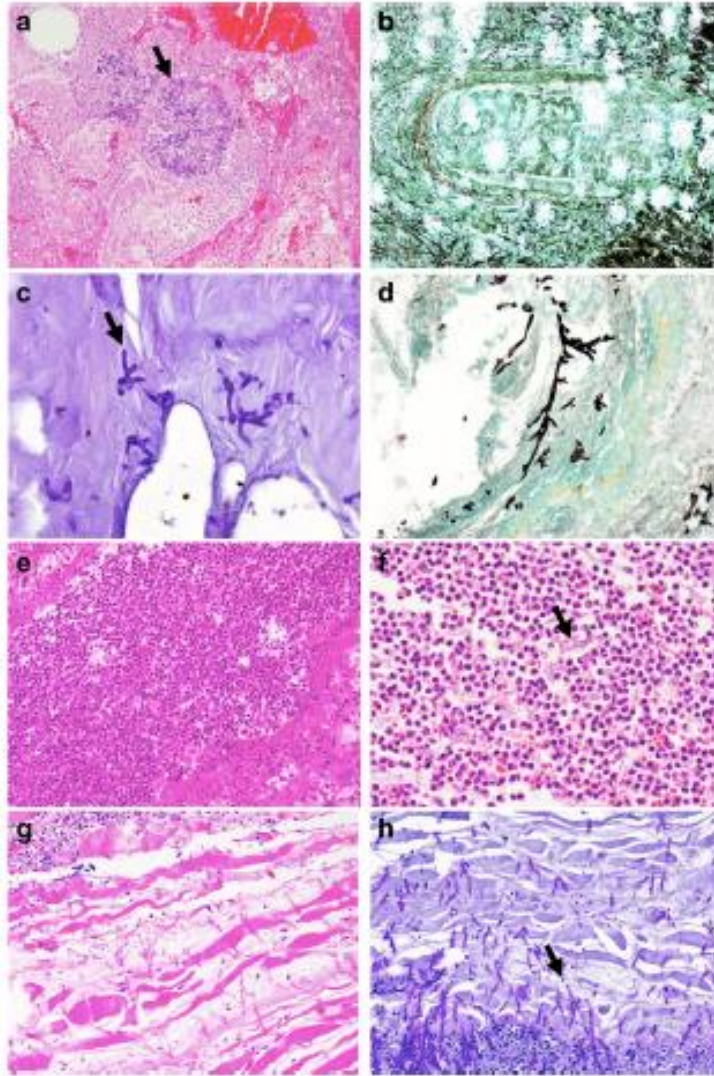


Fig. 4 Fungal infection in different organs: Angioinvasive aspergillosis of the lung (a P1, arrow, HE, original magnification  $\times 100$ ; b P1, Grocott, original magnification  $\times 200$ ). Zygomycetes species in the wall of the large bowel (c P3, arrow, PAS, original magnification  $\times 400$ ; d P3, Grocott, original magnification  $\times 400$ ). Acute inflammation of the lung with zygomycetes species (e P4, HE, original magnification  $\times 200$ ; f P4, arrow, HE, original magnification  $\times 400$ ). Aspergillus species within the wall of an esophageal ulcer (g P5, HE, original magnification  $\times 200$ ; hP5, arrow, PAS, original magnification  $\times 200$ )

### ENVIRONMENTAL VIRUS DETECTION ASSOCIATED WITH ASYMPTOMATIC SARS-COV-2-INFECTED INDIVIDUALS WITH POSITIVE ANAL SWABS

Huang Y, Ding Z, Chen Q, Wu L, Guo L, Zhao C, Sha L, Sun H.. Sci Total Environ. 2021 Jan 20;753:142289. doi: 10.1016/j.scitotenv.2020.142289. Epub 2020 Sep 9.

Level of Evidence: 3 - Local non-random sample

#### BLUF

An observational study conducted by an interdisciplinary group of researchers from Nanjing, China studied certain features of asymptomatic carriers of SARS-CoV-2, and postulate mechanisms by which they possibly might spread the virus. The 19 study patients were recruited from the Nanjing Number 2 Hospital, and the patients were confirmed SARS-CoV-2 positive via nasopharyngeal swabs. The researchers collected the following samples to measure the possible secretion pathways of the virus: the bedside table, the bedside handrails, the mobile phone screen, the palm of the patient's hand, the double sides of the mask, their fog mask, the cell phone shelves and toilet pads. The researchers found positive environmental samples (via nucleoprotein measurement) on the cell phone screen, the telephone shelf in the patient bathrooms, and the patient bedside rails. Authors suggest that SARS-CoV-2 can be found on external surfaces that have come into contact with carriers of the virus, which can be a means by which asymptomatic carriers are able to spread the virus.

#### ABSTRACT

In the fight against the outbreak of COVID-19 in China, we treated some asymptomatic infected individuals. This study aimed to detect pathogens in biological and environmental samples of these asymptomatic infected individuals and analyse their association. Using a cross-sectional study design, we collected biological and environmental samples from 19 patients treated in the isolation ward of Nanjing No.2 Hospital. Biological samples included saliva, pharyngeal swabs, blood, anal swabs, and exhaled breath condensate. Swab samples from the ward environment included inside masks, outside masks, palm swabs, bedside handrails, bedside tables, cell phone screens, toilet cell phone shelves, toilet pads and toilet lids. We also obtained some samples from public areas. We used RT-PCR to detect pathogens and colloidal gold to detect antibodies. As results, 19 asymptomatic infected individuals participated in the survey, with 8 positives for pathogens and 11 positives only for antibodies. Three positive samples were detected from among 96 environmental samples, respectively, from a cell phone surface, a cell phone shelf and a bedside handrail. No positive samples were detected in the exhaled breath condensate in this work. All patients identified pathogens in the environment had positive anal swabs. There was a statistical association between positive anal swabs and positive environmental samples. The association of positive samples from the surrounding of asymptomatically infected patients with positive anal swabs suggested that patients might secrete the virus for a more extended period.

### ALLERGIC REACTIONS INCLUDING ANAPHYLAXIS AFTER RECEIPT OF THE FIRST DOSE OF PFIZER-BIONTECH COVID-19 VACCINE

Shimabukuro T, Nair N.. JAMA. 2021 Jan 21. doi: 10.1001/jama.2021.0600. Online ahead of print.

