Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Table 1. Logistic Regression Analyses of Overall Burnout and Worsening Burnout with Teamwork and Leadership Factors, Joint Problem-Solving, Clear Process and Leader Inclusiveness

	Burnout		Worsening Burnout		Burnout		Worsening Burnout		Burnout		Worsening Burnout	
	W1	W2	W1	W2	W1	W2	W1	W2	W1	W2	W1	W2
Clear Process	0.28***	0.30**	0.86	0.29**								
Leader Inclusiveness					0.44*	0.35**	0.99	0.37*				
Joint Problem Solving									0.73	0.60**	0.76	0.45**
Controls												
Location (site 2)	0.38*	1.32	0.46	1.55	0.33*	1.31	0.44	1.52	0.39*	1.50	0.49	1.97
Role												
Resident/Fellow	0.33	1.65	0.23	1.00	0.41	1.76	0.24	1.04	0.44	1.84	0.23	0.98
APP	0.85	1.92	0.40	0.29	1.51	2.00	0.42	0.32	1.31	1.95	0.40	0.25
RN	1.88	3.92**	0.41	0.51	2.63	4.91**	0.44	0.68	2.55	5.34**	0.39	0.65
Other	1.44	2.05	0.36	0.38	2.63	2.90	0.39	0.59	2.38	2.86	0.34	0.53
Tenure												
2-5 years	0.98	0.85	1.33	0.99	1.21	0.91	1.36	0.98	1.18	0.94	1.36	0.93
More than 5 years	1.06	1.16	0.84	0.91	1.40	1.03	0.87	1.54	1.36	1.34	0.85	0.97
Shift												
Day	1.26	1.30	0.83	0.96	1.03	1.31	0.83	0.99	1.07	1.11	0.77	0.81
Mixed	4.43**	2.16	3.60	1.48	3.85*	2.13	2.59	1.54	3.58*	2.14	2.46	1.51
Age	0.97	0.97	1.01	0.99	0.97	0.98	1.01	1.00	0.97	0.97	1.00	0.99
Race												
Black	0.85	0.99	2.45	0.81	0.89	0.87	2.38	0.75	0.69	0.88	2.27	0.72
Asian	0.45	0.77	0.88	0.76	0.41	0.65	0.87	0.66	0.43	0.73	0.88	0.72
Other	0.18	0.64	0.54	0.65	0.21	0.68	0.55	0.68	0.22	0.59	0.52	0.54
Gender												
Female	0.91	0.85	1.22	1.50	1.22	0.80	1.26	1.38	1.12	0.79	1.16	1.38
COVID-19 Case Count	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
N	209	249	209	249	209	249	209	247	209	249	209	247

* $p < .05$; ** $p \leq .01$; *** $p < .001$; Standard errors are robust; all dependent variables are binary, results are odds ratios. Reference groups, for location is site 1; for role, is physician, other includes therapists, social workers, pharmacists and technicians; for tenure is <2 years; for shift, is night; for race, is white, and other includes Native American, Pacific Islander, and more than 1 race; for gender, is male and female includes female plus non-reported/non-binary.

10 Facilitated Peer Support Model Offers Promising Mental Health Intervention for Emergency Physicians During the Post-Pandemic Period

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Study Objective: The COVID-19 pandemic has placed an unprecedented psychological burden on emergency medicine (EM) providers who have experienced anxiety, depression, isolation, burnout, and poor self-care. ACEP along with 44 medical organizations issued a statement in support of clinician health in the post-pandemic period calling for the removal of barriers to mental health care and using non-clinical mental health support, specifically peer support, to foster resilience and recovery. While physicians prefer to seek support from colleagues, formal peer support interventions are not well studied. The objectives of the study were to determine feasibility, receptivity, and effect of physician peer support groups on symptoms of acute distress, anxiety, depression, and burnout.

