

# The Daily COVID-19 Literature Surveillance Summary

August 11, 2020



UW Medicine  
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This free and open source document represents a good faith effort to provide real time, distilled information for guiding best practices during the COVID-19 pandemic. This document is not intended to and cannot replace the original source documents and clinical decision making. These sources are explicitly cited for purposes of reference but do not imply endorsement, approval or validation.

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# 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>

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## EXECUTIVE SUMMARY

### Climate

- A physician from South Carolina reflects on a patient encounter with suspected COVID-19 which illustrates the [social disparities affecting immigrants](#) and the challenges posed by lack of health insurance and work instability during COVID-19 pandemic in the United States.

### Epidemiology

- Chinese researchers analyzed the ABO blood group distribution of 2173 symptomatic patients with RT-PCR confirmed SARS-CoV-2 and found [blood group A was associated with a higher risk for COVID-19](#) while blood group O was associated with lower risk. The authors suggest blood group as a risk factor, though the study did not control for confounding variables, so further research is indicated.

### Understanding the Pathology

- A study compared the COVID-19 RNA viral between 53 patients under the age of 16 and 352 over the age of 16 and found [no correlation between age and viral load](#). These data suggest that although children typically have fewer symptoms and less severe disease, age is not a significant determinant of viral load and thus transmissibility may not differ between age groups as has been previously proposed.

### Transmission & Prevention

- A group at Baylor College of Medicine [discusses the continued COVID-19 surge in the United States](#) and suggest it is a result of a lack of unified national leadership, failure of states enforcing Centers for Disease Control and Prevention guidelines for reopening, inadequate testing and tracing SARS-CoV-2 cases, and lack of isolation of exposed individuals when case numbers were lower. The authors advocate for the creation of a national contact tracing system to monitor the spread of COVID-19 on a local and national level, making a more concerted effort to understand and prevent transmission.
- Pharmacists in Pakistan and Saudi Arabia warn of the [potential threat of an outbreak of Crimean-Congo Haemorrhagic Fever](#) in light of an already stressed health care system due to the COVID-19 outbreak in Pakistan and the upcoming celebration of Eid-ul-Adha. The authors suggest that healthcare training programs be put into place, animal health be checked and reported, a lockdown be implemented during Eid-ul-Adha, and awareness campaigns should be undertaken to mitigate this risk.

### Management

- A study compared [antibody and immune profiles of COVID-19 patients](#) who survived to those who died at different stages of the disease and found that those who survived had significantly higher SARS-CoV-2-specific IgM and IgG levels in the early stages of COVID-19 disease and TH1 cells were significantly decreased in the early stage of disease in patients who died.

### Mental Health & Resilience Needs

- A qualitative study of semistructured interviews with 33 [home health care workers employed](#) by 24 home care agencies across New York City found that home health care workers were consistently providing front line care, often at significant risk, during the pandemic which has exacerbated inequities they experience as a marginalized portion of the workforce.

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## CLIMATE

### AFFECTING THE HEALTHCARE WORKFORCE

#### **FOSTERING THE HEALTHCARE WORKFORCE DURING THE COVID-19 PANDEMIC: SHARED LEADERSHIP, SOCIAL CAPITAL, AND CONTAGION AMONG HEALTH PROFESSIONALS**

Salas-Vallina A, Ferrer-Franco A, Herrera J.. Int J Health Plann Manage. 2020 Aug 3. doi: 10.1002/hpm.3035. Online ahead of print.

Level of Evidence: 3 - Non-randomized controlled cohort/follow-up study

#### **BLUF**

A descriptive study by authors from Spain conducted 42 interviews with the heads of medical units with either high or low COVID-19 contagion rates in order to understand how shared leadership interacts with social capital, or the "social relations within the organization," to reduce COVID-19 contagion among health professionals. They found that while leaders of units with low COVID-19 promoted shared decision making, trust, and autonomy, leaders of units with high COVID-19 rates did not promote these concepts. These findings suggest that shared leadership in medical units could improve healthcare worker performance, possibly leading to lower COVID-19 spread.

#### **ABSTRACT**

Health professionals managing patients with COVID-19 disease are at high risk of contagion. All medical personnel involved in caring for patients need coordination, knowledge and trust. Empirical work on human resources has tended to focus on the effects of human resource practices on performance, whereas leadership and social interactions have been overlooked. Based upon interviews with medical staff working in specialised medical units, this study uses the social capital theory to examine relationships among shared leadership, social capital, and contagion rates. First, shared leadership was found to positively affect COVID-19 contagion among health professionals. Second, by sharing information and a common language, and showing high levels of trust, namely social capital, medical units seem to reduce contagion rates of COVID-19. In other words, shared leadership plays a fundamental role in improving performance in healthcare by means of social capital.

## DISPARITIES

#### **IMMIGRANT COVID**

Rousseau P.. Ann Intern Med. 2020 Aug 4. doi: 10.7326/M20-4732. Online ahead of print.

Level of Evidence: 5 - Case report

#### **BLUF**

A physician from South Carolina reflects on a patient encounter with suspected COVID-19, illustrating the social disparities (ie., immigrant status) and the personal cost (ie., lack of health insurance, work instability) of the COVID-19 pandemic in the United States.

### NEUROLOGICAL COMORBIDITY AND SEVERITY OF COVID-19

Romagnolo A, Balestrino R, Imbalzano G, Ciccone G, Riccardini F, Artusi CA, Bozzali M, Ferrero B, Montalenti E, Montanaro E, Rizzone MG, Vaula G, Zibetti M, Lopiano L. J Neurol. 2020 Aug 4. doi: 10.1007/s00415-020-10123-y. Online ahead of print. Level of Evidence: 3 - Local non-random sample

#### BLUF

Authors from Italy and the United Kingdom collaborate on a case series about the correlation between COVID-19 severity and neurological morbidities in 344 patients admitted to ER of “Città della Salute e della Scienza di Torino Hospital” between March 2020 and April 2020. The authors found that patients with neurological comorbidities (n=77) experienced more severe COVID-19 courses (Figure 1, Table 6) (OR 2.305;  $p=0.012$ ), suggesting that this population may need to have more proactive screening.

