Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.
eTable 1. Patient Characteristics Stratified by Race and COVID-19 Period

| Characteristic | Period 1 (N=1,652) | Period 2 (N=3,217) | Period 3 (N=17,409) | Period 4 (N=8,690) | Period 5 (N=12,254) |
|---------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|               | Mar 1 to May 17, 2020 | May 18 to Sep 1, 2020 | Sep 2 2020, to Jun 7, 2021 | Jun 8 to Oct 30, 2021 | Oct 31 2021 to Feb 28, 2022 |
| White         | n=731 (44.2)       | n=1,946 (60.5)      | n=12,603 (72.4)       | n=6,645 (76.5)       | n=9,162 (74.8)       |
| Black         | n=921 (55.8)       | n=1,271 (39.5)      | n=4,806 (27.6)        | n=2,045 (23.5)       | n=3,092 (25.2)       |
| Age           | 73 (64, 80)        | 69 (61, 75)         | 72 (65, 79)           | 67 (65, 79)          | 72 (65, 79)          |
| Male sex      | 700 (95.8)         | 871 (94.6)          | 1,847 (94.9)          | 1,170 (92.1)         | 1,824 (95.0)         |
| Ethnicity     |                   |                    |                    |                    |                    |
| Hispanic      | 95 (13.0)          | 33 (3.6)            | 318 (16.3)           | 1,101 (8.7)          | 545 (8.2)            |
| Non-Hispanic  | 621 (85.0)         | 873 (94.8)          | 1,585 (81.4)         | 11,041 (87.6)        | 4,806 (91.7)         |
| Unknown       | 15 (2.0)           | 15 (1.6)            | 43 (2.2)             | 461 (3.7)            | 288 (4.3)            |
| Area Deprivation Index | 90 (78, 99) | 94 (86, 108) | 95 (87, 102) | 97 (90, 105) | 95 (87, 103) |
| Vaccination status |     |                  |                    |                    |                    |
| None          | 731 (100.0)        | 921 (100)           | 1,946 (100)          | 12,603 (100)         | 6,645 (100)          |
| Partially     |                   |                    |                    |                    |                    |
| Fully         | 663 (5.3)          | 220 (4.6)           | 2,594 (39.0)         | 734 (35.9)           | 3,101 (33.8)         |
| Boosted       |                   |                    |                    |                    |                    |
| Charlson Comorbidity Index | 4 (2, 6) | 4 (2, 6) | 4 (2, 6) | 3 (1, 5) | 2 (1, 4) |
| Coronary artery disease | 274 (37.5) | 228 (24.8) | 698 (35.9) | 4,631 (36.7) | 2,176 (32.7) |
| Malignancy    | 145 (19.8)         | 215 (23.3)          | 377 (19.4)           | 2,823 (22.4)         | 1,456 (21.9)         |
| Chronic kidney disease | 218 (29.8) | 307 (33.3) | 486 (25.0) | 3,326 (26.4) | 1,549 (23.3) |
| Chronic obstructive lung disease | 216 (29.5) | 229 (24.9) | 551 (28.3) | 3,808 (30.2) | 1,884 (28.3) |
| Diabetes      | 374 (51.2)         | 502 (54.5)          | 957 (49.2)           | 6,261 (49.7)         | 3,048 (45.0)         |
| Hypertension  | 574 (78.5)         | 771 (83.7)          | 1,504 (77.3)         | 10,108 (80.2)        | 5,078 (76.4)         |
### eTable 2. Treatments and Organ Support Stratified by Race and COVID-19 Period

1. Denominator used was the number of patients who required any supplemental oxygen.

| Characteristic                  | Period 1 (N=1,652) | Period 2 (N=3,217) | Period 3 (N=17,409) | Period 4 (N=8,690) | Period 5 (N=12,254) |
|--------------------------------|--------------------|--------------------|---------------------|--------------------|---------------------|
|                                | Mar 1 to May 17, 2020 | May 18 to Sep 1, 2020 | Sep 2 to Jun 7, 2021 | Jun 8 to Oct 30, 2021 | Oct 31 to Feb 28, 2022 |
| **White**                      | n=731 (44.2)       | n=1,946 (60.5)     | n=1,2603 (39.5)     | n=6,645 (76.5)      | n=9,162 (74.8)       |
| **Black**                      | n=921 (55.8)       | n=1,271 (35.5)     | n=4,806 (27.6)      | n=2,045 (23.5)      | n=3,092 (25.2)       |
| **Any oxygen requirement**     | 604 (82.6)         | 758 (82.3)         | 1,401 (72.0)        | 870 (68.5)          | 5,337 (80.3)         |
|                                | 9,163 (72.7)       | 3,286 (68.4)       | 1,461 (71.4)        | 6,386 (69.7)        | 1,738 (56.2)         |
| **Monoclonal antibodies**      | 101 (0.8)          | 43 (0.9)           | 374 (5.6)           | 105 (5.1)           | 447 (4.9)            |
|                                | 121 (7.1)          | 76 (3.9)           | 103 (8.2)           | 423 (3.5)           | 224 (3.4)            |
| **Antivirals prior to admission** | 14 (2.3)         | 16 (2.1)           | 212 (24.4)          | 5,143 (55.6)        | 3,655 (58.0)         |
| **Vasopressor support**        | 5 (4.6)            | 7 (3.3)            | 2 (1.3)             | 1 (1.2)             | 1 (1.2)              |
| **High flow oxygen**           | 202 (27.6)         | 237 (25.7)         | 523 (26.9)          | 2,196 (22.1)        | 2,241 (33.7)         |
| **Non-invasive ventilation**   | 144 (19.7)         | 171 (18.6)         | 460 (23.6)          | 3,018 (23.9)        | 1,962 (29.5)         |
| **Mechanical ventilation (MV)**| 128 (17.5)         | 204 (22.1)         | 223 (11.5)          | 984 (7.8)           | 738 (11.1)           |
| **Days of MV**                 | 5 (2.13)           | 7 (3.12)           | 6 (1.12)            | 4 (0.11)            | 4 (0.12)             |
| **Time from admission to MV**  | 2 (0.4)            | 2 (0.4)            | 3 (1.7)             | 3 (1.7)             | 3 (1.7)              |
| **Prone Positioning**          | 61 (47.7)          | 83 (40.7)          | 112 (50.2)          | 499 (50.7)          | 393 (53.3)           |
| **Extracorporeal Membrane Oxygenation** | 0 (0.0)       | 1 (0.0)            | 0 (0.0)             | 5 (0.0)             | 4 (0.1)              |
| **Vasopressor support**        | 155 (21.2)         | 219 (23.8)         | 258 (13.3)          | 1,183 (9.8)         | 802 (12.1)           |
| **Renal Replacement Therapy**  | 52 (7.1)           | 121 (13.1)         | 76 (3.9)            | 423 (3.5)           | 224 (3.4)            |
### eTable 3. Clinical Outcomes Stratified by Race and COVID-19 Period