Methods: A quasi-experimental design was used to determine pre-post intervention changes in anxiety and depression (primary outcomes) using the Patient Health Questionnaire (PHQ-4); provider burnout using the Maslach Burnout Inventory; and distress symptoms (fatigue, trouble sleeping, nervousness, feeling down, anger, helplessness, guilt, difficulty concentrating) using the SPADE Symptom Screener and PROMIS measure. The Participant-rated Global Impression of Change was used to monitor whether feeling better at the end of each session compared to the beginning. Receptivity was assessed using a net promoter score question. The study population was emergency physicians serving 10 academic and community hospitals who self-identified as having any mental health challenge during the pandemic. Three groups of 8 providers were recruited via departmental email listservs to participate in eight 1-hour virtual, peer support group sessions via Zoom Health. The visit structure was based on the National Alliance of Mental Illness (NAMI) peer support model and adapted for use in the clinician population. Three physicians were trained to cofacilitate with a NAMI support group leader. Data were collected using the Zoom polling function. Change analysis was conducted using dependent t-tests in SPSS. A sample size of 16 clinicians was needed to provide 80% power for two-sided tests at an alpha of 0.05 to detect a large effect size of 1.0 (3-point absolute change) for the PHQ-4.

Results: Of the 24 participating physicians, the majority were faculty physicians, white, female, and in practice 5 years or less. Average attendance was 6.5 sessions with 83% of physicians reaching the attendance goal of 6 out of 8 sessions. On average, participants reported feeling better at the end compared to the beginning of each session. Eighty six percent of physicians reported they would recommend peer support groups to a friend or colleague. Positive effect sizes showed improvement in 8 of 11 distress symptoms, and marginal significance (p<.10) for guilt and anxiety.

Conclusions: High levels of attendance, feeling better at the end of sessions, and willingness to recommend peer support groups to friends or colleagues demonstrate high physician receptivity to peer support and feasibility of implementation. Positive effect sizes show promising signs of improvement in the majority of anxiety, depression, distress, and burn out symptoms in this pilot study. Attention is needed to tailor strategies to male providers who may be hesitant to participate. Further research of this model with a larger samples and more robust design is planned.

Table: Change in Participant's Distress Symptoms Post Peer Support Intervention

Symptoms[1-3]	# Items	Score Range	Effect Size[4]	Mean Score Change[5]	SD of Change	95% CI of Change		P value[6]
						Lower	Upper	
Guilt	1	(0-10)	0.45	1.23	2.75	-0.06	2.51	0.061
Anxiety (GAD-2)	2	(0-6)	0.39	0.52	1.33	-0.08	1.3	0.086
Trouble Sleeping	1	(0-10)	0.35	0.65	1.84	-0.21	1.51	0.13
Fatigue (tiredness)	1	(0-10)	0.32	0.80	2.53	-0.38	1.98	0.17
Low mood (feeling down)	1	(0-10)	0.28	0.55	1.96	-0.37	1.47	0.23
Anxiety (nervousness)	1	(0-10)	0.22	0.45	2.09	-0.53	1.43	0.35
Depression (PHQ-2)	2	(0-6)	0.19	0.29	1.55	-0.42	1	0.41
Burnout	1	(0-10)	0.04	0.05	1.16	-0.48	0.58	0.85
Difficulty Concentrating	1	(0-10)	0	0	1.26	-0.59	0.59	1
Helplessness	1	(0-10)	-0.09	-0.15	1.76	-0.97	0.67	0.71
Anger	1	(0-10)	-0.10	-0.15	1.53	-0.87	0.57	0.67

1. PHQ-4 score measures anxiety and depression symptoms with the 4-item Patient Health Questionnaire (PHQ-4) comprised of 2-item depression Patient Health Questionnaire (PHQ-2) and 2-item Generalized Anxiety Disorder (GAD-2).
2. Burnout is a single item scale (scored 0-6) from Maslach Burnout Inventory.
3. SPADE Symptom Screener plus items drawn from the PROMIS measures for acute distress symptoms (fatigue, trouble sleeping, nervousness, feeling down, anger, helplessness, guilt, difficulty concentrating).
4. Effect Size Change = Mean Score Change / SD of the Change. Positive effect size represents improvement.
5. Mean Score Change = (post score) minus (baseline score)
6. P value < 0.05 indicates significance