#### ABSTRACT

**OBJECTIVE:** Neurological symptoms of COVID-19 patients have been recently described. However, no comprehensive data have been reported on pre-existing neurological comorbidities and COVID-19. This study aims at evaluating the prevalence of neurological comorbidities, and their association with COVID-19 severity. **METHODS:** We evaluated all consecutive patients admitted to the Emergency Room (ER) of our hospital between the 3rd March and the 14th April 2020, and diagnosed with COVID-19. Data on neurological and non-neurological diseases were extracted, as well as data on demographic characteristics and on severity degree of COVID-19. The prevalence of neurological comorbidities was calculated, and multivariate binary logistic regression analyses were used to estimate the association between neurological diseases and COVID-19 severity. **RESULTS:** We included 344 patients. Neurological comorbidities accounted for 22.4% of cases, with cerebrovascular diseases and cognitive impairment being the most frequent. Neurological comorbidity resulted independently associated with severe COVID-19 (OR 2.305;  $p = 0.012$ ), as well as male gender ( $p = 0.001$ ), older age ( $p = 0.001$ ), neoplastic diseases ( $p = 0.039$ ), and arterial hypertension ( $p = 0.045$ ). When neurological comorbidity was associated with non-neurological comorbidities, the OR for severe COVID-19 rose to 7.394 ( $p = 0.005$ ). Neurological patients, in particular cerebrovascular and cognitively impaired ones, received more respiratory support indication. **CONCLUSION:** Neurological comorbidities represent a significant determinant of COVID-19 severity, deserving a thorough evaluation since the earliest phases of infection. The vulnerability of patients affected by neurological diseases should suggest a greater attention in targeting this population for proactive viral screening.

#### FIGURES

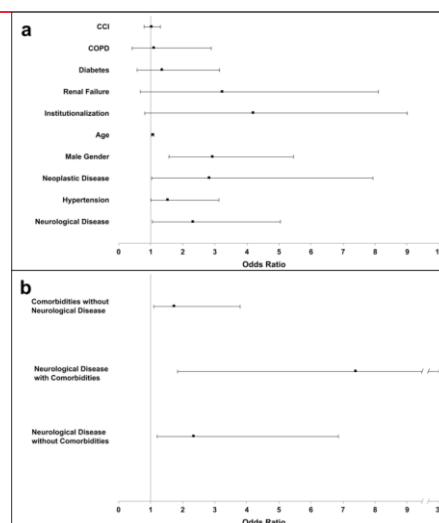


Figure 1. Multivariate analysis of association between patients' characteristics and severe form of infection. Odds ratios of associations between patients' characteristics and severe form of infection. In part b, values are adjusted for age and CCI, and patients without any comorbidities were used as reference group. CCI Charlson Comorbidity Index, COPD chronic obstructive pulmonary disease

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## ADULTS

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### GASTROINTESTINAL AND HEPATIC MANIFESTATIONS OF CORONA VIRUS DISEASE-19 AND THEIR RELATIONSHIP TO SEVERE CLINICAL COURSE: A SYSTEMATIC REVIEW AND META-ANALYSIS

Kumar A, Arora A, Sharma P, Anikhindi SA, Bansal N, Singla V, Khare S, Srivastava A.. Indian J Gastroenterol. 2020 Aug 4. doi: 10.1007/s12664-020-01058-3. Online ahead of print.

Level of Evidence: 2 - Systematic review of surveys that allow matching to local circumstances

#### BLUF

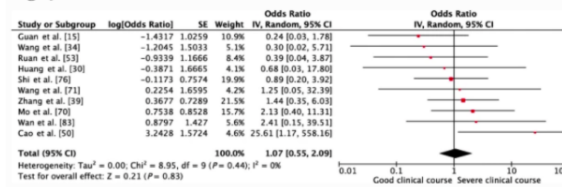
This systematic review and meta-analysis on the relationship between gastrointestinal (GI) signs/symptoms and the severity of COVID-19 found that while chronic liver disease was not an effective predictive value for COVID-19 clinical course (pooled odd ratio [OR] 1.07; 95% CI, 0.55–2.09;  $p = 0.83$ ), diarrhea (pooled OR 2.00; 95% CI, 1.37–2.91;  $p < 0.01$ ), elevated liver transaminases (pooled OR 1.40; 95% CI, 1.25–1.56,  $p < 0.01$  and pooled OR 1.57; 95% CI, 1.22–2.04;  $p < 0.01$ , respectively), bilirubin (pooled OR 2.38; 95% CI, 1.76–3.22;  $p < 0.01$ ), albumin (pooled OR 3.40; 95% CI, 2.35–4.92;  $p < 0.01$ ), and PT (pooled OR 2.95; 95% CI, 1.61–5.38;  $p < 0.01$ ) were associated with a severe clinical course (Figures 4-10). Thus, the authors explain that while GI complications are relatively rare (diarrhea is the most common and presents in only 9% of COVID-19 patients), they may be used as a metric for predicting COVID-19 severity.

#### ABSTRACT

**BACKGROUND:** Many case series on Corona Virus Disease (COVID-19) have reported gastrointestinal (GI) and hepatic manifestations in a proportion of cases; however, the data is conflicting. The relationship of GI and hepatic involvement with severe clinical course of COVID-19 has also not been explored. **OBJECTIVES:** The main objectives were to determine the frequency of GI and hepatic manifestations of COVID-19 and to explore their relationship with severe clinical course. **METHODS:** We searched PubMed for studies published between January 1, 2020, and March 25, 2020, with data on GI and hepatic manifestations in adult patients with COVID-19. These data were compared between patients with severe and good clinical course using the random-effects model and odds ratio (OR) as the effect size. If the heterogeneity among studies was high, sensitivity analysis was performed for each outcome. **RESULTS:** We included 62 studies (8301 patients) in the systematic review and 26 studies (4676 patients) in the meta-analysis. Diarrhea was the most common GI symptom (9%), followed by nausea/vomiting (5%) and abdominal pain (4%). Transaminases were abnormal in approximately 25%, bilirubin in 9%, prothrombin time (PT) in 7%, and low albumin in 60%. Up to 20% patients developed severe clinical course, and GI and hepatic factors associated with severe clinical course were as follows: diarrhea (OR 2), high aspartate aminotransferase (OR 1.4), high alanine aminotransferase (OR 1.6), high bilirubin (OR 2.4), low albumin (OR 3.4), and high PT (OR 3). **CONCLUSIONS:** GI and hepatic involvement should be sought in patients with COVID-19 since it portends severe clinical course. The pathogenesis of GI and hepatic involvement needs to be explored in future studies.