| Characteristic          | Period 1 (N=1,652) | Period 2 (N=3,217) | Period 3 (N=17,409) | Period 4 (N=8,690) | Period 5 (N=12,254) |
|-------------------------|--------------------|--------------------|---------------------|--------------------|---------------------|
|                         | Mar 1 to May 17, 2020 | May 18 to Sep 1, 2020 | Sep 2 to Jun 7, 2021 | Jun 8 to Oct 30, 2021 | Oct 31 to Feb 28, 2022 |
| ICU admission           | White 731 (44.2)   | Black 921 (55.8)   | White 1,946 (60.5)  | Black 1,271 (39.5)  | White 12,603 (72.4)  |
|                         | 333 (45.6)         | 423 (45.9)         | 946 (48.6)          | 543 (42.7)          | 5,299 (42.0)         |
|                         |                    |                    | 1,888 (39.3)        |                    | 3,148 (47.4)         |
|                         |                    |                    |                     |                    | 829 (40.5)           |
|                         |                    |                    |                     |                    | 3,701 (40.4)         |
|                         |                    |                    |                     |                    | 1,123 (36.3)         |
| ICU length of stay (LOS)| 7 (3, 14)          | 7 (3, 12)          | 6 (2, 13)           | 5 (2, 10)          | 5 (2, 10)           |
|                         | 6 (2, 13)          | 6 (2, 12)          | 5 (2, 10)           | 6 (2, 11)          | 5 (2, 10)           |
|                         | 1,304 (10.3)       | 424 (8.8)          | 5 (3, 10)           | 5 (2, 10)          | 4 (2, 9)            |
|                         | 745 (8.1)          | 745 (8.1)          | 180 (5.8)           | 4 (2, 9)           | 4 (2, 9)            |
| Hospital LOS            | 194 (26.5)         | 217 (23.6)         | 253 (13.0)          | 108 (8.5)          | 1304 (10.3)         |
|                         | 5 (2, 10)          | 5 (2, 10)          | 5 (2, 10)           | 5 (3, 10)          | 5 (2, 10)           |
|                         | 1,224 (18.4)       | 276 (13.5)         | 1,339 (14.6)        | 1,339 (14.6)       | 348 (11.3)          |
| 60-day Mortality        | 263 (36.0)         | 272 (29.5)         | 457 (23.5)          | 193 (15.2)         | 2,412 (19.1)        |
|                         | 2,412 (19.1)       | 729 (15.2)         | 1,224 (18.4)        | 276 (13.5)         | 1,339 (14.6)        |
|                         | 348 (11.3)         | 1,271 (13.9)       | 807 (12.1)          | 243 (11.9)         | 1,271 (13.9)        |
| 30-day Readmission      | 83 (15.5)          | 98 (13.9)          | 264 (13.6)          | 154 (12.1)         | 1,682 (13.3)        |
|                         |                    |                    | 620 (12.9)          |                    | 807 (12.1)          |
|                         |                    |                    | 243 (11.9)          |                    | 1,271 (13.9)        |
|                         |                    |                    | 446 (14.4)          |                    |                    |
**eTable 4. COVID-19 Treatments, Organ Support Measures, and Outcomes in a 1:1 Matched Cohort Stratified by Time Periods**