Level of Evidence: 4 - Case-series

#### BLUF

A case series conducted by the Immunization Safety Office at the Centers for Disease Control and Prevention in Atlanta, Georgia and the Office of Biostatistics and Epidemiology at the Food and Drug Administration in Bethesda, Maryland identified 21 cases from December 14-23, 2020 submitted to the Vaccine Adverse Event Reporting System (VAERS) after the first dose of Pfizer-BioNTech COVID-19 vaccine. The cases include 17/21 patients with documented history of allergies/allergic reactions, 4 patients hospitalized, 17 treated in the emergency department with symptoms of urticaria, angioedema, rash, and sense of throat closure, however no deaths were reported (See Table). Authors urge that vaccination locations should have access to epinephrine for managing anaphylaxis, screen for contraindications and precautions, observe vaccine recipients for 15 or 30 minutes afterwards, and acknowledge the importance of recognizing/reporting adverse effects of vaccine administration to VAERS.

Table. Characteristics of Cases of Anaphylaxis (N = 21) Following Receipt of Pfizer-BioNTech COVID-19 Vaccine Reported to the Vaccine Adverse Events Reporting System (VAERS), December 14-23, 2020<sup>a</sup>

Age, y	Sex	Past history		Reaction onset, min	Signs and symptoms	Treatment setting	Epinephrine received	Brighton level <sup>c</sup>	Outcome or disposition <sup>d</sup>
		Allergies or allergic reactions <sup>b</sup>	Anaphylaxis						
27	F	Tropical fruit	No	2	Diffuse erythematous rash, sensation of throat closure	ED	Yes	2	Recovered at time of report
35	M	No	No	5	Diffuse erythematous rash, swollen tongue	ED	Yes	1	Discharged home
55	F	Rabies vaccine	Yes, rabies vaccine	5	Generalized urticaria, wheezing	Inpatient	Yes	1	Discharged home
52	F	Sulfa drugs	Yes, sulfa drugs	7	Wheezing, stridor, nausea	Inpatient	Yes	1	Discharged home
30	F	Bee sting	No	8	Generalized urticaria, wheezing	Inpatient	Yes	1	Recovered at time of report
32	F	No	No	10	Diffuse erythematous rash, difficulty breathing	Inpatient	Yes	2	Discharged home
60	F	Eggs, milk, sulfa drugs, jellyfish sting	Yes, jellyfish sting	10	Diffuse erythematous rash, hoarseness	ED	Yes	2	Recovered at time of report
29	F	Shellfish, eggs	No	10	Generalized urticaria, swollen lips and tongue	ED	Yes	1	Discharged home
52	F	Metoprolol, clarithromycin	No	10	Generalized urticaria, stridor, wheezing	ED	Yes	1	Recovered at time of report
49	F	Iodinated contrast media	No	13	Generalized urticaria, swollen throat	ED	Yes	1	Recovered at time of report
36	F	No	No	13	Generalized urticaria, nausea	ED	Yes	2	Not specified
40	F	Sulfa drugs, walnuts	Yes, walnuts	14	Generalized urticaria, nausea	ED	Yes	2	Discharged home
33	F	Wasp sting	No	15	Diffuse erythematous rash, swollen lip	ED	Yes	1	Recovered at time of report
41	F	Prochlorperazine	Yes, prochlorperazine	15	Diffuse erythematous rash, persistent dry cough	ED	No	2	Discharged home
57	F	Penicillin, azithromycin	Yes, unspecified	15	Diffuse pruritic rash, hoarseness	ED	Yes	2	Recovered at time of report
45	M	No	No	23	Generalized urticaria, swollen airway	ED	Yes	2	Discharged home
46	F	Hydrocodone, nuts	No	25	Diffuse erythematous rash, difficulty swallowing	ED	Yes	2	Discharged home
30	F	Cats, dogs	No	30	Generalized pruritus, wheezing	ED	No	2	Discharged home
44	F	Influenza A(H1N1) vaccine	Yes, Influenza A(H1N1) vaccine	34	Generalized urticaria, swollen lips	ED	Yes	1	Discharged home
29	F	Sulfa drugs	No	54	Generalized urticaria, persistent cough	ED	Yes	2	Recovered at time of report
29	F	Steroids	No	150	Diffuse pruritic rash, swollen lip	ED	Yes	1	Discharged home

Abbreviations: COVID-19, coronavirus disease 2019; ED, emergency department.

<sup>a</sup> Table is reproduced from the MMWR report.<sup>2</sup>

<sup>b</sup> As documented in the VAERS report or medical records, or through confirmation with the treating clinician or the patients themselves.

<sup>c</sup> The Brighton Collaboration case definition uses combinations of symptoms to define levels of diagnostic certainty. Brighton level 1 represents the highest

level of diagnostic certainty that a reported case is indeed a case of anaphylaxis; levels 2 and 3 are successively lower levels of diagnostic certainty. Level 4 is a case reported as anaphylaxis but that does not meet the Brighton Collaboration case definition. Level 5 is a case that was neither reported as anaphylaxis nor meets the case definition.<sup>6</sup>

<sup>d</sup> As documented in the description of the adverse event in the VAERS report.

Table. Characteristics of Cases of Anaphylaxis (N = 21) Following Receipt of Pfizer-BioNTech COVID-19 Vaccine Reported to the Vaccine Adverse Events Reporting System (VAERS), December 14-23, 2020



### LEAVING NO STONE UNTURNED IN LIGHT OF THE COVID-19 FAECAL-ORAL HYPOTHESIS? A WATER, SANITATION AND HYGIENE (WASH) PERSPECTIVE TARGETING LOW-INCOME COUNTRIES

Gwenzi W.. Sci Total Environ. 2021 Jan 20;753:141751. doi: 10.1016/j.scitotenv.2020.141751. Epub 2020 Aug 20.

Level of Evidence: 5 - Review / Literature Review

#### BLUF

An engineer from the Biosystems and Environmental Research Group at the University of Zimbabwe reviews literature describing SARS-CoV-2's proliferation and persistence in the human gastrointestinal system. They argue that because evidence supports fecal-oral transmission of SARS-CoV-2, developing countries are vulnerable to this mode of transmission and require higher standards in water sanitation systems, raw marine/aquatic foods processing, produce production systems relying on raw wastewater, and public markets (Figure 2). The author recommends emphasizing the importance of improved sanitation practices to minimize this exposure risk in developing countries.

