44.3. Pre-vaccination Antibody Titers Against Seasonal Coronaviruses And Antibody Responses to the Pfizer-BioNTech BNT162b2 COVID-19 mRNA Vaccine in Healthcare Workers

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Background. The Prospective Assessment of SARS-CoV-2 Seroconversion (PASS) study is following over 200 healthcare workers who have received the Pfizer-BioNTech BNT162b2 COVID-19 mRNA vaccine. A major aim of the study is to determine whether baseline antibody titers against the seasonal human coronaviruses are associated with altered levels of vaccine-induced antibody responses to SARS-CoV-2.

Methods. Serum samples obtained pre-vaccination and 1 month after the second dose were tested for IgG antibodies against the full pre-fusion spike protein and the receptor binding domain (RBD) of SARS-CoV-2, as well as the full pre-fusion spike protein.

Results. Preliminary analyses of the first 103 subjects in whom we have 1 month post-vaccination serum demonstrate development of high IgG geometric mean titer (GMT) to both the full spike protein (GMT: 13,685, 12,014-15,589, 95% CI) and the RBD (GMT: 19,448, 17,264-21,908, 95% CI) of SARS-CoV-2 after the 2nd vaccine dose. Preliminary analysis demonstrates no association between baseline antibody titers against spike protein of OC43 and antibody titers against SARS-CoV-2 spike protein ( Patients’ r-value= 0.13, P-value= 0.21) or RBD (Patients’ r-value= 0.09, P-value= 0.36) one month after vaccination. Future analyses will evaluate whether there is an association with baseline seasonal coronavirus antibody titers and either SARS-CoV-2 neutralization titer or anti-SARS-CoV-2 spike protein titers at 6 months after vaccination.

Conclusion. These preliminary results suggest that baseline antibody responses to seasonal coronaviruses neither boost nor impede SARS-CoV-2 vaccine-induced antibody responses. Longitudinal sampling will enable assessment of vaccine durability and determination of whether baseline seasonal coronavirus antibody levels are associated with altered duration of detectable COVID-19 vaccine-induced antibody responses.

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444. County-level COVID-19 Case Fatality Rate in Medicaid Expansion States Compared to Non-Expansion States

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Background. Medicaid expansion has been adopted by 38 states and the District of Columbia,2,2 contributing to lower rates of uninsured individuals in the US.3 During

Table 2. Multivariable analysis with Cox proportional hazards model on factors associated with mortality in patients with COVID-19

| Variable          | HR (95% CI) | p value |
|-------------------|------------|---------|
| Age               | 1.03 (1.02, 1.04) | <0.0001 |
| Male Sex          | 1.4 (1.03, 1.9) | 0.05   |
| COVID at hospital admission | 1.3 (1.04, 1.18) | 0.002 |
| sPO2 at hospital admission | 1.3 (1.15, 1.56) | 0.006 |

Abbreviations: HR: Hazard ratio, CI: Confidence interval
the COVID-19 pandemic, Medicaid enrollment offset employer-based insurance losses precipitated by the recession. The aim of this study was to evaluate whether Medicaid expansion may have impacted COVID-19 mortality.

**Methods.** We conducted an ecologic study that included all US counties in the 50 states and District of Columbia. County-specific Medicaid expansion status was based on when expansion was adopted within the state. COVID-19 cases and deaths for each county were obtained from the Centers of Disease Control (CDC). Unadjusted and multivariable negative binomial regression with robust standard errors was used to determine associations of in-hospital mortality in COVID-19 patients. Covariates included demographics, comorbidities, economic indicators, and physician density. These analyses were then performed in subgroups of counties defined by urbanicity (metro, suburban, or rural) and quintiles of poverty rates. Incidence Rate Ratios (IRR) and 95% confidence intervals (CI) are reported.

**Results.** A total of 1,814 Medicaid expansion and 1,328 non-expansion counties were included in the analysis. Crude case fatality rates were 2.1% (non-expansion) and 1.8% (expansion). Medicaid expansion was not associated with a significantly lower COVID-19 case fatality rate in either the unadjusted (IRR: 0.86; 95% CI: 0.74, 1.01) or fully adjusted (IRR: 1.02; 95% CI: 0.90, 1.16) models. In adjusted models, Medicaid expansion status was also not associated with differences in COVID-19 case fatality rates across strata of steering by community or percent of individuals living below the poverty line.

**Conclusion.** In this county-level analysis, Medicaid expansion status was not associated with a significant difference in county-level COVID-19-related case fatality rates among people of all ages. Future individual-level studies are needed to better characterize the effect of Medicaid on COVID-19 mortality.

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**445. COVID-19 Pharmacotherapy Was Not Associated with Mortality in a Community Teaching System**

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**Background.** During the COVID-19 pandemic, a task force was assembled to collect data on patient characteristics and treatment exposures to assess what factors may contribute to patient outcomes, and to develop institutional treatment guidelines.

**Methods.** A retrospective study was performed on COVID-19 inpatient admissions within a four-hospital community health system over a six-month period from April-October 2020. Positive COVID-19 immunology results and/or in conjunction with an inpatient admission was criteria for inclusion. Covariates for age, gender, race were added a priori. Covariates of interest included baseline comorbidities, admission level of care, vital signs, mortality outcomes, need for intubation, and specific pharmacological treatment exposures. Logistic regression was performed on our final model and reported as OR +/- 95% CI.