|                         | Periods 1-2 (N=468) |                         | Periods 3-5 (N=3,594) |                         | All Periods (N=4,062) |
|-------------------------|---------------------|-------------------------|------------------------|------------------------|-----------------------|
|                         | Mar 1 to Sep 1, 2020| Sep 2 2020 to Feb 28, 2022 | Mar 1, 2020, to Feb 28, 2022 |                         |                       |
|                         | White (n=234) | Black (n=234) | **P** value | White (n=1,797) | Black (n=1,797) | **P** value | White (n=2,031) | Black (n=2,031) | **P** value |
| **Demographics**        |                     |                         |                        |                       |                       |
| Age                     | 73 (69.78) 72 (68.78) | 0.53                    | 72 (65.76) 72 (65.76) | 0.15                   | 72 (66.77) 72 (65.76) | 0.12 |
| Charlson Index          | 5 (3.7) 5 (3.6) | 0.91                    | 3 (1.5) 3 (1.6) | 0.23                   | 4 (2.5) 4 (2.6) | 0.25 |
| ADI                     | 95 (91.102) 97 (92.102) | 0.43                    | 96 (90.102) 96 (91.103) | 0.23                   | 96 (90.102) 96 (91.103) | 0.21 |
| Male gender             | 232 (99.1) 232 (99.1) | 1.00                    | 1,764 (98.2) 1,764 (98.2) | 1.00                   | 2,457 (98.6) 2,457 (98.6) | 1.00 |
| **COVID-19 Treatments** |                     |                         |                        |                       |                       |
| Systemic Steroids       | 86 (36.4) 95 (40.6) | 0.39                    | 1,265 (70.4) 1,193 (66.4) | 0.01                   | 1,351 (66.5) 1,288 (63.4) | 0.04 |
| Remdesivir              | 46 (19.7) 31 (13.2) | 0.06                    | 1,061 (59.0) 971 (54.0) | 0.002                  | 1,107 (54.5) 1,002 (49.3) | <0.001 |
| Immunomodulators        | 12 (5.1) 9 (3.8) | 0.50                    | 90 (5.0) 83 (4.6) | 0.59                   | 102 (5.0) 92 (4.5) | 0.46 |
| **Organ support measures** |                     |                         |                        |                       |                       |
| ICU admission           | 117 (50.0) 99 (42.3) | 0.10                    | 758 (42.2) 757 (42.1) | 0.97                   | 875 (43.1) 856 (42.1) | 0.55 |
| Low-flow oxygen         | 228 (97.4) 231 (98.7) | 0.50                    | 1,754 (97.6) 1,746 (97.2) | 0.40                   | 1,982 (97.6) 1,977 (97.3) | 0.62 |
| High-flow oxygen        | 80 (34.2) 62 (26.5) | 0.07                    | 529 (29.4) 499 (27.8) | 0.27                   | 609 (30.0) 561 (27.6) | 0.10 |
| Non-invasive ventilation | 42 (17.9) 42 (17.9) | 1.00                    | 357 (19.9) 357 (19.9) | 1.00                   | 399 (19.6) 399 (19.6) | 1.00 |
| Mechanical ventilation (MV) | 23 (9.8) 23 (9.8) | 1.00                    | 75 (4.2) 75 (4.2) | 1.00                   | 98 (4.8) 98 (4.8) | 1.00 |
| Ventilator days         | 5 (3.10) 4 (1.10) | 0.27                    | 3 (0.9) 4 (0.12) | 0.42                   | 4 (0.9) 4 (0.12) | 0.72 |
| Time to initiation of MV | 5 (1.10) 4 (1.12) | 0.90                    | 4 (1.10) 6 (2.15) | 0.22                   | 4 (1.10) 6 (1.14) | 0.25 |
| Prone Positioning       | 15 (65.2) 11 (47.8) | 0.37                    | 38 (50.7) 47 (62.7) | 0.19                   | 53 (54.1) 58 (59.2) | 0.58 |
| **Outcomes**            |                     |                         |                        |                       |                       |
| Hospital Mortality      | 46 (19.7) 37 (15.8) | 0.28                    | 161 (9.0) 160 (8.9) | 0.95                   | 207 (9.9) 197 (9.7) | 0.60 |
| 60-day Mortality        | 80 (34.2) 60 (25.5) | 0.04                    | 328 (18.3) 316 (17.6) | 0.60                   | 408 (20.1) 376 (18.5) | 0.20 |
| 30-day Readmission      | 37 (19.7) 41 (20.8) | 0.62                    | 290 (17.7) 307 (18.8) | 0.45                   | 327 (17.9) 348 (19.0) | 0.56 |

*We matched Black and White subjects with a documented need for supplemental oxygen using coarsened exact matching on 10-year age intervals, sex, ethnicity, Charlson Index categories (0,1,2 or >2), area deprivation index categories, invasive and non-invasive mechanical ventilation, vaccination status, admission month, location, and preexisting chronic kidney and liver disease.*
eTable 5. Comparison of Health Care–Associated Infection Rates, Number of Beds, Location, and Complexity Level of Hospitals in the 20th vs 80th Percentile for Within-Center Race Odd Ratios for Steroid Treatment Data presented as means with standard errors of means. The odds ratio reflects the odds of receiving steroids for COVID-19 in Black vs. White patients. An odds ratio of less than 1 indicates a lower likelihood of Black patients receiving steroids than White patients.

|                | 1 CLABSI | 2 CAUTI | Beds | Location  | 3 Complexity level |
|----------------|----------|---------|------|-----------|--------------------|
| 20th percentile| 1.70 (0.27) | 0.88 (0.15) | 94 (9) | 2/21 rural | 17 high, 3 medium, 1 low |
| 80th percentile| 1.41 (0.21) | 0.65 (0.10) | 118 (13) | 0/24 rural | 22 high, 1 medium, 1 low |

