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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
at discharge (13% vs 10%, p=0.0035). 4475 patient encounters had a procalcitonin drawn. Procalcitonin levels > 2.0 were significantly associated with positive blood cultures (43% vs 22%, p<0.0001) and death at discharge (14% vs 10, 9<0.0001). These associations remained significant regardless if they there was a leukocytosis or not. Upon multivariable logistic regression, a bandemia > 16% was 1.38 time the odds of positive blood cultures (CI 1.17-1.62, p=0.0001) and procalcitonin > 2.0 was 2.40 times the odds (CI 2.04-2.81, p<0.0001). The association with in-hospital mortality did not remain statistically significant in the full multivariable model for bandemia >16% (OR 1.13, 0.92-1.38, p=0.25), but trended towards significance for procalcitonin > 2.0 (OR 1.21, 0.99-1.48, p=0.056).

Conclusion: A relative bandemia > 16% and procalcitonin > 2.0 were associated with positive blood cultures and in-hospital death. A leukocytosis or lack of, did not contribute to these findings, suggesting that the prior two variables may be of greater importance in predicting severe outcomes.

80 Thromboelastic Profiles of Patients With Coronavirus (COVID-19) Pneumonia

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Study Objectives: The primary objective of the study was to use thromboelastography (TEG) to evaluate coagulation dynamics in patients hospitalized with COVID-19 and to investigate TEG as a predictive tool for clinical course of infection.

Methods: Adult patients admitted to Naval Medical Center Portsmouth with the diagnosis of SARS-CoV-2 were eligible for enrollment. TEG was performed on admission and trended daily with other laboratory tests through the hospitalization. Charts were reviewed for demographic, medical history, daily progress notes, clinical status, lab values, and anticoagulation medication use for each patient. Treatment teams were blinded to TEG values.

Results: A total of 53 patients were enrolled, with three patients having two separate admissions. There were 31 males and 22 females with a mean age of 48. The preponderance of individual TEG components showed progression towards hypercoagulable state as days of illness progressed, with 92% of subjects having at least one TEG value outside the reference range, even with the vast majority of patients receiving either therapeutic or prophylactic anticoagulants. The maximum amplitude (MA) and TEG coagulation index (CI) best correlated with day of illness (r = 0.45 and r = 0.32, respectively). Peak CI also correlated with length of hospital stay (r = 0.38). The majority (91%) remained hypercoagulable on discharge.

Conclusions: The use of TEG measurements in those hospitalized at NMCP with COVID-19 infection confirms the hypercoagulable state previously reported in COVID-19 patients. It may have a role as a tool to predict clinical courses or to direct anticoagulation or antiplatelet therapy to reduce morbidity and mortality.

81 Metabolic Syndrome Is Associated With Worse Outcomes in SARS-CoV-2 Positive Emergency Department Patients

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Study Objective: Increased body mass index (BMI) and metabolic syndrome (MetS) have been associated with adverse outcomes in numerous diseases. However, the role of BMI and MetS in severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection remains unclear. We sought to examine the associations of increased BMI and MetS on several clinical outcomes in all ED patients tested for SARS-CoV-2 and then in the subset of COVID positive patients only.

Methods: The REGistry of potential COVID-19 in emERgency care (RECOVER) is an observational study of SARS-CoV-2 tested patients from 155 US EDs. Inclusion criteria were a nucleic acid test at index visit. Body mass was categorized per CDC designations ie, BMI 18.5 to <25 kg/m², 25 to <30 kg/m², 30 to <35 kg/m², 35 to <40 kg/m² and ≥40 kg/m². The presence of metabolic syndrome was defined as having 3 or more defining characteristics per the electronic medical record at the time of index visit; these included an elevated BMI (≥30 kg/m²), hyperlipidemia, hypertension, and diabetes. We used multivariable logistic regression to test for associations of several variables (including BMI, MetS, age, sex, race, ethnicity, and smoking) on the following clinical outcomes, first comparing SARS-CoV-2 positive and SARS-CoV-2 negative patients (N=27, 051) and then in the COVID+ subset (N=14, 056): hospital admission, intensive care unit (ICU) care, intubation, 30-day mortality and 30-day new or recurrent venous thromboembolism (VTE).

Results: We report that BMI ≥ 30 kg/m² was associated with SARS-CoV-2 test positivity (odds ratio [OR] 1.13, 95% confidence interval [CI] 1.08-1.20). Analysis of BMI ≥ 40 kg/m² revealed a stronger association with test positivity (OR 1.24, 95% CI 1.14-1.35). By contrast, MetS was not associated with testing positive (OR 0.95, 95% CI 0.89-1.01) in the overall cohort. In COVID+ patients, BMI ≥ 40 kg/m² was associated with ICU care (adjusted odds ratio [aOR] 1.97; 95% CI 1.65-2.35), intubation (aOR 2.69; 95% CI 2.22-3.26) and mortality (aOR 1.50; 95% CI 1.22-1.84). MetS was associated with worsened clinical outcomes: hospital admission (aOR 2.11; 95% CI 1.89-2.37), ICU care (aOR 1.58; 95% CI 1.40-1.78), intubation (aOR 1.46; 95% CI 1.28-1.66), and mortality (aOR 1.29; 95% CI 1.13-1.48) and VTE (aOR 1.51; 95% CI 1.07-2.13).

Conclusions: In this large nationwide sample of ED patients undergoing SARS-CoV-2 testing, we report that BMI ≥ 30 kg/m², BMI ≥ 40 kg/m² and not MetS was associated with SARS-CoV-2 test positivity. Multivariable analysis in COVID positive patients only revealed significant associations of BMI ≥ 40 kg/m² with three outcomes (ICU care, intubation and mortality) and of MetS with five outcomes (hospital admission, ICU care, intubation, mortality and VTE).