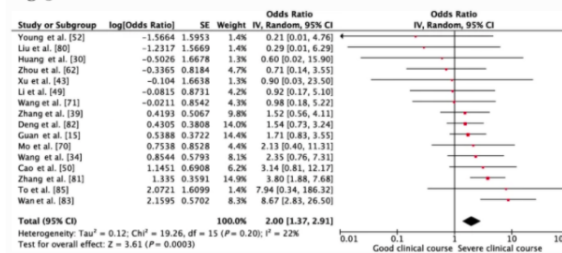


Fig. 4



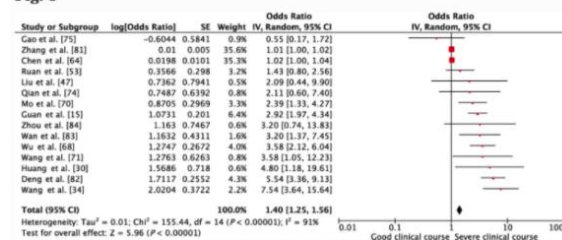
Forest plot showing pooled odds ratio for patients with chronic liver disease developing severe clinical course

Fig. 5



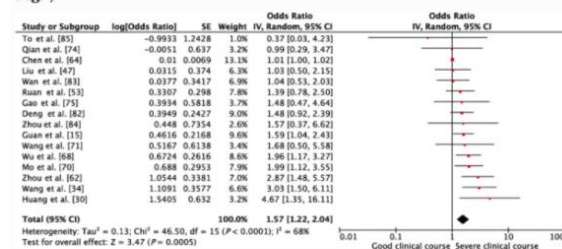
Forest plot showing pooled odds ratio of diarrhea being associated with severe clinical course

Fig. 6



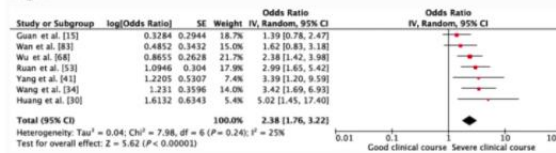
Forest plot showing pooled odds ratio of higher than normal values of aspartate aminotransferase being associated with severe clinical course

Fig. 7



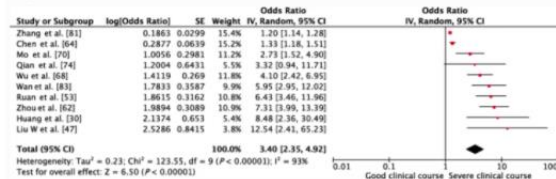
Forest plot showing pooled odds ratio of higher than normal values of alanine transaminase being associated with severe clinical course

Fig. 8



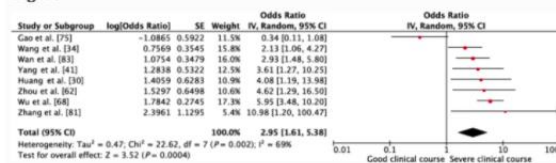
Forest plot showing pooled odds ratio of higher than normal values of serum bilirubin being associated with severe clinical course

Fig. 9



Forest plot showing pooled odds ratio of lower than normal values of serum albumin being associated with severe clinical course

Fig. 10



Forest plot showing pooled odds ratio of higher than normal values of prothrombin time being associated with severe clinical course

## RELATIONSHIP BETWEEN THE ABO BLOOD GROUP AND THE COVID-19 SUSCEPTIBILITY

Zhao J, Yang Y, Huang H, Li D, Gu D, Lu X, Zhang Z, Liu L, Liu T, Liu Y, He Y, Sun B, Wei M, Yang G, Wang X, Zhang L, Zhou X, Xing M, Wang PG.. Clin Infect Dis. 2020 Aug 4;ciaa1150. doi: 10.1093/cid/ciaa1150. Online ahead of print.

Level of Evidence: 3 - Local non-random sample

### BLUF

Chinese researchers analyzed the ABO blood group distribution of 2173 symptomatic patients with RT-PCR confirmed SARS-CoV-2 in Wuhan and Shenzhen and found blood group A was associated with a higher risk for COVID-19 (OR 1.21; 95% CI 1.02-1.43,  $p=0.027$ ) while blood group O was associated with lower risk (OR 0.67; 95% CI 0.60-0.75,  $P<0.001$ ) (Table 1, Figure 1). The authors suggest confirmation of ABO blood group as a risk factor could guide risk management, but because their study did not control for confounding variables, they recommend further data to verify potential associations.

### ABSTRACT

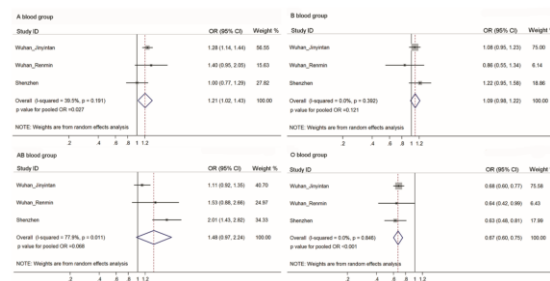
To explore any relationship between the ABO blood group and the COVID-19 susceptibility, we compared ABO blood group distributions in 2,173 COVID-19 patients with local control populations, and found that blood group A was associated with an increased risk of infection, whereas group O was associated with a decreased risk.

Table 1. The ABO blood group distribution in patients with COVID-19 and normal controls.