1 Number of central line-associated bloodstream infections (CLABSI) per 1000 device days
2 Number of catheter-associated urinary tract infections (CAUTI) per 1000 device days
3 VA medical centers are categorized into high-complexity, medium complexity, and low complexity facilities. High-complexity facilities typically serve medium to high-risk patients and harbor complex clinical and medium to large-sized research and teaching programs. Medium and low complexity facilities serve low-risk patients and harbor few or no complex clinical and research/teaching programs.
**eTable 6. Model Specifications and Coefficients for Steroid Treatment**

| Characteristic                  | beta  | 95% CI          | p-value |
|--------------------------------|-------|-----------------|---------|
| (Intercept)                    | -3.6  | -4.1, -3.0      | <0.001  |
| ns(Age, df = 5)1               | 0.47  | 0.17, 0.78      | 0.002   |
| ns(Age, df = 5)2               | 0.73  | 0.38, 1.1       | <0.001  |
| ns(Age, df = 5)3               | 0.30  | 0.07, 0.53      | 0.010   |
| ns(Age, df = 5)4               | 1.0   | 0.27, 1.8       | 0.008   |
| ns(Age, df = 5)5               | -0.20 | -0.58, 0.18     | 0.307   |
| Male sex                       | 0.00  | -0.12, 0.12     | 0.983   |
| Charlson Index                 | -0.04 | -0.05, -0.03    | <0.001  |
| Chronic kidney disease         | -0.12 | -0.19, -0.05    | <0.001  |
| Chronic liver disease          | -0.30 | -0.39, -0.21    | <0.001  |
| Black race                     | -0.13 | -0.22, -0.04    | 0.004   |
| Proportion of Black patients   | -0.40 | -0.73, -0.07    | 0.018   |
| Non-Hispanic Ethnicity         | -0.15 | -0.27, -0.03    | 0.012   |
| Unknown Ethnicity              | -0.16 | -0.34, 0.02     | 0.090   |
| Area deprivation index         | 0.00  | 0.00, 0.00      | 0.001   |
| ICU admission                  | 0.39  | 0.33, 0.44      | <0.001  |
| Mechanical ventilatoin         | 1.1   | 1.0, 1.3        | <0.001  |
| Vasopressors                   | 0.16  | 0.05, 0.27      | 0.005   |
| Renal replacement therapy      | -0.32 | -0.45, -0.20    | <0.001  |
| Number of mRNA vaccinations    |       |                 |         |
| 1                              | -0.23 | -0.38, -0.09    | 0.001   |
| 2                              | -0.71 | -0.79, -0.63    | <0.001  |
| 3                              | -1.0  | -1.1, -0.88     | <0.001  |
| 2\(^2\) Month of hospital admission |       |                 |         |
| 1                              | 0.00  | —               |         |
| 2                              | 0.38  | -0.06, 0.81     | 0.089   |
| 3                              | 0.08  | -0.47, 0.63     | 0.778   |
| 4                              | 2.5   | 2.1, 2.9        | <0.001  |
| 5                              | 3.8   | 3.4, 4.2        | <0.001  |
| 6                              | 3.7   | 3.3, 4.1        | <0.001  |
| 12                             | 3.5   | 3.2, 3.9        | <0.001  |
| 24                             | 3.6   | 3.2, 4.0        | <0.001  |
| Time between positive test and admission | 0.03  | 0.02, 0.04      | <0.001  |

**Random effects**

|                     |       |
|---------------------|-------|
| St3n.sd__(Intercept)| 0.24  |
| St3n.1.sd__test_to_hosp | 0.04  |
| St3n.2.sd__race_cat2 | 0.26  |

\(^1\)CI = Confidence Interval

No. Obs. = 31,004; Sigma = 1.00; Log-likelihood = -16,746; AIC = 33,590; BIC = 33,998; Deviance = 33,087; Residual df = 30,955

\(^2\)Months 7 to 11 and 13 to 23 omitted from table due to space constraints
### eTable 7. Model Specifications and Coefficients for Remdesivir Treatment

| Characteristic                                      | beta   | 95% CI       | p-value |
|-----------------------------------------------------|--------|--------------|---------|
| (Intercept)                                         | -17    | -223, 190    | 0.875   |
| ns(Age, df = 5)1                                    | 0.44   | 0.16, 0.72   | 0.002   |
| ns(Age, df = 5)2                                    | 0.68   | 0.35, 1.0    | <0.001  |
| ns(Age, df = 5)3                                    | 0.23   | 0.01, 0.44   | 0.041   |
| ns(Age, df = 5)4                                    | 0.82   | 0.12, 1.5    | 0.022   |
| ns(Age, df = 5)5                                    | -0.31  | -0.68, 0.06  | 0.100   |
| Male sex                                            | -0.10  | -0.21, 0.02  | 0.092   |
| Charlson Index                                      | -0.04  | -0.05, -0.03 | <0.001  |
| Chronic kidney disease                              | -0.38  | -0.45, -0.32 | <0.001  |
| Chronic liver disease                               | -0.20  | -0.28, -0.12 | <0.001  |
| Black race                                          | -0.12  | -0.18, -0.05 | <0.001  |
| Proportion of Black patients                        | -0.38  | -0.75, -0.01 | 0.043   |
| Non-Hispanic Ethnicity                              | -0.15  | -0.25, -0.04 | 0.008   |
| Unknown Ethnicity                                   | -0.20  | -0.37, -0.04 | 0.018   |
| Area deprivation index                              | 0.00   | 0.00, 0.00   | 0.329   |
| ICU admission                                       | 0.23   | 0.17, 0.28   | <0.001  |
| Mechanical ventilation                              | 0.57   | 0.46, 0.68   | <0.001  |
| Vasopressors                                        | -0.06  | -0.16, 0.04  | 0.241   |
| Renal replacement therapy                           | -1.0   | -1.1, -0.90  | <0.001  |
| Number of mRNA vaccinations                         |        |              |         |
| 1                                                    | -0.07  | -0.21, 0.07  | 0.318   |
| 2                                                    | -0.45  | -0.52, -0.37 | <0.001  |
| 3                                                    | -0.55  | -0.68, -0.43 | <0.001  |
| Month of hospital admission                         |        |              |         |
| 1                                                    |        |              |         |
| 2                                                    | 12     | -195, 219    | 0.910   |
| 3                                                    | 15     | -192, 221    | 0.889   |
| 4                                                    | 16     | -191, 222    | 0.882   |
| 5                                                    | 16     | -191, 222    | 0.882   |
| 6                                                    | 16     | -191, 222    | 0.882   |
| 12                                                   | 17     | -190, 223    | 0.874   |
| 24                                                   | 17     | -190, 224    | 0.873   |
| Time between positive test and admission            | -0.01  | -0.02, 0.00  | 0.050   |