#### ABSTRACT

The human coronavirus disease (COVID-19) is now a global pandemic. Social distancing, hand hygiene and the use of personal protective equipment dominate the current fight against COVID-19. In developing countries, the need for clean water provision, sanitation and hygiene has only received limited attention. The current perspective examines the latest evidence on the occurrence, persistence and faecal-oral transmission of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), the etiological agent causing COVID-19. Evidence shows that SARS-CoV-2 proliferate in the human gastrointestinal system, and is shed via faeces. SARS-CoV-2 can survive and remain viable for up to 6 to 9 days on surfaces. Recent wastewater-based epidemiological studies from several countries also detected SARS-CoV-2 RNA in raw wastewaters. Shell disorder analysis shows that SARS-CoV-2 has a rigid outer shell conferring resilience, and a low shell disorder conferring moderate potential for faecal-oral transmission. Taken together, these findings point to potential faecal-oral transmission of SARS-CoV-2, which may partly explain its rapid transmission. Three potential mechanisms may account for SARS-CoV-2 faecal-oral transmission: (1) untreated contaminated drinking water, (2) raw and poorly cooked marine and aquatic foods from contaminated sources, (3) raw wastewater-based vegetable production systems (e.g., salads) and aquaculture, and (4) vector-mediated transmission from faecal sources to foods, particularly those from open markets and street vending. SARS-CoV-2 faecal-oral transmission could be particularly high in developing countries due to several risk factors, including; (1) poor drinking water, wastewater and sanitation infrastructure, (2) poor hygiene and food handling practices, (3) unhygienic and rudimentary funeral practices, including home burials close to drinking water sources, and (4) poor social security and health care systems with low capacity to cope with disease outbreaks. Hence, clean drinking water provision, proper sanitation, food safety and hygiene could be critical in the current fight against COVID-19. Future research directions on COVID-19 faecal-oral transmission are highlighted.

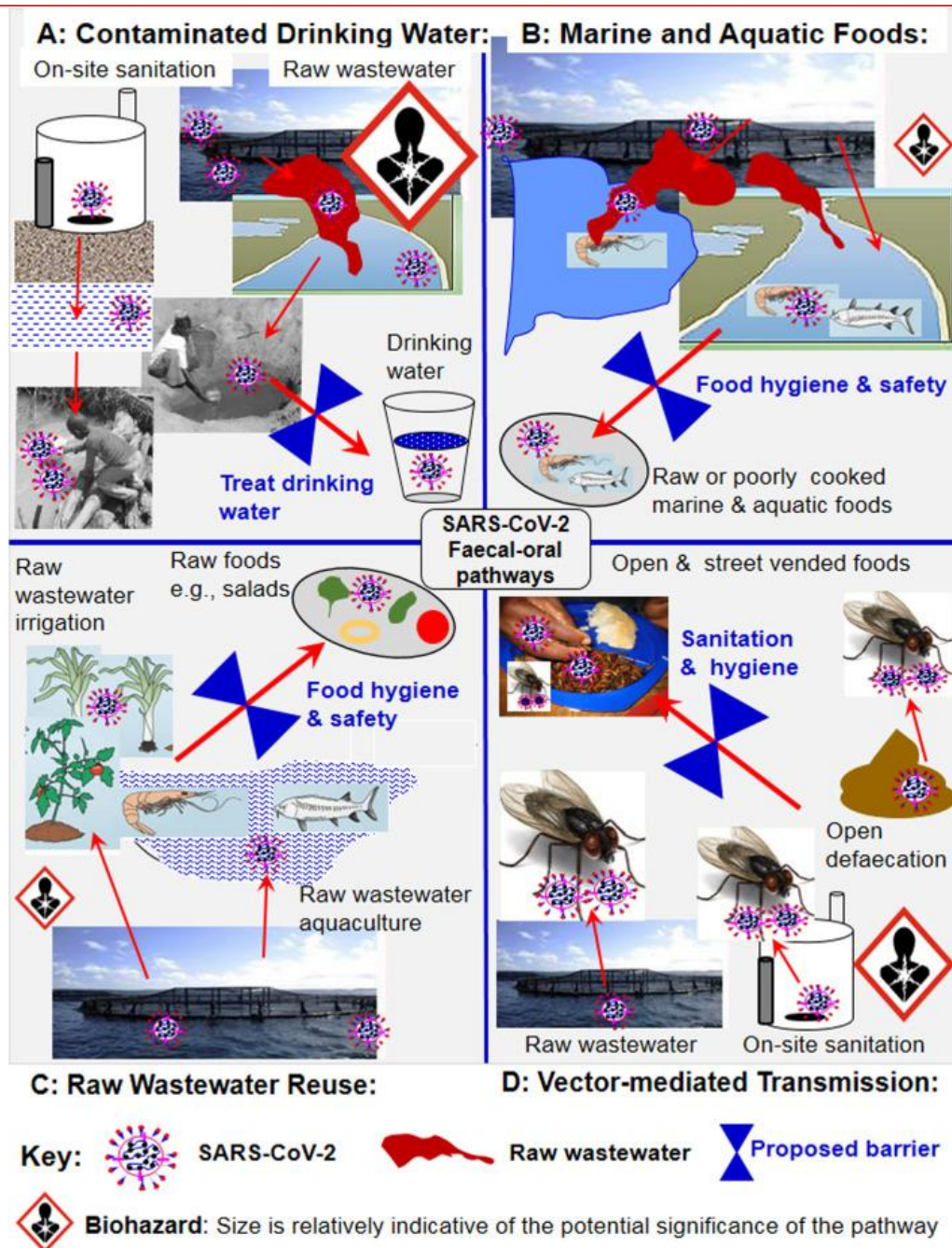


Figure 2. Proposed WASH strategy targeting water, sanitation, and hygiene to limit SARS-CoV2 exposure in developing countries

### EFFECT OF BAMLANIVIMAB AS MONOTHERAPY OR IN COMBINATION WITH ETESEVIMAB ON VIRAL LOAD IN PATIENTS WITH MILD TO MODERATE COVID-19: A RANDOMIZED CLINICAL TRIAL

Gottlieb RL, Nirula A, Chen P, Boscia J, Heller B, Morris J, Huhn G, Cardona J, Mocherla B, Stosor V, Shawa I, Kumar P, Adams AC, Van Naarden J, Custer KL, Durante M, Oakley G, Schade AE, Holzer TR, Ebert PJ, Higgs RE, Kallewaard NL, Sabo J, Patel DR, Klekotka P, Shen L, Skovronsky DM. JAMA. 2021 Jan 21. doi: 10.1001/jama.2021.0202. Online ahead of print. Level of Evidence: 2 - Randomized trial or observational study with dramatic effect

#### BLUF

In this randomized double-blind clinical trial, drug developers from Eli Lilly and Company and their American clinical trial partners investigated the effect of antispikes neutralizing antibodies (bamlanivimab monotherapy or combination therapy with bamlanivimab and etesevimab) versus placebo for patients infected with mild to moderate SARS-CoV-2 (Figure 1). They found combination therapy significantly reduced viral load on day 11 of treatment, which was not replicated with monotherapy or placebo (Figure 2, Table 1). Authors suggest combination therapy may be useful in the treatment of COVID-19, and are working on further clinical trials investigating its clinical benefits in high-risk patients.