	Blood Group			
	A	B	AB	O
Controls (Wuhan Area)	1188 (32.2%)	920 (24.9%)	336 (9.1%)	1250 (33.8%)
<b>Wuhan Jinyintan Hospital</b>				
Patients				
1775	670 (37.8%)	469 (26.4%)	178 (10.0%)	458 (25.8%)
$\chi^2$	16.431	1.378	1.117	35.674
<i>P</i>	<b>&lt;0.001</b>	0.240	0.291	<b>&lt;0.001</b>
OR	1.279	1.083	1.114	0.680
95%CI	1.136–1.440	0.952–1.232	0.920–1.349	0.599–0.771
Deaths				
206	85 (41.3%)	50 (24.3%)	19 (9.2%)	52 (25.2%)
$\chi^2$	6.944	0.015	0.000	6.102
<i>P</i>	<b>0.008</b>	0.903	1.000	<b>0.014</b>
OR	1.482	0.966	1.015	0.660
95%CI	1.113–1.972	0.697–1.340	0.625–1.649	0.479–0.911
<b>Renmin Hospital of Wuhan University</b>				
patients				
113	45 (39.8%)	25 (22.1%)	15 (13.3%)	28 (24.8%)
$\chi^2$	2.601	0.318	1.815	3.640
<i>P</i>	0.107	0.573	0.178	0.045
OR	1.396	0.857	1.530	0.644
95%CI	0.952–2.048	0.546–1.344	0.878–2.664	0.418–0.993
Controls (Shenzhen area)	23386	6728 (28.8%)	5880 (25.1%)	1712 (7.3%)
<b>Patients from Shenzhen Third People's Hospital</b>				
285	82 (28.8%)	83 (29.1%)	39 (13.7%)	81 (28.4%)
$\chi^2$	0.000	2.160	15.729	12.278
<i>P</i>	1.000	0.142	<b>&lt;0.001</b>	0.001
OR	1.000	1.223	2.008	0.627
95%CI	0.773–1.294	0.946–1.582	1.427–2.824	0.484–0.812

CI, confidence interval; OR, odds ratio; \*P value was calculated by 2-tailed  $\chi^2$

Figure 1



## SERUM PREALBUMIN VALUES PREDICT THE SEVERITY OF CORONAVIRUS DISEASE 2019 (COVID-19)

Mattiuzzi C, Lippi G.. J Med Virol. 2020 Aug 4. doi: 10.1002/jmv.26385. Online ahead of print.

Level of Evidence: 3 - Non-consecutive studies, or studies without consistently applied reference standards

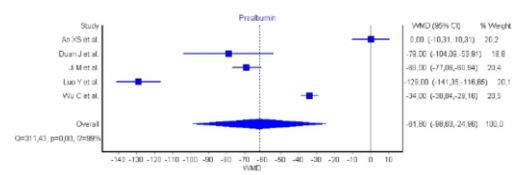
### BLUF

A meta-analysis conducted in Italy of 5 Chinese studies (n=1813 COVID-19 patients, Table 1) found 4 of the 5 studies demonstrated that severely ill COVID-19 patients had significantly reduced serum prealbumin levels with a 95% confidence interval of -98.63 to -24.96 mg/L and a weighted mean difference of -61.80 mg/L (Figure 1). This suggests that serum prealbumin levels could be utilized to triage and predict severe disease progression in COVID-19 patients. Of note, there was a significant amount of heterogeneity in these studies and the evidence is likely limited by the number of studies available.

### ABSTRACT

Serum prealbumin assessment is a highly valuable and effective strategy for predicting disease progression in critically ill patients, as well as in those affected by chronic disorders and malnutrition.<sup>1</sup> This article is protected by copyright. All rights reserved.

**Figure 1** Weighted mean difference (WMD) and 95% confidence interval (95% CI) of antithrombin values in coronavirus disease 2019 (COVID-19) patients with severe illness compared to those with milder disease.



**Table 1.** Summary of clinical studies which investigated prealbumin values in coronavirus disease 2019 (COVID-19) patients with or with severe illness.

Study name	Setting	Study design	Sample size	Age	Females	Endpoint
An XS et al.	China	Cross-sectional	47	47±5 vs. 39±7	49%	Prolonged hospitalization
Duan J et al.	China	Cross-sectional	348	58±15 vs. 44±15	47%	Respiratory failure
Ji M et al.	China	Cross-sectional	102	N/A	52%	Respiratory failure
Luo Y et al.	China	Cross-sectional	1115	70±12 vs. 59±15	49%	Death
Wu C et al.	China	Cross-sectional	201	47±4 vs. 59±5	36%	Respiratory failure

## UNDERSTANDING THE PATHOLOGY

### SARS-COV-2 VIRAL LOAD IN THE UPPER RESPIRATORY TRACT OF CHILDREN AND ADULTS WITH EARLY ACUTE COVID-19

Baggio S, L'Huillier AG, Yerly S, Bellon M, Wagner N, Rohr M, Huttner A, Blanchard-Rohner G, Loevy N, Kaiser L, Jacqueroz F, Eckerle I. Clin Infect Dis. 2020 Aug 6:ciaa1157. doi: 10.1093/cid/ciaa1157. Online ahead of print.

Level of Evidence: 3 - Local non-random sample

#### BLUF

This study from Geneva University Hospital in Switzerland compared the RNA viral load (VL) of 53 SARS-CoV-2 positive patients under the age of 16 from March 10th, 2020 through May 26th, 2020 to the RNA VL of 352 positive patients over the age of 16 from March 29th through April 23rd, 2020, with the goal of determining if age was significant factor in VL. Inclusion criteria for the study included the presence of symptoms, with symptom onset within the previous five days of sampling, and no prior SARS-CoV-2 positive test. The results revealed no correlation ( $r = .01$ ) between age and VL (Figure 1), suggesting that although children typically have fewer symptoms and less severe disease, age is not a significant determinant of SARS-CoV-2 VL. This implies that there may not be as much difference in transmissibility between younger and older patients as previously assumed.

#### ABSTRACT

The factors that contribute to transmission of SARS-CoV-2 by children are unclear. We analysed viral load at the time of diagnosis in 53 children and 352 adults with COVID-19 in the first 5 days post symptom onset. No significant differences in SARS-CoV-2 RNA loads were seen between children and adults.