**Random effects**

- Sta3n.sd__(Intercept): 0.30
- Sta3n.1.sd__test_to_hosp: 0.03
- Sta3n.2.sd__race_cat2: 0.11

\(^1\)CI = Confidence Interval

No. Obs. = 31,004; Sigma = 1.00; Log-likelihood = -18,688; AIC = 37,474; BIC = 37,883; Deviance = 36,980; Residual df = 30,955; Months 7 to 11 and 13 to 23 omitted from table due to space constraints.
**eTable 8. Model Specifications and Coefficients for Immunomodulation Treatment**

| Characteristic                          | beta | 95% CI   | p-value |
|----------------------------------------|------|----------|---------|
| (Intercept)                            | -4.3 | -5.0, -3.5 | <0.001  |
| ns(Age, df = 5)1                       | 0.49 | 0.01, 1.0 | 0.047   |
| ns(Age, df = 5)2                       | 0.48 | -0.08, 1.0 | 0.094   |
| ns(Age, df = 5)3                       | 0.23 | -0.19, 0.65 | 0.280   |
| ns(Age, df = 5)4                       | 0.57 | -0.67, 1.8 | 0.368   |
| ns(Age, df = 5)5                       | -0.92 | -1.8, -0.05 | 0.039   |
| Male sex                               | 0.19 | -0.01, 0.40 | 0.061   |
| Charlson Index                         | -0.08 | -0.10, -0.05 | <0.001  |
| Chronic kidney disease                 | -0.07 | -0.19, 0.06 | 0.295   |
| Chronic liver disease                  | -0.18 | -0.33, -0.02 | 0.028   |
| Black race                             | -0.27 | -0.39, -0.14 | <0.001  |
| Proportion of Black patients           | -0.03 | -0.48, 0.43 | 0.905   |
| Non-Hispanic Ethnicity                 | -0.21 | -0.39, -0.03 | 0.021   |
| Unknown Ethnicity                      | -0.16 | -0.44, 0.12 | 0.260   |
| Area deprivation index                 | 0.00  | -0.01, 0.00 | 0.032   |
| ICU admission                          | 1.9   | 1.7, 2.0  | <0.001  |
| Mechanical ventilation                 | 1.2   | 1.1, 1.3  | <0.001  |
| Vasopressors                           | 0.17  | 0.03, 0.31 | 0.016   |
| Renal replacement therapy              | -0.33 | -0.51, -0.14 | <0.001  |
| Number of mRNA vaccinations            |      |          |         |
| 1                                      | -0.37 | -0.63, -0.10 | 0.007   |
| 2                                      | -0.70 | -0.82, -0.58 | <0.001  |
| 3                                      | -1.1  | -1.3, -0.83 | <0.001  |
| Month of hospital admission            |      |          |         |
| 1                                      | 0.57  | 0.13, 1.0  | 0.012   |
| 2                                      | -0.08 | -0.68, 0.53 | 0.805   |
| 3                                      | -0.04 | -0.57, 0.49 | 0.877   |
| 4                                      | 0.02  | -0.43, 0.48 | 0.917   |
| 5                                      | -1.5  | -2.3, -0.77 | <0.001  |
| 6                                      | -0.34 | -0.84, 0.16 | 0.184   |
| 12                                     | 0.82  | 0.35, 1.3  | <0.001  |
| 24                                     | 0.02  | 0.00, 0.03 | 0.035   |

| Time between positive test and admission | 0.02 | 0.00, 0.03 | 0.035 |

**Random effects**

|                     |       |
|---------------------|-------|
| Sta3n.sd__(Intercept) | 0.30  |
| Sta3n.1.sd__test_to_hosp | 0.00  |
| Sta3n.2.sd__race_cat2   | 0.20  |

<sup>1</sup>CI = Confidence Interval

No. Obs. = 31,004; Sigma = 1.00; Log-likelihood = -6,928; AIC = 13,955; BIC = 14,364; Deviance = 13,670; Residual df = 30,955