11 Impact of BMI on Outcomes in Patients Hospitalized for COVID-19

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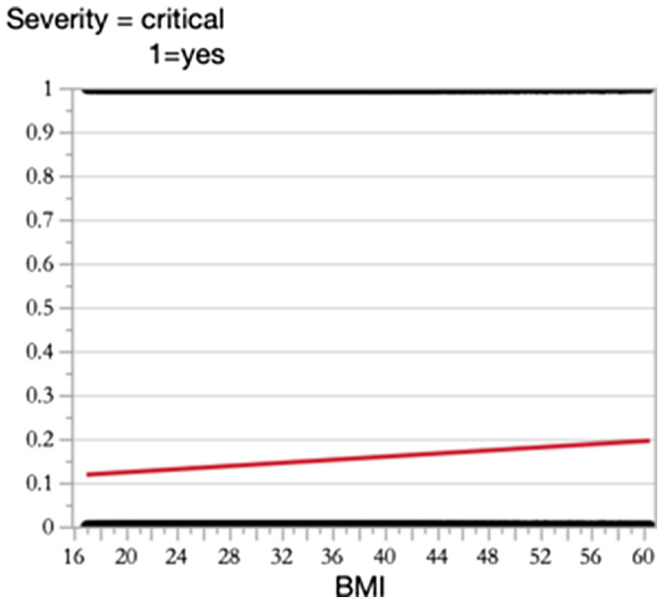
Study Objectives: Obesity is a common problem, affecting over 40% of U.S. adults. It is a risk factor for chronic diseases such as type 2 diabetes, heart disease, and some cancers. There is some evidence it may also be associated with increased morbidity for COVID-19–associated illness. The authors sought to quantify the relationship between BMI and mortality after COVID-19.

Methods: This was an observational retrospective cohort study from 178 hospitals from a large health system across the United States. Patients who presented to the hospital with confirmed COVID-19 between January 1st, 2020, and September 1st, 2020 were evaluated for outcomes during hospitalization, including disease severity by level of care, intensive care unit admission, hospital length of stay, and in-hospital death. Disease severity was classified as moderate, severe or critical. Moderate disease was defined as highest level of care being the medical floor; critical disease was defined as highest level of care being the intensive care unit (ICU) and requiring mechanical ventilation and/or vasopressor support; and severe disease was defined as highest level of care being ICU but not meeting criteria for critical disease.

Results: There were 45,340 patients in the cohort. The median age was 63 years (IQR 49-75). Forty eight percent of the cohort was female. Median overall BMI was 29.3 (IQR 25.1 to 34.7). In men median BMI was 28.6 (IQR 25.0 to33.3). In women the median BMI was 30.1 (IQR 25.4 to 36.2). Men had a significantly lower BMI when compared to women (P<0.001). Age was inversely correlated to BMI (P<0.001, 95% CI -0.130 to -0.130). The majority of the cohort (57%) had

moderate disease, with 29% having severe disease and 14% have critical diseases. The overall mortality was 15%. The overall hospital median length of stay (LOS) was 5 days (IQR 3-11). Patients with higher BMI were significantly more likely to require mechanical ventilation and require pressor support (P<0.0001, 95% CI 0.0013 to 0.0021) [Figure 1]. Patients with higher BMI were also significantly more likely to die (P<0.001, OR 1.031, 95% CI 1.03-1.04). This association held true even when analyzed in a multivariable regression model controlled for age and sex (p=0.0131). The hospital length of stay was inversely correlated to the BMI. Bivariate analysis demonstrated that the average length-of-stay could be approximated as 9.1 days -0.03*BMI. Presumably, this is because at higher BMIs there is higher mortality resulting in shorter LOS.

Conclusion: Patients with elevated BMI were significantly more likely to have highest disease severity, higher mortality and shorter length-of-stay in this large national cohort of patients hospitalized for COVID-19.



12 The Association of Altered Mental Status in the Emergency Department With In-Hospital Mortality in COVID-19 Patients

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Study Objectives: Altered mental status (AMS) is frequently associated with poor outcomes across a wide spectrum of conditions including infections. This study aims to identify whether AMS in emergency department (ED) patients with COVID-19 is independently associated with in-hospital mortality.