#### FIGURES

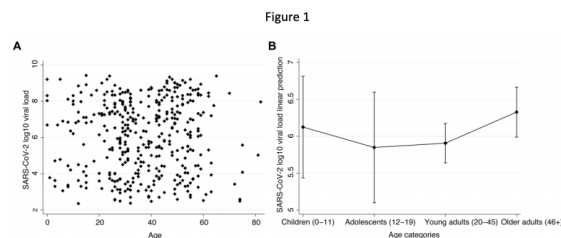


Figure 1. Scatterplot of age (continuous) against log10 viral load B. Means and 95% confidence intervals of log10 viral load against age groups.

### ENDOTHELIAL DYSFUNCTION IN COVID-19: A POSITION PAPER OF THE ESC WORKING GROUP FOR ATHEROSCLEROSIS AND VASCULAR BIOLOGY, AND THE ESC COUNCIL OF BASIC CARDIOVASCULAR SCIENCE

Evans PC, Ed Rainger G, Mason JC, Guzik TJ, Osto E, Stamataki Z, Neil D, Hofer IE, Fragiadaki M, Waltenberger J, Weber C, Bochaton-Piallat ML, Bäck M. Cardiovasc Res. 2020 Aug 4:cvaa230. doi: 10.1093/cvr/cvaa230. Online ahead of print.

Level of Evidence: Other - Review / Literature Review

#### BLUF

The Council of Basic Cardiovascular Science of the European Society of Cardiology and the Group on Atherosclerosis and Vascular Biology discuss the pathophysiology of endothelial dysfunction associated with COVID-19 (Figure 1) and potential interventions that may mitigate this process (Figure 2). Citing the limited data on certain cardiovascular drugs (ie statins, beta adrenergic blockers, ACEis, ARBs, etc) and COVID-19, the authors suggest further investigation into these agents' influence on the endothelial response to SARS-CoV-2. They also suggest further research into endothelial biomarkers and tests of function, immune response at the level of the endothelium, and the long-term cardiovascular consequences of COVID-19.

## ABSTRACT

The COVID-19 pandemic is an unprecedented healthcare emergency causing mortality and illness across the world. Although primarily affecting the lungs, the SARS-CoV-2 virus also affects the cardiovascular system. In addition to cardiac effects, e.g. myocarditis, arrhythmias, and myocardial damage, the vasculature is affected in COVID-19, both directly by the SARS-CoV-2 virus, and indirectly as a result of a systemic inflammatory cytokine storm. This includes the role of the vascular endothelium in the recruitment of inflammatory leucocytes where they contribute to tissue damage and cytokine release, which are key drivers of acute respiratory distress syndrome (ARDS), in disseminated intravascular coagulation, and cardiovascular complications in COVID-19. There is also evidence linking endothelial cells (ECs) to SARS-CoV-2 infection including: (i) the expression and function of its receptor angiotensin-converting enzyme 2 (ACE2) in the vasculature; (ii) the prevalence of a Kawasaki disease-like syndrome (vasculitis) in COVID-19; and (iii) evidence of EC infection with SARS-CoV-2 in patients with fatal COVID-19. Here, the Working Group on Atherosclerosis and Vascular Biology together with the Council of Basic Cardiovascular Science of the European Society of Cardiology provide a Position Statement on the importance of the endothelium in the underlying pathophysiology behind the clinical presentation in COVID-19 and identify key questions for future research to address. We propose that endothelial biomarkers and tests of function (e.g. flow-mediated dilatation) should be evaluated for their usefulness in the risk stratification of COVID-19 patients. A better understanding of the effects of SARS-CoV-2 on endothelial biology in both the micro- and macrovasculature is required, and endothelial function testing should be considered in the follow-up of convalescent COVID-19 patients for early detection of long-term cardiovascular complications.

## FIGURES

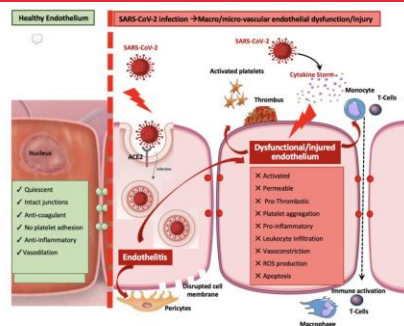


Figure 1. Endothelial dysregulation by SARS-CoV-2. Healthy endothelium (left) is characterised by quiescence, intact junctions, anti-coagulant anti-inflammatory phenotype and an intact vasodilation phenotype. The cell in the centre (endothelitis) is infected with SARS-CoV-2, whereas the cells to the right have been activated as a result of cytokine release and activation of pro-thrombotic pathways. Infection with SARS-CoV-2 is via ACE2 which is subsequently endocytosed, potentially reducing ACE2-mediated regulation of vascular tone. SARS-CoV-2 infection causes endothelial dysfunction at multiple levels including inflammatory activation, cytokine storm, leukocyte infiltration, increased permeability, thrombosis, platelet aggregation, vasoconstriction, ROS production and apoptosis

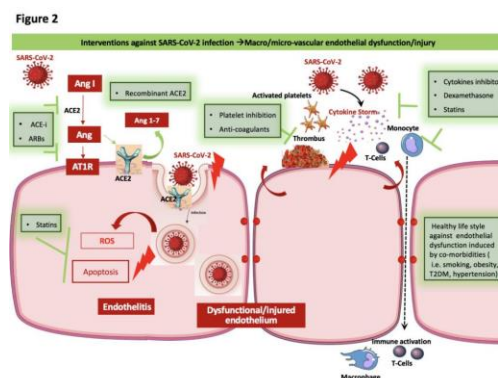


Figure 2 Potential interventions to reduce endothelial injury and activation. Endothelial infection with SARS-CoV-2 infection causes dysregulation of the RAAS, apoptosis, thrombosis and inflammation (red tones). Several interventions (green tones) can reduce endothelial dysfunction in COVID-19 including modulators of the RAAS (ACE-i, ARBs, ACE2); anti-inflammatory molecules (cytokine inhibitors, dexamethasone, statins); inhibitors of ROS/apoptosis (statins); platelet inhibitors and anti-coagulants. A healthy lifestyle may also reduce endothelial dysfunction in patients with COVID-19.