<sup>2</sup>Months 7 to 11 and 13 to 23 omitted from table due to space constraints
## eTable 9. Model Specifications and Coefficients for Intensive Care Unit Admission

| Characteristic                                      | beta  | 95% CI     | p-value |
|-----------------------------------------------------|-------|------------|---------|
| (Intercept)                                         | -1.7  | -2.1, -1.3 | <0.001  |
| ns(Age, df = 5)1                                    | 0.07  | -0.16, 0.30| 0.542   |
| ns(Age, df = 5)2                                    | 0.19  | -0.07, 0.45| 0.160   |
| ns(Age, df = 5)3                                    | 0.23  | 0.04, 0.41  | 0.018   |
| ns(Age, df = 5)4                                    | 0.09  | -0.49, 0.66 | 0.769   |
| ns(Age, df = 5)5                                    | 0.16  | -0.16, 0.47 | 0.335   |
| Male sex                                            | 0.01  | -0.09, 0.11 | 0.870   |
| Charlson Index                                      | 0.03  | 0.02, 0.04  | <0.001  |
| Black race                                          | -0.05 | -0.13, 0.02 | 0.165   |
| Proportion of Black patients                        | -0.17 | -0.74, 0.40 | 0.555   |
| Non-Hispanic Ethnicity                              | 0.04  | -0.06, 0.14 | 0.490   |
| Unknown Ethnicity                                   | 0.04  | -0.11, 0.20 | 0.572   |
| Area deprivation index                              | 0.00  | 0.00, 0.01  | <0.001  |
| ICU admission                                        | 1.9   | 1.7, 2.0    | <0.001  |
| Mechanical ventilation                              | 17    | -143, 178   | 0.831   |
| Non-invasive ventilation                            | 0.88  | 0.82, 0.93  | <0.001  |
| Vasopressors                                        | 1.2   | 1.1, 1.4    | <0.001  |
| Renal replacement therapy                           | 0.46  | 0.33, 0.58  | <0.001  |
| Number of mRNA vaccinations                         |       |            |         |
| 1                                                    | -0.16 | -0.28, -0.04| 0.012   |
| 2                                                    | -0.13 | -0.20, -0.06| <0.001  |
| 3                                                    | -0.09 | -0.20, 0.02 | 0.093   |
| Month of hospital admission                         |       |            |         |
| 1                                                    | 0.07  | -0.22, 0.36 | 0.617   |
| 2                                                    | 0.37  | 0.05, 0.69  | 0.024   |
| 4                                                    | 0.46  | 0.16, 0.75  | 0.002   |
| 5                                                    | 0.25  | -0.02, 0.52 | 0.073   |
| 6                                                    | 0.30  | 0.02, 0.58  | 0.038   |
| 12                                                   | 0.06  | -0.21, 0.33 | 0.650   |
| 24                                                   | -0.22 | -0.49, 0.05 | 0.111   |
| Time between positive test and admission             | -0.01 | -0.02, 0.00 | 0.002   |
| Steroid treatment                                   | 0.37  | 0.31, 0.43  | <0.001  |
| Remdesivir treatment                                | 0.06  | 0.00, 0.12  | 0.035   |
| Immunomodulatory treatment                          | 1.7   | 1.6, 1.8    | <0.001  |

**Random effects**

- Sta3n.sd__(Intercept) 0.53
- Sta3n.1.sd__test_to_hosp 0.00
- Sta3n.2.sd__race_cat2 0.22

1 CI = Confidence Interval
No. Obs. = 43,222; Sigma = 1.00; Log-likelihood = -23,006; AIC = 46,112; BIC = 46,545; Deviance = 45,484; Residual df = 43,172
2 Months 7 to 11 and 13 to 23 omitted from table due to space constraints
## eTable 10. Model Specifications and Coefficients for Mechanical Ventilation

| Characteristic                                             | beta  | 95% CI  | p-value |
|-----------------------------------------------------------|-------|---------|---------|
| (Intercept)                                               | -4.8  | -5.8, -3.9 | <0.001 |
| ns(Age, df = 5)1                                          | 0.73  | 0.03, 1.4 | 0.041  |
| ns(Age, df = 5)2                                          | 0.67  | -0.12, 1.5 | 0.097  |
| ns(Age, df = 5)3                                          | 0.36  | -0.15, 0.86 | 0.169  |
| ns(Age, df = 5)4                                          | -0.26 | -2.0, 1.5  | 0.772  |
| ns(Age, df = 5)5                                          | -1.1  | -2.1, -0.11 | 0.030  |
| Male sex                                                  | 0.09  | -0.16, 0.33 | 0.483  |
| Charlson Index                                            | -0.04 | -0.06, -0.02 | <0.001 |
| Black race                                                | 0.09  | -0.04, 0.22 | 0.159  |
| Proportion of Black patients                              | 0.49  | 0.02, 1.0  | 0.040  |
| Non-Hispanic Ethnicity                                    | 0.19  | -0.01, 0.39 | 0.061  |
| Unknown Ethnicity                                         | -0.04 | -0.38, 0.30 | 0.821  |
| Area deprivation index                                    | 0.01  | 0.00, 0.01  | <0.001 |
| Low flow oxygen supplementation                           | 0.42  | 0.24, 0.60  | <0.001 |
| Non-invasive ventilation                                  | 1.3   | 1.2, 1.4   | <0.001 |
| Vasopressors                                              | 3.6   | 3.5, 3.7   | <0.001 |
| Renal replacement therapy                                 | 0.43  | 0.27, 0.59  | <0.001 |
| Number of mRNA vaccinations                               |       |          |         |
| 1                                                         | -0.15 | -0.44, 0.15 | 0.326  |
| 2                                                         | -0.26 | -0.43, -0.10 | 0.002  |
| 3                                                         | -0.21 | -0.52, 0.09  | 0.171  |
| Month of hospital admission                               |       |          |         |
| 1                                                         |       |          |         |
| 2                                                         | -0.73 | -1.1, -0.33 | <0.001 |
| 3                                                         | -1.1  | -1.6, -0.56 | <0.001 |
| 4                                                         | -1.7  | -2.1, -1.2  | <0.001 |
| 5                                                         | -1.6  | -2.0, -1.2  | <0.001 |
| 6                                                         | -1.8  | -2.2, -1.4  | <0.001 |
| 12                                                        | -2.3  | -2.7, -1.9  | <0.001 |
| 24                                                        | -2.6  | -3.1, -2.1  | <0.001 |
| Time between positive test and admission                  | 0.01  | 0.00, 0.03  | 0.092  |
| Steroid treatment                                         | 1.1   | 0.91, 1.2   | <0.001 |
| Remdesivir treatment                                      | 0.16  | 0.04, 0.28  | 0.009  |
| Immunomodulatory treatment                                | 1.3   | 1.2, 1.5    | <0.001 |