#### ABSTRACT

**Importance:** Coronavirus disease 2019 (COVID-19) continues to spread rapidly worldwide. Neutralizing antibodies are a potential treatment for COVID-19. **Objective:** To determine the effect of bamlanivimab monotherapy and combination therapy with bamlanivimab and etesevimab on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral load in mild to moderate COVID-19. **Design, Setting, and Participants:** The BLAZE-1 study is a randomized phase 2/3 trial at 49 US centers including ambulatory patients (N = 613) who tested positive for SARS-CoV-2 infection and had 1 or more mild to moderate symptoms. Patients who received bamlanivimab monotherapy or placebo were enrolled first (June 17–August 21, 2020) followed by patients who received bamlanivimab and etesevimab or placebo (August 22–September 3). These are the final analyses and represent findings through October 6, 2020. **Interventions:** Patients were randomized to receive a single infusion of bamlanivimab (700 mg [n = 101], 2800 mg [n = 107], or 7000 mg [n = 101]), the combination treatment (2800 mg of bamlanivimab and 2800 mg of etesevimab [n = 112]), or placebo (n = 156). **Main Outcomes and Measures:** The primary end point was change in SARS-CoV-2 log viral load at day 11 (+/-4 days). Nine prespecified secondary outcome measures were evaluated with comparisons between each treatment group and placebo, and included 3 other measures of viral load, 5 on symptoms, and 1 measure of clinical outcome (the proportion of patients with a COVID-19-related hospitalization, an emergency department [ED] visit, or death at day 29). **Results:** Among the 577 patients who were randomized and received an infusion (mean age, 44.7 [SD, 15.7] years; 315 [54.6%] women), 533 (92.4%) completed the efficacy evaluation period (day 29). The change in log viral load from baseline at day 11 was -3.72 for 700 mg, -4.08 for 2800 mg, -3.49 for 7000 mg, -4.37 for combination treatment, and -3.80 for placebo. Compared with placebo, the differences in the change in log viral load at day 11 were 0.09 (95% CI, -0.35 to 0.52; P = .69) for 700 mg, -0.27 (95% CI, -0.71 to 0.16; P = .21) for 2800 mg, 0.31 (95% CI, -0.13 to 0.76; P = .16) for 7000 mg, and -0.57 (95% CI, -1.00 to -0.14; P = .01) for combination treatment. Among the secondary outcome measures, differences between each treatment group vs the placebo group were statistically significant for 10 of 84 end points. The proportion of patients with COVID-19-related hospitalizations or ED visits was 5.8% (9 events) for placebo, 1.0% (1 event) for 700 mg, 1.9% (2 events) for 2800 mg, 2.0% (2 events) for 7000 mg, and 0.9% (1 event) for combination treatment. Immediate hypersensitivity reactions were reported in 9 patients (6 bamlanivimab, 2 combination treatment, and 1 placebo). No deaths occurred during the study treatment. **Conclusions and Relevance:** Among nonhospitalized patients with mild to moderate COVID-19 illness, treatment with bamlanivimab and etesevimab, compared with placebo, was associated with a statistically significant reduction in SARS-CoV-2 viral load at day 11; no significant difference in viral load reduction was observed for bamlanivimab monotherapy. Further ongoing clinical trials will focus on assessing the clinical benefit of antispikes neutralizing antibodies in patients with COVID-19 as a primary end point. **Trial Registration:** ClinicalTrials.gov Identifier: NCT04427501.

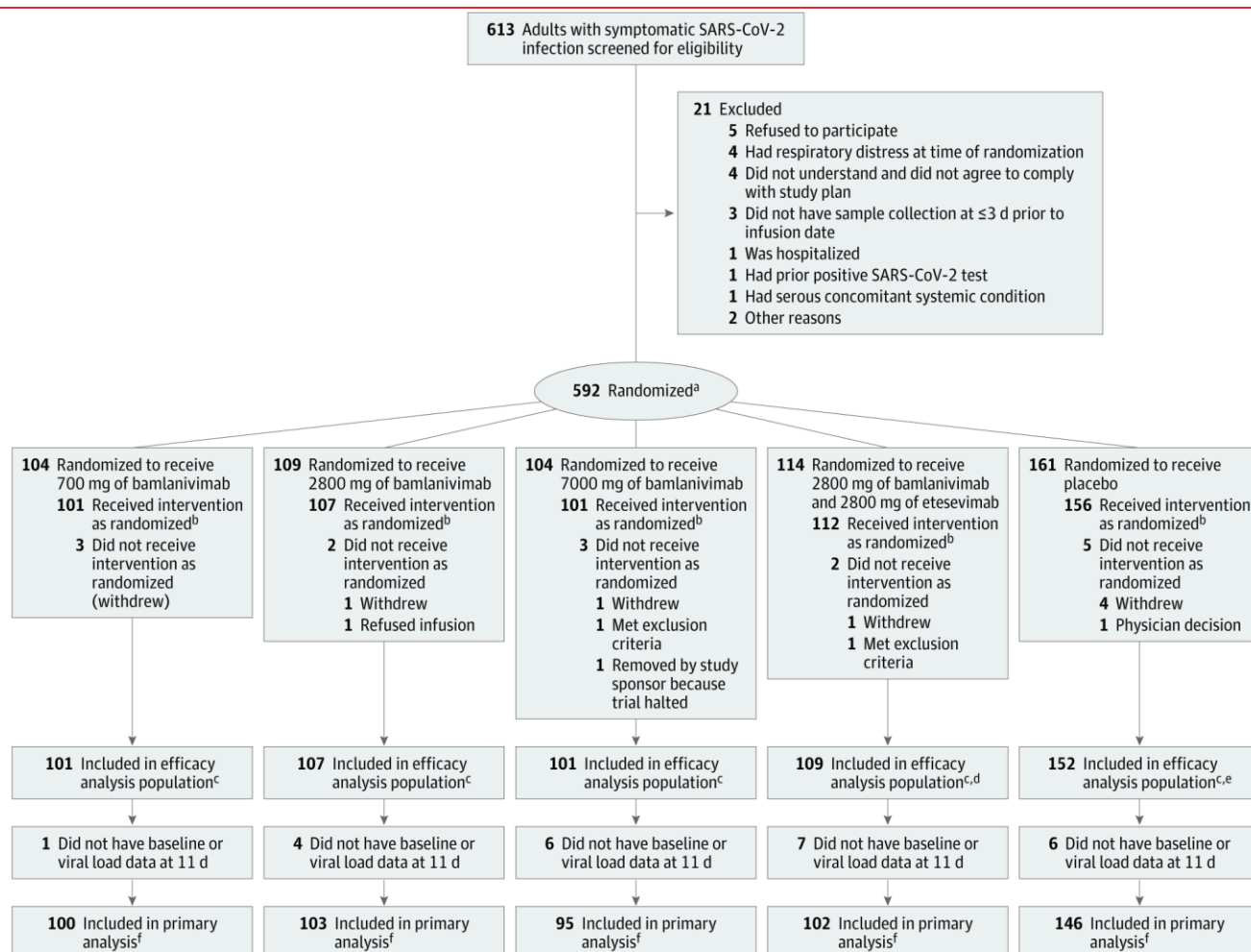


Figure 1

SARS-CoV-2 indicates severe acute respiratory syndrome coronavirus 2.

a Stratified by duration since symptom onset to randomization ( $\leq 8$  days vs  $> 8$  days).

b Included in the adverse event analysis.