# TRANSMISSION & PREVENTION

## DEVELOPMENTS IN TRANSMISSION & PREVENTION

### DEACTIVATION OF SARS-COV-2 WITH PULSED XENON ULTRAVIOLET: IMPLICATIONS FOR ENVIRONMENTAL COVID-19 CONTROL

Simmons S, Carrion R, Alfson K, Staples H, Jinadatha C, Jarvis W, Sampathkumar P, Chemaly RF, Khawaja F, Povroznik M, Jackson S, Kaye KS, Rodriguez RM, Stibich M. Infect Control Hosp Epidemiol. 2020 Aug 3:1-19. doi: 10.1017/ice.2020.399. Online ahead of print.

Level of Evidence: 5 - Mechanism-based reasoning

#### BLUF

Researchers in Texas conducted an in vitro study by inoculating surfaces and N95 masks with SARS-CoV-2 and then exposing them to different pulses of xenon ultraviolet. They found that pulsed xenon ultraviolet has the potential to significantly decrease the viral load on hard surfaces and N95 in as little as 1-2 minutes (Table 2), suggesting that this may be an effective tool for disinfection of both environment and PPE.

#### ABSTRACT

**OBJECTIVE:** Prolonged survival of SARS-CoV-2 on environmental surfaces and personal protective equipment may lead to these surfaces transmitting disease to others. This article reports the effectiveness of a pulsed xenon ultraviolet disinfection system in reducing the load of SARS-CoV-2 on hard surfaces and N95 respirators. **METHODS:** Chamber slides and N95 respirator material were directly inoculated with SARS-CoV-2 and exposed to different durations of pulsed xenon ultraviolet disinfection. **RESULTS:** For hard surfaces, disinfection for 1, 2, and 5 minutes resulted in 3.53 Log<sub>10</sub>, >4.54 Log<sub>10</sub>, and >4.12 Log<sub>10</sub> reductions in viral load, respectively. For N95 respirators, disinfection for 5 minutes resulted in >4.79 Log<sub>10</sub> reduction in viral load. We found that pulsed xenon ultraviolet significantly reduces SARS-CoV-2 on hard surfaces and N95 respirators. **CONCLUSION:** With the potential to rapidly disinfectant environmental surfaces and N95 respirators, pulsed xenon ultraviolet devices are a promising technology for the reduction of environmental and personal protective equipment bioburden and to enhance both healthcare worker and patient safety by reducing the risk of exposure to SARS-CoV-2.

#### FIGURES

Table 2. Impact of PX-UV on SARS-CoV-2 Inoculated onto Hard Surfaces

Test Surface	UV-C Exposure Time [minutes]	Viral Titer [PFU/mL (Log <sub>10</sub> ) per Carrier]				Log <sub>10</sub> Reduction	
		1	2	3	Average	% reduction	Relative to Controls
Slide	0	6.04	6.28	6.28	6.20	N/A	N/A
Slide	1	3	2.45	2.56	2.67	99.97%	3.53
Slide	2	2.38	<1.3	<1.3	<1.66	>99.997%	>4.54
Slide	5	<1.3	2.15	2.8	<2.08	>99.992%	>4.12

\*UV-C: Ultraviolet C light, PFU: Plaque forming units



## PREVENTION IN THE COMMUNITY

### WHY CONTACT TRACING EFFORTS HAVE FAILED TO CURB COVID-19 TRANSMISSION IN MUCH OF THE U.S

Clark E, Chiao EY, Amirian ES. Clin Infect Dis. 2020 Aug 6:ciaa1155. doi: 10.1093/cid/ciaa1155. Online ahead of print.  
Level of Evidence: Other - Expert Opinion

#### BLUF

An expert opinion study conducted in Texas discussed the continued COVID-19 surge in the United States as a result of a lack of unified national leadership, failure of states enforcing Centers for Disease Control and Prevention (CDC) guidelines for reopening, inadequate testing and tracing SARS-CoV-2 cases, and lack of isolation of exposed individuals when case numbers were lower. The authors advocate for the creation of a national contact tracing system to monitor the spread of COVID-19 on a local and national level, making a more concerted effort to understand and prevent transmission.

#### ABSTRACT

By late April 2020, public discourse in the U.S. had shifted toward the idea of using more targeted case-based mitigation tactics (e.g., contact tracing) to combat COVID-19 transmission while allowing for the safe "re-opening" of society, in an effort to reduce the social, economic, and political ramifications associated with stricter approaches. Expanded tracing-testing efforts were touted as a key solution that would allow for a precision approach, thus preventing economies from having to shut down again. However, it is now clear that many regions of the U.S. were unable to mount robust enough testing-tracing programs to prevent major resurgences of disease. This viewpoint offers a discussion of why testing-tracing efforts failed to sufficiently mitigate COVID-19 across much of the nation, with the hope that such deliberation will help the U.S. public health community better plan for the future.

### CRIMEAN-CONGO HAEMORRHAGIC FEVER AND EID-UL-ADHA; A POTENTIAL THREAT DURING THE COVID-19 PANDEMIC

Butt MH, Ahmad A, Misbah S, Mallhi TH, Khan YH. J Med Virol. 2020 Aug 4. doi: 10.1002/jmv.26388. Online ahead of print.  
Level of Evidence: Other - Opinion

#### BLUF

Researchers in Pakistan and Saudi Arabia warn of the potential threat of an outbreak of Crimean-Congo Haemorrhagic Fever (CCHF) in light of an already stressed health care system due to the COVID-19 outbreak in Pakistan and the upcoming celebration of Eid-ul-Adha during the first week of August. The authors suggest that healthcare training programs be put into place, animal health be checked and reported, a lockdown be implemented during Eid-ul-Adha, and awareness campaigns should be undertaken to increase knowledge of best practices in preventing CCHF in the general community.