**Results.** A total of 682 patients met inclusion criteria. Pharmacotherapies were not associated with a difference in mortality in a four-hospital system. Corticosteroids (p = 0.99); Remdesivir (p = 0.79); hydroxychloroquine (p = 0.32); tocilizumab (p = 0.91); were not associated with mortality. ACE-inhibitor or angiotensin II receptor blockers OR 0.28 (0.09-0.93) (p = 0.03); convalescent plasma OR 7.85 (1.47-42.1) (p = 0.02); neuromuscular blocking agents (NMBA) OR 5.51 (1.28-23.8) (p = 0.02); vasoressors OR 17.6 (5.62-54.9) (p = 0.00) were associated with in-hospital mortality. Covariates that were associated with a difference in mortality were: age > 60 years OR 2.73 (1.04-7.14) (p = 0.04); structural lung disease OR 3.02 (1.28-7.10) (p = 0.01). Covariates not associated with mortality included African American race (p = 0.30); critical care admission (p = 0.19); obesity (p = 0.06); cardiovascular disease (p = 0.89); and diabetes (p = 0.28).

**Conclusion.** The use of corticosteroids, remdesivir, tocilizumab, and hydroxychloroquine, and admission to a critical care bed was not associated with a difference of in-hospital mortality. Patients who required vasopressors or NMBa were associated with in-hospital mortality. Despite national trends reporting increased mortality in patients with obesity, diabetes, cardiovascular disease, and of African American race, this was not observed in our health system safety net hospitals.

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**446. Prognostic Value of Absolute Lymphocyte Count for Disease Severity and Clinical Outcomes in Adult COVID-19 Patients**

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**Background.** Lymphopenia has been reported as a relatively frequent finding in patients with coronavirus disease 2019 (COVID-19). This study aimed to assess the use of absolute lymphocyte count (ALC) as a prognostic biomarker for disease severity and clinical outcomes.

**Methods.** A cohort of adult patients with COVID-19 admitted to Memorial Healthcare System, Hollywood, Florida from March 7, 2020 to January 18, 2021 was retrospectively analyzed. An absolute lymphocyte count (ALC) < 1.1 x 10^7/L was used as a cutoff point to define lymphopenia. Correlations of ALC upon admission with age and serum levels of C-reactive protein, interleukin-6, lactate dehydrogenase, and creatinine were analyzed. Univariate and multivariable regression models were developed to assess the association of lymphopenia with the risk of ICU admission and clinical outcomes.

**Results.** 4,485 hospitalized patients were included in the final analyses. Mean age was 61 (interquartile range, 47-73) years and 2,311 (51.5%) were men. Lymphopenia was more frequent in patients admitted to the ICU compared to those that were not admitted to the ICU, with an odds ratio of 2.14 (95% confidence interval [CI], 1.78-2.56, p < 0.0001) (Figure 1). The actual value of the ALC was negatively correlated with age and serum levels of C-reactive protein, interleukin-6, lactate dehydrogenase, and creatinine (all p < 0.005). Patients with lymphopenia (n=2,409) compared to those without lymphopenia (n=2,076) had multivariable-adjusted odds ratios of 1.85 (95% CI, 1.53-2.24) for ICU admission, 2.08 (95% CI, 1.67-2.58) for intubation, 1.98 (95% CI, 1.31-3.00) for development of acute kidney failure, and 2.23 (95% CI, 1.79-2.79) for in-hospital mortality (Table 1). Analyses were adjusted for age, gender, race, hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, coronary artery disease, malignancy, obesity, smoking.

**Conclusion.** In this study, the use of an absolute lymphocyte count as a biomarker for severity and outcome was associated with lymphopenia among patients with COVID-19.

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**447. An Ordinal Scale Assessing SARS-CoV-2 Infected Patient Outcomes Using Electronic Health Records**

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**Session:** P-21. COVID-19 Research

**Background.** Absolute lymphocyte count (ALC) was found to be an independent marker of COVID-19 outcomes in several studies. The ALC was negatively correlated with age and serum levels of C-reactive protein, interleukin-6, lactate dehydrogenase, and creatinine (all p < 0.005).

**Methods.** The ALC was measured at the time of COVID-19 diagnosis and classification as an admission status of the patient was based on the number of lymphocytes in the patient's blood. The ALC was determined from the patient's electronic health record (EHR). Patients were classified into quartiles based on their ALC, with quartile 1 representing the lowest ALC and quartile 4 representing the highest.

**Results.** The median ALC at the time of COVID-19 diagnosis was 1.21 x 10^7/L. The ALC was significantly lower in patients who were admitted to the ICU compared to those who were not admitted to the ICU (p < 0.0001). Patients with a lower ALC had a higher risk of developing acute kidney failure (p = 0.003), development of acute respiratory distress syndrome (p = 0.01), and in-hospital mortality (p = 0.005). The ALC was also negatively correlated with the number of lymphocytes in the blood (p < 0.0001). The ALC was higher in patients with COVID-19 than in patients with other respiratory infections (p < 0.0001).

**Conclusion.** The ALC was a powerful predictor of COVID-19 outcomes, and its measurement at the time of diagnosis could be used to predict the risk of developing severe outcomes.

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