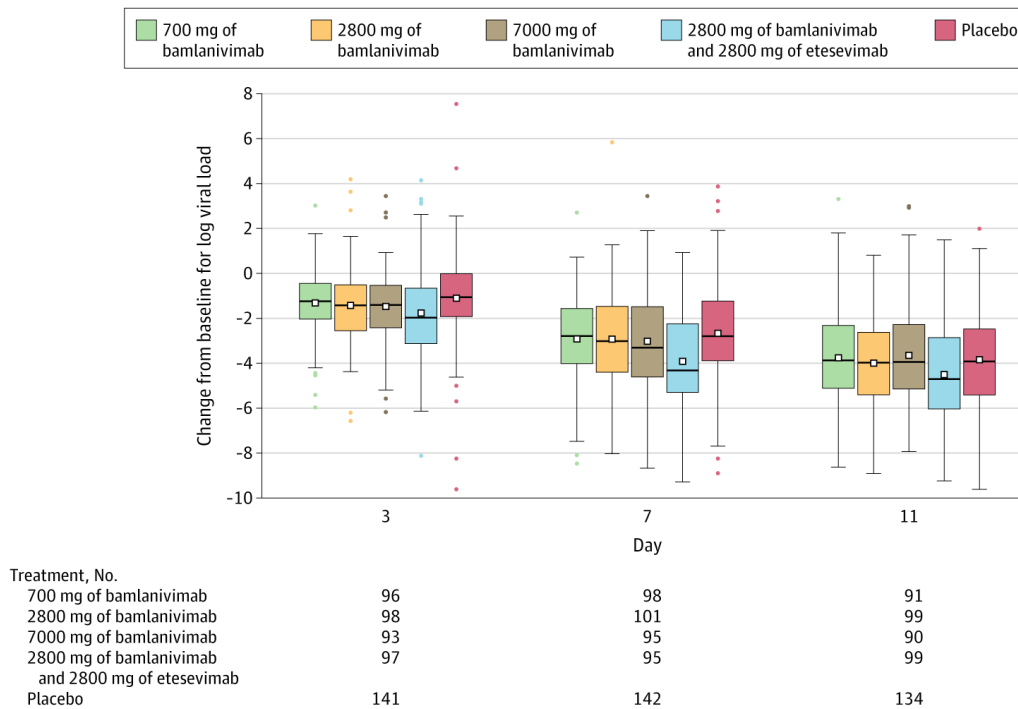
c Had data on at least 1 postbaseline viral load.

d Three patients were excluded from the efficacy analysis because they did not have data on at least 1 postbaseline viral load. However, these patients were included in the safety analysis because they did receive the intervention as randomized.

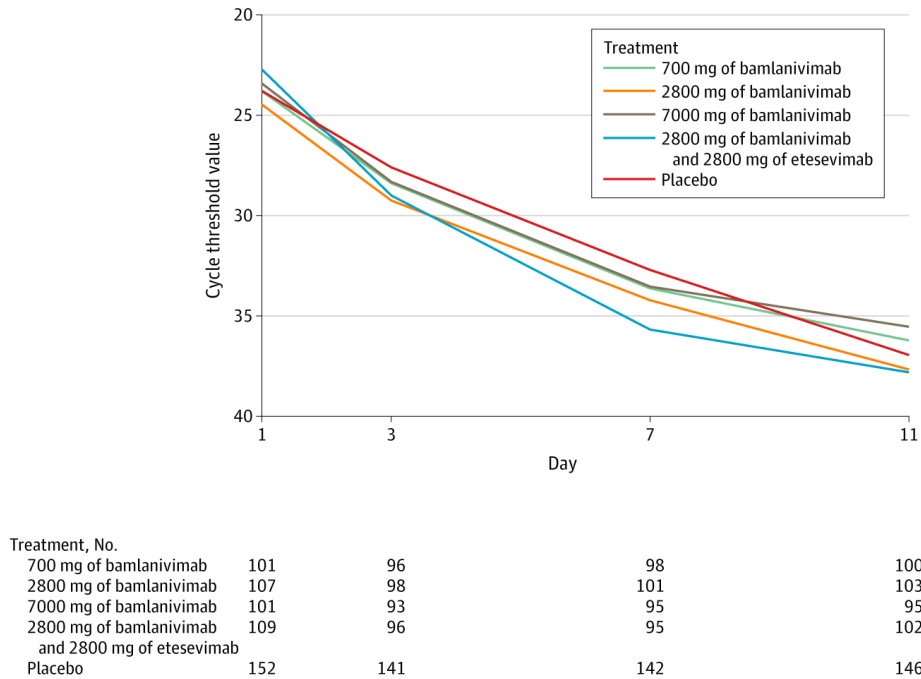
e Four patients were excluded from the efficacy analysis because they did not have data on at least 1 postbaseline viral load. However, these patients were included in the safety analysis because they did receive the intervention as randomized.

f Had data on viral load for both baseline and at day 11.

**A** Box plot for change from baseline to log viral load



**B** Mean SARS-CoV-2 viral load cycle threshold value



Randomization and infusion occurred on day 1. A, The middle line represents the median change from baseline for log viral load; the boxes represent the interquartile range; the squares inside each box represent the mean; the whiskers extend to the highest and lowest values within 1.5 x the interquartile range of the nearer quartile; and the dots represent observed values outside that range. B, The cycle threshold is defined as the number of cycles required for the fluorescent signal of the polymerase chain reaction assay to cross the threshold (ie, exceeds background level). Cycle threshold levels are inversely proportional to the number of copies of the virus and thus serve to estimate viral load. Virus is presumed to be undetectable beyond approximately 40 cycle thresholds. SARS-CoV-2 indicates severe acute respiratory syndrome coronavirus 2.