#### SUMMARY

Every year, people from Pakistan celebrate the religious festival known as Eid-ul-Adha, during which "millions of farm animals including goats, cows, sheep and camels are sacrificed" to honor Ibrahim's loyalty and obedience to Allah above all others. However, the authors warn of a dual public health threat--the potential for CCHF outbreak which is transmitted by ticks and livestock as well as concerns of COVID-19 spread. The practice of in-house slaughtering with inappropriate handling can facilitate animal-to-human transmission, the migratory activities from rural to urban areas can lead to disease spread, and the current burden of the Pakistan healthcare system with COVID-19 can lead to substantial morbidity and mortality. For these reasons, several recommendations were made to curb the potential threat, including health care training programs, checking animal health, lock-down placements, and awareness campaigns for CCHF prevention.

#### ABSTRACT

Pakistan is celebrating Eid-ul-Adha in the first week of August 2020. Eid-ul-Adha is an annual religious festival during which millions of farm animals including goats, cows, sheep and camels are sacrificed. This article is protected by copyright. All rights reserved.



## DELAYED VIRUS-SPECIFIC ANTIBODY RESPONSES ASSOCIATE WITH COVID-19 MORTALITY

Wang F, Yao Y, Hou H, Wu S, Guo C, Zhou H, Liu Z, Sun Z.. Allergy. 2020 Aug 5. doi: 10.1111/all.14546. Online ahead of print.  
Level of Evidence: 4 - Case-series or case-control studies, or poor quality prognostic cohort study

### BLUF

This retrospective study between February and April, 2020 at Tongji Hospital in China compared antibody and immune profiles of COVID-19 patients who survived (n=92) to those with COVID-19 who died (n=57) at different stages of the disease. Based on their findings (illustrated below), the authors evidenced that a delayed antibody response to COVID-19 correlates with poor outcome.

### SUMMARY

Some of the main findings of this study include, but are not limited to, the following:

- the survived patients had significantly higher SARS-CoV-2-specific IgM and IgG levels in the early stages of COVID-19 disease (less than or equal to 10 days from symptom onset) compared to the deceased patients (Figure 1b, c).
- the deceased patients developed a median value IgM that was higher than those in survived patients only in the end stage of the disease (greater than 30 days since symptom onset), although this was not statistically significant (Figure 1b, c).
- deceased patients in the end stage group showed slightly higher frequency of certain antibody secreting cells (ASCs) than deceased patients in the early stage group (Figure 1d, e).
- the percentage of type 1 follicular helper T cells (TFH1) was significantly decreased in deceased patients compared to those who survived (Figure 2b).
- TH1 cells was significantly decreased in the early stage group in deceased patients compared to the early stage group in survived patients (Figure 2b).

### FIGURES

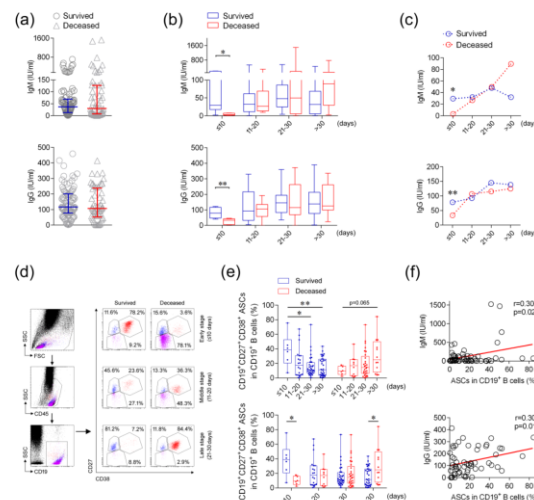


Figure 1. SARS-CoV-2-specific antibodies and antibody-secreting cells. (a) The levels of SARS-CoV-2-specific IgM and IgG were detected in 92 survived and 57 deceased COVID-19 patients. Data are shown in dot plots and expressed as median with IQR.

(b) The levels of SARS-CoV-2-specific IgM and IgG in patients with different onset time are shown in box plots. Data are expressed as median with IQR. (c) Line graphs showing the median values of IgM and IgG in survived and deceased patients with different onset time. (d) Representative FACS plots showing the frequency of CD19+CD27+CD38+ ASCs within CD19+ B cells in survived and deceased patients with different onset time. (e) The frequencies of ASCs within CD19+ B cells in patients with different onset time are shown in box plots. (f) Correlation between SARS-CoV-2-specific antibodies and the percentages of ASCs in 57 deceased patients (Spearman's rank correlation test). \*p less than 0.05, \*\*p less than 0.01 (Mann-Whitney U test).

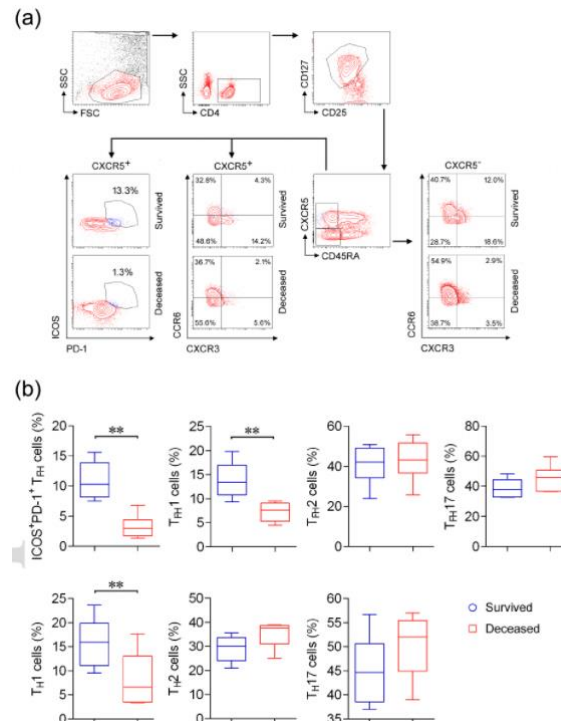


Figure 2. TFH and TH cell subsets in COVID-19 patients. The frequencies of activated TFH, TFH1, TFH2, TFH17, TH1, TH2 and TH17 cells in the early stage in survived and deceased patients were determined. (a) Representative FACS plots showing the gating strategies for TFH (CD4+CD127highCD25lowCD45RA-CXCR5+), activated TFH (ICOS+PD-1+ TFH), TFH1 (CXCR3+CCR6- TFH), TFH2 (CXCR3-CCR6- TFH) and TFH17 (CXCR3-CCR6+ TFH) cells, and for TH (CD4+CD127highCD25lowCD45RA-CXCR5-), TH1 (CXCR3+CCR6- TH), TH2 (CXCR3-CCR6- TH), and TH17 (CXCR3-CCR6+ TH) cells. (b) The percentages of activated TFH, TFH1, TFH2, TFH17, TH1, TH2 and TH17 cells in survived and deceased COVID-19 patients are shown in box plots. Data are expressed as median with IQR. \*\*p < 0.01 (Mann-Whitney U test)