**Random effects**

|                        |       |
|------------------------|-------|
| Sta3n.sd__(Intercept)  | 0.29  |
| Sta3n.1.sd__test_to_hosp| 0.00  |
| Sta3n.2.sd__race_cat2  | 0.10  |

1 CI = Confidence Interval

No. Obs. = 43,222; Sigma = 1.00; Log-likelihood = -6,099; AIC = 12,299; BIC = 12,732; Deviance = 12,055; Residual df = 43,172

2 Months 7 to 11 and 13 to 23 omitted from table due to space constraints
**eTable 11. Model Specifications and Coefficients or Noninvasive Ventilation**

| Characteristic                                      | beta  | 95% CI      | p-value |
|-----------------------------------------------------|-------|-------------|---------|
| (Intercept)                                         | -4.9  | -5.3, -4.4  | <0.001  |
| ns(Age, df = 5)1                                    | 1.1   | 0.80, 1.5   | <0.001  |
| ns(Age, df = 5)2                                    | 1.3   | 1.0, 1.7    | <0.001  |
| ns(Age, df = 5)3                                    | -0.04 | -0.29, 0.20 | 0.718   |
| ns(Age, df = 5)4                                    | 2.2   | 1.4, 3.0    | <0.001  |
| ns(Age, df = 5)5                                    | -0.93 | -1.4, -0.49 | <0.001  |
| Male sex                                            | 0.37  | 0.25, 0.49  | <0.001  |
| Charlson Index                                      | 0.05  | 0.04, 0.06  | <0.001  |
| Black race                                          | -0.20 | -0.27, -0.12| <0.001  |
| Proportion of Black patients                        | -0.32 | -0.62, -0.02| 0.035   |
| Non-Hispanic Ethnicity                              | -0.05 | -0.15, 0.06 | 0.402   |
| Unknown Ethnicity                                   | 0.03  | -0.13, 0.20 | 0.700   |
| Area deprivation index                              | 0.00  | 0.00, 0.00  | 0.046   |
| Low flow oxygen supplementation                     | 1.2   | 1.1, 1.3    | <0.001  |
| Vasopressors                                        | 1.4   | 1.3, 1.4    | <0.001  |
| Renal replacement therapy                           | 0.05  | -0.07, 0.16 | 0.420   |
| Number of mRNA vaccinations                         |       |             |         |
| 1                                                    | 0.00  | -0.14, 0.14 | 0.986   |
| 2                                                    | 0.10  | 0.02, 0.17  | 0.015   |
| 3                                                    | 0.31  | 0.19, 0.44  | <0.001  |
| Month of hospital admission                         |       |             |         |
| 1                                                    |       |             |         |
| 2                                                    | 0.05  | -0.25, 0.35 | 0.739   |
| 3                                                    | 0.20  | -0.15, 0.54 | 0.272   |
| 4                                                    | 0.34  | 0.03, 0.65  | 0.031   |
| 5                                                    | 0.32  | 0.04, 0.60  | 0.025   |
| 6                                                    | 0.28  | -0.02, 0.58 | 0.065   |
| 12                                                   | 0.45  | 0.17, 0.72  | 0.001   |
| 24                                                   | 0.13  | -0.15, 0.42 | 0.348   |
| Time between positive test and admission            | 0.01  | 0.00, 0.01  | 0.163   |
| Steroid treatment                                   | 0.39  | 0.32, 0.46  | <0.001  |
| Remdesivir treatment                                | 0.19  | 0.13, 0.26  | <0.001  |
| Immunomodulatory treatment                          | 1.2   | 1.2, 1.3    | <0.001  |

**Random effects**

| Statistic                                           | Value |
|-----------------------------------------------------|-------|
| Sta3n.sd__(Intercept)                               | 0.22  |
| Sta3n.1.sd__test_to_hosp                            | 0.00  |
| Sta3n.2.sd__race_cat2                               | 0.19  |

CI = Confidence Interval

No. Obs. = 43,222; Sigma = 1.00; Log-likelihood = -19,447; AIC = 38,991; BIC = 39,416; Deviance = 38,625; Residual df = 43,173