Table 1. Patient Demographics and Baseline Clinical Characteristics

Characteristic	Bamlanivimab monotherapy			Combination therapy (2800 mg bamlanivimab and 2800 mg of etesevimab) (n = 112)	Placebo (n = 156)
	700 mg (n = 101)	2800 mg (n = 107)	7000 mg (n = 101)		
Age					
Median (IQR), y	39 (31-58)	45 (31-56)	46 (34-55)	44 (30-60)	46 (35-57)
≥65 y, No. (%)	11 (10.9)	8 (7.5)	14 (13.9)	13 (11.6)	23 (14.7)
Sex, No. (%)					
Female	63 (62.4)	51 (47.7)	58 (57.4)	58 (51.8)	85 (54.5)
Male	38 (37.6)	56 (52.3)	43 (42.6)	54 (48.2)	71 (45.5)
Self-reported race, No./total (%)					
White	90/101 (89.1)	90/104 (86.5)	89/100 (89.0)	105/111 (94.6)	133/151 (88.1)
Black	7/101 (6.9)	7/104 (6.7)	8/100 (8.0)	4/111 (3.6)	7/151 (4.6)
Asian	1/101 (1.0)	5/104 (4.8)	3/100 (3.0)	2/111 (1.8)	8/151 (5.3)
American Indian or Alaska Native	1/101 (1.0)	0/104	0/100	0/111	2/151 (1.3)
Native Hawaiian or other Pacific Islander	0/101	1/104 (1.0)	0/100	0/111	0/151
Multiple	2/101 (2.0)	1/104 (1.0)	0/100	0/111	1/151 (0.7)
Self-reported ethnicity, No. (%)					
Hispanic	49 (48.5)	47 (43.9)	39 (38.6)	42 (37.5)	68 (43.6)
Not Hispanic	52 (51.5)	60 (56.1)	62 (61.4)	70 (62.5)	88 (56.4)
BMI <sup>a</sup>					
Median (IQR)	(n = 100) 28.8 (25.1-35.4)	(n = 106) 30.4 (25.6-34.0)	(n = 97) 27.8 (24.7-32.3)	(n = 109) 27.2 (22.9-33.0)	(n = 152) 29.2 (25.9-34.2)
≥30 but <40, No./total (%)	34/100 (34.0)	50/106 (47.2)	28/97 (28.9)	33/109 (30.3)	63/152 (41.4)
≥40, No./total (%)	11/100 (11.0)	6/106 (5.7)	7/97 (7.2)	7/109 (6.4)	9/152 (5.9)
Risk factors for severe COVID-19, No. (%) <sup>b</sup>	74 (73.3)	78 (72.9)	63 (62.4)	67 (59.8)	105 (67.3)
COVID-19 severity, No. (%) <sup>c</sup>					
Mild	83 (82.2)	79 (73.8)	70 (69.3)	92 (82.1)	125 (80.1)
Moderate	18 (17.8)	28 (26.2)	31 (30.7)	20 (17.9)	31 (19.9)
Duration of symptoms, median (IQR), d <sup>d</sup>	5 (3-6)	4 (3-6)	4 (2-7)	4 (3-5)	4 (3-6)
SARS-CoV-2 cycle threshold, mean (SD) <sup>e</sup>	23.8 (6.5)	24.5 (7.6)	23.4 (6.8)	22.7 (8.0)	23.8 (7.8)

Abbreviations: BMI, body mass index; COVID-19, coronavirus disease 2019; IQR, interquartile range; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

<sup>a</sup> Calculated as weight in kilograms divided by height in meters squared.

<sup>b</sup> Aged 55 years or older; BMI of 30 or greater; medical history of diabetes, chronic kidney disease, cardiovascular disease, chronic respiratory disease, or immunosuppressive disease; or receiving immunosuppressive treatment.

<sup>c</sup> Based on 8 symptom domains (cough, shortness of breath, feeling feverish, fatigue, body aches and pain, sore throat, chills, headache) that were rated from none or absent (score of 0) to severe (score of 3), which were combined

to provide an overall score (range, 0-24; symptom score excluded loss of appetite, taste, and smell).

<sup>d</sup> Calculated based on the patient-reported start date of symptom onset and compared with the date of treatment infusion.

<sup>e</sup> The cycle threshold is the number of polymerase chain reaction cycles required for a viral sample to be detected. Lower numbers suggest more infecting organisms and an increased burden of disease. Values range between 0 and 45; the (log base 10) viral load was calculated from the cycle threshold value (45 - cycle threshold)/log<sub>2</sub>10, or (45 - cycle threshold)/3.321928.

## HAND SANITIZER-INDUCED OCULAR INJURY: A COVID-19 HAZARD IN CHILDREN

Yangzes S, Grewal S, Gailson T, Grewal SPS.. JAMA Ophthalmol. 2021 Jan 21. doi: 10.1001/jamaophthalmol.2020.6351. Online ahead of print.

Level of Evidence: 5 - Case Report

### BLUF

Physicians at the Grewal Eye Institute and Postgraduate Institute of Medical Education in Chandigarh, India present cases of toxic keratopathy in two children (Figure 1) who were exposed to alcohol-based hand rubs (ABHRs). This study suggests that the ABHR stations used to reduce SARS-CoV-2 transmission are often at eye level for younger children (Figure 2) and in order to prevent such injuries, children should be taught how to properly use hand sanitizers and encouraged to wash hands with soap and water. Authors suggest that hand sanitizing stations should have warnings and separate dispensers at a lower levels for children.

### FIGURES

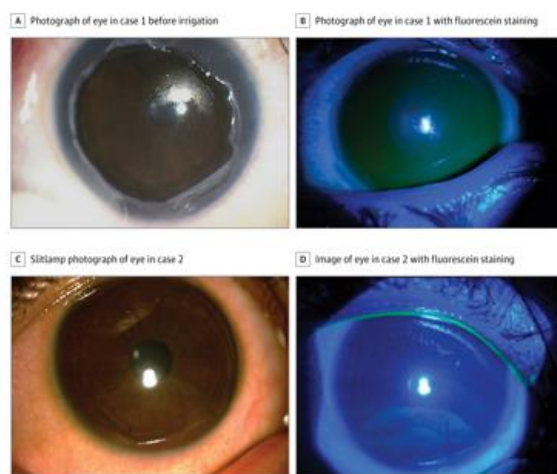


Figure Legend:

**Anterior Segment Findings** A, Snapshot of the right eye of a 4-year-old girl before irrigation depicting large epithelial defect sparing a rim of devitalized corneal epithelium. B, Photograph of the same eye after fluorescein staining, showing total epithelial defect. C, Slitlamp photograph of the right eye of a 5-year-old boy. D, Diffuse conjunctival congestion is seen with superficial punctate keratopathy in the inferior quadrant, which is clearly visible on fluorescein staining.

'Figure 1.' Anterior Segment Findings



Figure Legend:

**Representative Illustration of a Child Using a Hand Sanitizer Dispenser** Representative illustration of a child attempting to sanitize his hand through a foot-operated dispenser located above his eye level. In this position, apart from the aerosols, squirt of liquid can enter the eyes of the child, causing injury.