Methods: This was a retrospective multicenter cohort study. We included all patients with a positive SARS-CoV-2 PCR within 2 weeks of presentation, who were admitted from the ED of three hospitals in the greater Boston area between March and August 2020. The primary covariate of interest was ED AMS at ED arrival and the primary outcome was in-hospital mortality. The ED charts were abstracted for demographics, comorbid conditions, symptoms, laboratory testing, and radiology testing along with in-hospital outcomes. AMS was defined by documentation of changes in mental status from baseline. We used logistic regression modeling with backwards elimination to determine an adjusted estimate for the independent association of AMS with mortality.

Results: We included 824 visits with 51% male, a mean age was 67.1 (SD 17.0) and 153 (18.6%) had AMS. There were 132 deaths for an overall mortality rate of 16.1%. Patients with AMS had in-hospital mortality of 38.2% (95% CI 30.4%-46.4%), compared to 11.1% (8.8%-13.7%) for patients without AMS (p<0.0001). After adjusting for potential confounders, visits by patients with AMS during their stay at the ED had 3.1 (95% CI, 2.1-5.9) times the odds of death compared to those without AMS.

Conclusion: Among patients with COVID-19, AMS in the ED was associated with three-fold increase in mortality compared to patients without AMS.

13 Comorbid Conditions With COVID-19 in Hospitalized Pediatric Patients: A Multi-Center Analysis

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Background: Although the physical morbidity and mortality attributable to SARS-CoV-2 has predominantly affected adults, children remain at risk for serious complications. There has been substantial research regarding comorbid conditions, such as obesity and diabetes, and COVID-19 outcomes in adults, yet much is still unknown in the pediatric population.

Study Objective: This study sought to examine comorbid conditions as risk factors associated with severe outcomes among pediatric COVID-19 patients.

Methods: In this cross-sectional retrospective study we used data mining approaches on the Cerner multicenter dataset to retrieve an extensive list of comorbidities including pre-existing and concurrent conditions in hospitalized patients with SARS-CoV-2 (> 29 days and <21 years, hospitalized 3/1-6/30/20). Complications were defined as death or mechanical ventilator use. A nested mixed effects model was built on the most common comorbid conditions. All variables were assessed using the generalized variance inflation factor. Corresponding two-way statistical interactions with age were considered while controlling for patient demographics and payer type; the final model was selected using backward elimination procedures.

Results: There were 2480 encounters from 2320 patients; 17.1% required a ventilator and 0.85% died (19/21 patients who died required mechanical ventilation). 25.8% of patients were <2, 16% were 6-11, and 29.6% were 12-18. Male patients comprised 52.1%, and 48.3% were White/Caucasian, 21.8% were Hispanic, and 15.1% were African American/Black. Males were at 36% increased odds of complication (IOC), and Black/African American patients were found to be at 63% IOC. Patients with bacterial pneumonia and severe sepsis had 330% and 314% IOC respectively. Heart failure, 738% IOC, coagulation defect, 722% IOC, and patent ductus arteriosus (PDA), 693% IOC, were among the highest risk factors in this study. Obese patients had 246% IOC. Interestingly, the increased risk of complications in patients with epilepsy and acute kidney failure was age dependent. Patients with epilepsy > 5 years were at higher odds of complication and those odds increased with age, whereas younger patients with acute kidney failure were more at risk. The highest risk factor for complication was found to be ileus, OR=11.9. Of 40 patients with ileus, 3 died and 26 required mechanical ventilation.

Conclusions: Risk factors for complications of SARS-CoV-2 infection encompass a variety of conditions including obesity, epilepsy, PDA, bacterial pneumonia, sepsis, acute kidney failure, and ileus. Further studies are needed to explore these associations which may help elucidate why certain children suffer increased complications as well as inform treatment decisions.

14 External Validation of the Quick COVID-19 Severity Index: A Prognostic Tool for Early Clinical Decompensation

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Study Objective: To externally validate a risk-stratification tool—the Quick COVID-19 Severity Index (qCSI)—developed by Haimovich et al. to predict 24-hour respiratory decompensation in admitted patients with COVID-19.