## MENTAL HEALTH & RESILIENCE NEEDS

### COVID-19'S IMPACT ON HEALTHCARE WORKFORCE

#### EXPERIENCES OF HOME HEALTH CARE WORKERS IN NEW YORK CITY DURING THE CORONAVIRUS DISEASE 2019 PANDEMIC: A QUALITATIVE ANALYSIS

Sterling MR, Tseng E, Poon A, Cho J, Avgar AC, Kern LM, Ankuda CK, Dell N.. JAMA Intern Med. 2020 Aug 4. doi: 10.1001/jamainternmed.2020.3930. Online ahead of print.

Level of Evidence: 3 - Local non-random sample

#### BLUF

A collaboration of partners from Cornell University, Icahn School of Medicine, and the Home Care Industry Education Fund conducted a qualitative study of semistructured interviews with 33 home health care workers employed by 24 home care agencies across New York City. They found five common themes (Box) highlighting the sacrifices made and inequities faced by this workforce, suggesting an urgent need for interventions and policies to better support this worker population.

#### ABSTRACT

**Importance:** Home health care workers care for community-dwelling adults and play an important role in supporting patients with confirmed and suspected coronavirus disease 2019 (COVID-19) who remain at home. These workers are mostly middle-aged women and racial/ethnic minorities who typically earn low wages. Despite being integral to patient care, these workers are often neglected by the medical community and society at large; thus, developing a health care system capable of addressing the COVID-19 crisis and future pandemics requires a better understanding of the experiences of home health care workers. **Objective:** To understand the experiences of home health care workers caring for patients in New York City during the COVID-19 pandemic. **Design, Setting, and Participants:** From March to April 2020, a qualitative study with 1-to-1 semistructured interviews of 33 home health care workers in New York City was conducted in partnership with the 1199SEIU Home Care Industry Education Fund, a benefit fund of the 1199 Service Employees International Union United Healthcare Workers East, the largest health care union in the US. Purposeful sampling was used to identify and recruit home health care workers. **Main Outcomes and Measures:** Audio-recorded interviews were professionally transcribed and analyzed using grounded theory. Major themes and subthemes were identified. **Results:** In total, 33 home health care workers employed by 24 unique home care agencies across the 5 boroughs of New York City participated. Participants had a mean (SD) age of 47.6 (14.0) years, 32 (97%) were women, 21 (64%) were Black participants, and 6 (18%) were Hispanic participants. Five major themes emerged: home health care workers (1) were on the front lines of the COVID-19 pandemic but felt invisible; (2) reported a heightened risk for virus transmission; (3) received varying amounts of information, supplies, and training from their home care agencies; (4) relied on nonagency alternatives for support, including information and supplies; and (5) were forced to make difficult trade-offs in their work and personal lives. **Conclusions and Relevance:** In this qualitative analysis, home health care workers reported providing frontline essential care, often at personal risk, during the COVID-19 pandemic. They experienced challenges that exacerbated the inequities they face as a marginalized workforce. Interventions and policies to better support these frontline health care professionals are urgently needed.

**Box. Major Themes and Subthemes Summarizing Home Health Care Workers' Experiences When Caring for Patients During the Coronavirus Disease 2019 (COVID-19) Pandemic**

**Theme 1: On the Front Lines of COVID-19 Medical Management, but Invisible**

**Subthemes**

- Providing day-to-day care for patients with chronic conditions
- Monitoring patients for COVID-19 symptoms
- Taking precautions to prevent COVID-19 in the home
- Feeling invisible

**Theme 2: Heightened Risk for COVID-19 Transmission to Patients and Themselves**

**Subthemes**

- Risk of transmitting COVID-19 to patients
- Risk of contracting COVID-19 themselves
- Reliance on public transportation, which increases exposure risk
- Numerous home care workers per patient, increases risk of spread

**Theme 3: Varying Levels of Support From Agencies, Including Information and Personal Protective Equipment**

**Subthemes**

- Differing amounts of COVID-19 information
- Limited personal protective equipment
- Lacking COVID-19-specific training

**Theme 4: Reliance on Alternative Sources for Support**

**Subthemes**

- Information sources included news media, social media, and others
- Nonagency sources of personal protective equipment
- Peer support

**Theme 5: Forced to Make Tough Trade-offs Between Their Own Health and Finances**

**Subthemes**

- Working vs risk of exposure
- Working vs risk of losing wages and benefits
- Risk of transmission vs duty to provide care

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### WHAT COVID-19 IS TEACHING US ABOUT COUNSELING FOR WEIGHT MANAGEMENT

Kushner RF.. Obesity (Silver Spring). 2020 Aug 6. doi: 10.1002/oby.22988. Online ahead of print.

Level of Evidence: Other - Expert Opinion

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#### BLUF

A perspective piece by a clinician at Northwestern University Feinberg School of Medicine discusses how weight management clinicians and patients have reacted and altered clinical practice due to the COVID-19 pandemic. Increased stress surrounding COVID-19 may potentially serve as a trigger for overeating, however many patients have gained positive skills such as cooking and meal preparation, identifying previous triggers of overeating, and utilization of behavior self-care strategies due to increased digital and social media support resources. While anecdotal, this shift indicates the benefits of emphasizing healthy living over weight loss during the COVID-19 pandemic.

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#### ABSTRACT

The COVID-19 pandemic has been a seismic event for those of us who provide obesity care for two reasons - it profoundly altered our patients' living environment and it fundamentally changed the practice of how we deliver counseling. The convergence of these two unique experiences has brought insight to patients and providers alike and will most certainly lead to transformational changes in healthcare. Oftentimes anomalies lead to deeper understanding. We are at such a time in our history.

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