82 The Oropharyngeal Microbiome Predicts Need for Respiratory Support Among COVID-19 Patients

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Study Objective: The clinical course and severity of infection with respiratory viruses such as SARS-CoV-2, the causative agent of COVID-19, are hypothesized to be affected by the microbes colonizing the upper airway, also known as the oropharyngeal microbiome, where they first establish infection. To determine how the oropharyngeal microbiome interacts SARS-CoV-2 and if it affects the clinical course of COVID-19, we carried out a study of the oropharyngeal microbiome of patients presenting to the emergency department or on the admission wards with symptoms of COVID-19.

Methods: We collected oral swabs and clinical data regarding COVID-19 severity including need for respiratory support and mortality. Nucleic acids were extracted from oral swabs and high-throughput metagenomic sequencing was performed on extracted DNA. Out of a total of 115 enrolled patients with complete data, 51 had a laboratory confirmed diagnosis of acute COVID-19 and 40 went on to require some respiratory support. We analyzed the relative abundance of detected organisms in individuals who were COVID-19+ versus COVID-19- and used mixed-effect random forest modeling to identify microbiota and clinical covariates that associated with the need for respiratory support among COVID-19+ subjects.

Results: We found 19 species that were significantly different among COVID-19+/COVID-19- patients, most notably, several Actinomyces species showed significant increases among COVID-19+ patients. We found that among COVID-19+ patients, microbiome features were highly correlated with need for respiratory support (F1 score 0.876).

Conclusions: The contributions of microbiome features such as relative abundances of Prevotella salivae, Campylobacter concisus, and Veillonella infantans as well as the Shannon Diversity Index this model approximated the importance of clinical factors known to contribute to risk for severe COVID-19 such as body mass index (BMI) and age. The composition of the oropharyngeal microbiome may represent a target for diagnostics in the ED to aid in the determination of who is likely to suffer respiratory failure and require oxygen support.

S32 Annals of Emergency Medicine

Volume 78, No. 45 : October 2021
Factors Predicting Respiratory Support

- Prevotella salivae
- Body Mass Index
- Campylobacter concisus
- Veillonella infantantium
- Actinomyces sp 56 Spd3
- Shannon Diversity Index
- Granulicatella elegans
- Aggregatibacter sp oral taxon 458
- Actinomyces oris
- Prevotella intermedia
- Rothia dentocariosa
- Eubacterium brachy
- Asian Raci
- Neisseria sp oral taxon 014
- Neisseria elongata
- Haemophilus sp HMSC71H05
- Prevotella sp oral taxon 473
- Lachnospiraceae bacterium saburreum
- Actinomyces sp oral taxon 51
- Charlson Comorbidity Index
- Neisseria flavescens
- Streptococcus milleri
- Prevotella pallens
- Corynebacterium durum
- Streptococcus sp
- Abiotrophia sp HMSC24B09
- Megabacterium diverium
- Leptotrichia wadei
- Solobacterium moorei

0.000 0.05 0.10 0.15
Median Importance

A Randomized Control Trial of a Multiplex Gastrointestinal PCR Panel versus Usual Testing to Assess Use of Antibiotics for Patients With Infectious Diarrhea in the Emergency Department

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Study Objective: Infectious diarrhea is a common complaint in US emergency departments (EDs). While the most common causes of infectious diarrhea are viral, the most serious are usually due to bacterial or protozoal sources. In the ED, the provider has limited ability to evaluate for these more serious causes using traditional testing such as stool culture due to its low sensitivity and long processing time. Despite the fact that many cases of infectious diarrhea are self-limited, appropriate antibiotic therapy for most bacterial and protozoal causes of infectious diarrhea has been shown to lead to a shorter duration of symptoms and decreased spread of disease in close contacts. Multiplex gastrointestinal polymerase chain reaction (GI-PCR) panels test the stool for multiple microbiological sources and the results are available in about an hour. These tests allow the ED provider to start targeted treatment of diarrhea during the same visit thus avoiding the conundrum of empiric therapy. The objective of this study was to compare the use of a multiplex GI-PCR test to usual testing (ie, standard testing or no testing) in ED patients with suspected acute infectious diarrhea to determine if there is a change in appropriate antibiotic management.

Methods: A prospective single center randomized control trial was designed to investigate antibiotic use in ED patients with moderate to severe suspected infectious diarrhea, comparing those that received GI-PCR to those that received usual testing. ED patients with signs of dehydration, inflammation or persistent symptoms were randomized to one of two treatment arms: (1) an experimental arm consisting of the multiplex GI-PCR (GIP) versus (2) a control arm which included usual testing or no testing. Mann-Whitney U test was used to compare the group differences for the continuous variables. A chi-square test or Fisher’s exact test was performed to test the group differences for categorical variables. For the purposes of our primary outcome, antibiotic usage, Farrington & Mannington score was used to calculate the confidence interval for the proportion difference between the experimental and control groups, and for each individual arm’s exact clopper-peason confidence intervals was calculated.

Results: A total of 74 patients provided diarrheal stool samples and were randomized to either the experimental GIP arm or to the control arm consisting of usual testing. The treatment groups were well balanced with respect to characteristics at baseline. Participants in the GIP arm received antibiotics in 87% of bacterial or protozoal diarrheal infections (13/15) while those in the control arm received antibiotics in 46% of bacterial or protozoal infections (6/13) (p-value 0.042). The two-proportion difference was 0.41 with 95% CI of 0.007 and 0.68.

Conclusions: ED use of multiplex PCR leads to an increase in antibiotic use for bacterial and protozoal causes of infectious diarrhea compared to usual