'Figure 2.' Representative Illustration of a Child Using a Hand Sanitizer Dispenser



### THE EFFECT OF COVID-19 EPIDEMIC ON THE SEXUAL FUNCTION OF HEALTHCARE PROFESSIONALS

Bulut EC, Ertaş K, Bulut D, Koparal MY, Çetin S.. *Andrologia*. 2021 Jan 13:e13971. doi: 10.1111/and.13971. Online ahead of print.

Level of Evidence: 3 - Local non-random sample

#### BLUF

An observational study conducted by multiple hospitals and medical schools throughout Turkey administered the Impact of Event Scale-Revised (IES-R) and Index of Erectile Function-5 (IIEF-5) to 159 male COVID-19 unit healthcare workers (102 physicians and 57 nurses) and 200 controls. They found a higher prevalence of erectile dysfunction (ED) among healthcare workers (82.4%) compared to control groups (50.5%) (See Table 3), higher percentages in nurses (89.5%) compared to doctors (78.4%) (See Table 4), and higher prevalence among healthcare workers in the diagnosed patient area (85.7%) compared to suspected patient areas (77%) (See Table 2). Authors suggest that these findings correlate to a higher rate of PTSD (using self-reported ED as indicator of PTSD) in front line healthcare workers, and that traumatic experiences associated with being a healthcare worker during COVID-19 pandemic lead to sexual dysfunction, thus highlighting the need for psychological support for healthcare providers during the pandemic.

#### ABSTRACT

Studies have shown that healthcare professionals struggling with epidemics develop symptoms of post-traumatic stress disorder. The aim of this study is to show how often and severely erectile dysfunction, one of the components of post-traumatic stress disorder, is seen among healthcare professionals during COVID-19 outbreak. The Impact of Event Scale-Revised (IES-R) and the Index of Erectile Function-5 (IIEF-5) were applied to 159 male healthcare professionals working in COVID-19 units and a control group of 200 people. Healthcare professional group was divided into subgroups according to occupation (physician, nurse), age-group (18-25, 26-30, >30), marital status and unit of work (Suspected Patient Area, Diagnosed Patient Area). Both stress disorder and erectile dysfunction were seen at higher rates in healthcare professionals group ( $p < .001$ ). The median IIEF-5 scores of nurses, married subjects and those working in the Diagnosed Patient Area, were found to be higher ( $p < .001$ ,  $p = .014$ ,  $p = .011$  respectively). During the COVID-19 outbreak, healthcare professionals are exposed to psychological trauma and their sexual function may be negatively affected. The measures to be taken are important to estimate which groups are more affected.

**TABLE 3** Scale Scores of the Whole Cohort and Subgroups

	Total Score, Median (IQR)	Occupation Median-IQR)			Age Median-IQR)				Marital St Median-IC
		Physician	Nurse	p	18-25	26-30	>30	p	
Index of Erectile Function (IIEF-5)	13 (5-24)	15 (5-24)	10 (5-23)	<b>&lt;.001</b>	14 (5-23)	11.5 (5-23)	14 (5-24)	.715	16 (5-24)
The Impact of Event Scale-Revised (IES-R)	28 (0-75)	28 (1-75)	23 (0-74)	.711	25 (0-74)	20.5 (1-72)	28 (1-75)	<b>.648**</b>	19 (1-74)

Bold statements show statistically significant difference.

\*Mann-Whitney U test, Kruskal-Wallis H test.

Table 3: Scale Scores of the Whole Cohort and Subgroups

**TABLE 4** Regression analysis

Model predicting severe ED								
		Univariate			Multivariate**			
		OR	CI 95%	p	OR	CI 95%	p	
Occupation	Physician	Ref.	1.39-7.29	0.006	Ref.			0.002
	Nurse	3.18			3.89	1.62-9.33		
Age	1	Ref.						0.226
	2	0.64	0.20-2.09					
	3	0.41	0.14-1.16					
Marital status	Single	Ref.		0.190	Ref.			0.108
	Married	2.12	0.68-6.56		2.64	0.80-8.67		
Working Area	Suspected Patient Area	Ref.		0.036	Ref.			0.01
	Diagnosed Patient Area	2.81	1.07-7.36		3.42	1.24-9.41		

Bold statements show statistically significant difference.

\*Wald test.

\*\*p > 2 factors were included in the multivariate model in univariate analysis.

Table 4: Regression Analysis

TABLE 2 Scale intensity of the whole cohort and subgroups

	Total (number, percentage)	Occupation		Age		Marital status			Unit of work		
		Physician (n = 102)	Nurse (n = 57)	18-25 (n = 24)	26-30 (n = 38)	>30 (n = 97)	Single (n = 37)	Married (n = 122)	Suspected patient area (n = 61)	Diagnosed patient area (n = 98)	
Index of erectile function (IIEF-5)											
No ED (22-25)	28 (17.6%)	22 (21.6%)	6 (10.5%)	4 (16.7%)	8 (21.1%)	16 (16.5%)	8 (21.6%)	20 (16.4%)	14 (23%)	14 (14.3%)	
Mild (17-21)	25 (15.7%)	19 (18.6%)	6 (10.5%)	4 (16.7%)	5 (13.2%)	16 (16.5%)	10 (27%)	15 (12.3%)	11 (18%)	14 (14.3%)	
Mild to Moderate (12-16)	39 (24.5%)	30 (29.4%)	9 (15.8%)	5 (20.8%)	6 (15.8%)	28 (28.9%)	10 (27%)	29 (23.8%)	19 (31.1%)	20 (20.4%)	
Moderate (8-11)	38 (23.9%)	19 (18.6%)	19 (33.3%)	4 (16.7%)	11 (28.9%)	23 (23.7%)	5 (13.5%)	33 (27%)	11 (18%)	27 (27.6%)	
Severe (5-7)	29 (18.2%)	12 (11.8%)	17 (29.8%)	7 (29.2%)	8 (21.1%)	14 (14.4%)	4 (10.8%)	25 (20.5%)	6 (9.8%)	23 (23.5%)	
p		=.002		.644		.087		=.062			
The impact of event scale-revised (IES-R)											
Normal (0-8)	38 (23.9%)	25 (24.5%)	13 (22.8%)	7 (29.2%)	10 (26.3%)	21 (21.6%)	10 (27%)	28 (23%)	14 (23%)	24 (24.5%)	
Mild (9-25)	34 (21.4%)	18 (17.6%)	16 (28.1%)	5 (20.8%)	11 (28.9%)	18 (18.6%)	12 (32.4%)	22 (18%)	17 (27.9%)	17 (17.3%)	
Moderate (26-43)	65 (40.9%)	46 (45.1%)	19 (33.3%)	8 (33.3%)	12 (31.6%)	45 (46.4%)	14 (37.8%)	51 (41.8%)	22 (36.1%)	43 (43.9%)	
Severe (43-88)	22 (13.8%)	13 (12.7%)	9 (15.8%)	4 (16.7%)	5 (13.2%)	13 (13.4%)	1 (2.7%)	21 (17.2%)	8 (13.1%)	14 (14.3%)	
p		=.336		.652		.061		=.461			

Bold statements show statistically significant difference.

\*Pearson's chi-square test.

\*\*Fisher's exact test.

Table 2: Scale Intensity of the whole cohort and subgroups

## IMPACT ON PUBLIC MENTAL HEALTH

### PROSPECTIVE INTERACTIVE INFLUENCE OF FINANCIAL STRAIN AND EMOTIONAL NONACCEPTANCE ON PROBLEMATIC ALCOHOL USE DURING THE COVID-19 PANDEMIC

Gratz KL, Scamaldo KM, Vidaña AG, Richmond JR, Tull MT.. Am J Drug Alcohol Abuse. 2021 Jan 11:1-10. doi: 10.1080/00952990.2020.1849248. Online ahead of print.  
Level of Evidence: 3 - Local non-random sample

#### BLUF

Psychologists associated with the University of Toledo conducted a study to further understand the relationship between alcohol abuse and financial strain during the COVID-19 pandemic. A total of 254 adults were surveyed, 72% of whom were employed full-time, 14.2% employed part-time, and 13.8% unemployed (Table 2). The Difficulties in Emotion Regulation Scale (DERS) was used to measure emotion regulation difficulties, the Alcohol Use Disorders Identification Test (AUDIT) was used to assess problematic alcohol use, and the Depression Anxiety Stress Scales (DASS-21) was used to assess depression symptom

severity. Results indicate that financial strain was positively correlated with problematic alcohol use among participants with high levels of emotional nonacceptance ( $p = 0.037$ ) (Figure 1). However, people who exhibited emotional acceptance were more likely to self-report lower alcohol use ( $p = 0.110$ ). This information suggests that individuals who are not accepting of their emotional distress often use alcohol as a coping mechanism during this pandemic.

## ABSTRACT

**Background:** Researchers have highlighted the risk for alcohol use problems in the context of COVID-19, although the factors associated with this risk remain unclear. **Objectives:** This study examined the prospective relation of baseline financial strain (reported at the beginning of the pandemic) to problematic alcohol use one month later, as well as the moderating role of emotional nonacceptance. We hypothesized that financial strain would be more strongly associated with problematic alcohol use one month later among participants with high (vs. mean or low) levels of nonacceptance. **Methods:** Shortly after COVID-19 was declared a pandemic by the WHO and national emergency by the U.S. President (on March 11 and 13, 2020, respectively), a U.S. nationwide community sample completed a prospective online study, including an initial assessment from March 27 - April 5, 2020 and a one-month follow-up from April 27-May 21. Measures included the Family Economic Strain Scale, Difficulties in Emotion Regulation Scale, and Alcohol Use Disorders Identification Test. Participants included 254 adults reporting some alcohol use (50.4% women; mean age = 41.8). **Results:** Baseline financial strain was significantly positively associated with problematic alcohol use one month later only among participants with high ( $b = .06$ ,  $SE = .03$ ,  $p = .037$ ) versus mean ( $b = .01$ ,  $SE = .02$ ,  $p = .677$ ) or low ( $b = -.04$ ,  $SE = .02$ ,  $p = .110$ ) emotional nonacceptance. **Conclusion:** Individuals experiencing financial strain in the context of COVID-19 may be at risk for problematic alcohol use if they are not accepting of their emotional distress.

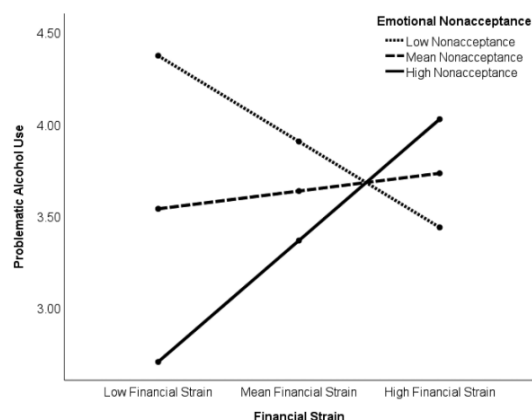
## FIGURES

**Table 2.** Main and interactive associations of baseline financial strain and emotional nonacceptance with problematic alcohol use at the one-month follow-up.

	R <sup>2</sup>	ΔR <sup>2</sup>	ΔF	Cohen's f	b	SE	p
<i>Step 1</i>	.55	.55	43.57 <sup>a</sup>	1.08			
Sex					.29	.39	.458
Age					.001	.02	.943
Race/ethnicity					.58	.54	.288
Income					-.50	.39	.200
Pandemic job loss					-.67	.51	.194
Depression symptoms					.004	.02	.860
Baseline alcohol problems					.69	.04	.000
<i>Step 2</i>	.55	.00	0.16 <sup>b</sup>	.00			
Financial strain					.004	.02	.851
Emotional nonacceptance					-.02	.04	.576
<i>Step 3</i>	.57	.02	8.30 <sup>c</sup>	.17			
Interaction					.008	.003	.004

*p* values listed as .000 are  $p < .001$ . Financial strain and emotional nonacceptance (assessed at the initial assessment) are mean centered. Sex (0 = Male; 1 = Female); Race/ethnicity = racial/ethnic background (0 = racial/ethnic minority, 1 = non-minority); Income = income level (0 = < \$50,000/year; 1 = ≥ \$50,000/year); Pandemic job loss = Loss of job as a result of the COVID-19 pandemic (0 = no, 1 = yes); Depression symptoms = Depression symptom severity; Baseline alcohol problems = baseline problematic alcohol use on the AUDIT. Interaction = interaction of baseline financial strain and emotional nonacceptance.

<sup>a</sup> $df = 7$ , 246. <sup>b</sup> $df = 2$ , 244. <sup>c</sup> $df = 1$ , 243.



**Figure 1.** Baseline financial strain was significantly positively associated with problematic alcohol use one-month later only among participants with high ( $b = .06$ ,  $SE = .03$ ,  $p = .037$ , 95% CI [.003,.106]) versus mean ( $b = .01$ ,  $SE = .02$ ,  $p = .677$ , 95% CI [-.030,.046]) or low ( $b = -.04$ ,  $SE = .02$ ,  $p = .110$ , 95% CI [-.086,.009]) emotional nonacceptance, controlling for sex, age, income, racial/ethnic background, job loss as a result of the COVID-19 pandemic, depression symptom severity, and baseline problematic alcohol use.

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