*Months 7 to 11 and 13 to 23 omitted from table due to space constraints*
### Table 12. Model Specifications and Coefficients for Prone Positioning

| Characteristic                          | beta  | 95% CI          | p-value |
|----------------------------------------|-------|-----------------|---------|
| (Intercept)                            | -0.89 | -2.1, 0.28      | 0.136   |
| ns(Age, df = 5)1                       | -0.12 | -0.92, 0.68     | 0.768   |
| ns(Age, df = 5)2                       | 0.01  | -0.89, 0.91     | 0.988   |
| ns(Age, df = 5)3                       | -0.90 | -1.6, -0.22     | 0.009   |
| ns(Age, df = 5)4                       | -1.0  | -3.0, 1.0       | 0.324   |
| ns(Age, df = 5)5                       | -2.5  | -3.8, -1.1      | <0.001  |
| Male sex                               | -0.01 | -0.39, 0.37     | 0.959   |
| Charlson Index                         | -0.10 | -0.13, -0.07    | <0.001  |
| Black race                             | 0.00  | -0.19, 0.20     | 0.981   |
| Proportion of Black patients           | -1.4  | -2.1, -0.68     | <0.001  |
| Non-Hispanic Ethnicity                 | -0.22 | -0.51, 0.08     | 0.153   |
| Unknown Ethnicity                      | -0.35 | -0.89, 0.18     | 0.197   |
| Area deprivation index                 | 0.00  | -0.01, 0.00     | 0.170   |
| Vasopressors                           | 1.3   | 1.1, 1.5        | <0.001  |
| Renal replacement therapy              | 0.36  | 0.16, 0.56      | <0.001  |
| Number of mRNA vaccinations             |       |                 |         |
| 1                                      | -0.45 | -1.0, 0.06      | 0.085   |
| 2                                      | -0.26 | -0.54, 0.02     | 0.066   |
| 3                                      | -0.44 | -1.1, 0.19      | 0.174   |
| Month of hospital admission            |       |                 |         |
| 1                                      | 0.65  | 0.13, 1.2       | 0.014   |
| 2                                      | 0.19  | -0.55, 0.93     | 0.617   |
| 3                                      | 0.23  | -0.42, 0.89     | 0.479   |
| 4                                      | -0.15 | -0.72, 0.42     | 0.605   |
| 5                                      | -0.23 | -0.89, 0.42     | 0.485   |
| 6                                      | -0.90 | -1.6, -0.20     | 0.012   |
| 12                                     | -1.6  | -2.5, -0.67     | <0.001  |
| 24                                     | 0.02  | -0.01, 0.05     | 0.143   |
| Time between positive test and         |       |                 |         |
| admission                              |       |                 |         |
| Steroid treatment                      | 0.72  | 0.44, 1.0       | <0.001  |
| Remdesivir treatment                   | 0.35  | 0.17, 0.54      | <0.001  |
| Immunomodulatory treatment             | 1.0   | 0.80, 1.2       | <0.001  |

**Random effects**

|                    |       |
|--------------------|-------|
| Sta3n.sd__ Intercept| 0.41  |
| Sta3n.1.sd__ test_to_hosp | 0.03  |
| Sta3n.2.sd__ race_cat2 | 0.00  |

1 CI = Confidence Interval

No. Obs. = 3,654; Sigma = 1.00; Log-likelihood = -2,047; AIC = 4,191; BIC = 4,488;
Deviance = 3,962; Residual df = 3,606

2 Months 7 to 11 and 13 to 23 omitted from table due to space constraints
**eTable 13. Model Specifications and Coefficients for Hospital Death**

| Characteristic                                      | beta | 95% CI | p-value |
|-----------------------------------------------------|------|--------|---------|
| (Intercept)                                         | -6.3 | -7.5, -5.1 | <0.001 |
| ns(Age, df = 5)1                                    | 2.5  | 1.5, 3.6  | <0.001 |
| ns(Age, df = 5)2                                    | 2.7  | 1.6, 3.8  | <0.001 |
| ns(Age, df = 5)3                                    | 3.8  | 3.2, 4.4  | <0.001 |
| ns(Age, df = 5)4                                    | 5.4  | 3.0, 7.7  | <0.001 |
| ns(Age, df = 5)5                                    | 4.8  | 4.2, 5.5  | <0.001 |
| Male sex                                            | 0.33 | 0.08, 0.59 | 0.011 |
| Charlson Index                                      | 0.07 | 0.05, 0.08 | <0.001 |
| Black race                                          | -0.02| -0.15, 0.10| 0.708 |
| Proportion of Black patients                        | -0.16| -0.56, 0.23| 0.421 |
| Non-Hispanic Ethnicity                              | -0.02| -0.20, 0.16| 0.814 |
| Unknown Ethnicity                                   | -0.39| -0.70, -0.09| 0.011 |
| Area deprivation index                              | 0.00 | 0.00, 0.00 | 0.286 |
| Mechanical ventilation                              | 2.3  | 2.2, 2.4  | <0.001 |
| Vasopressors                                        | 1.4  | 1.3, 1.5  | <0.001 |
| Renal replacement therapy                           | 0.60 | 0.45, 0.76 | <0.001 |
| Number of mRNA vaccinations                         |      |         |         |
| 1                                                   | -0.42| -0.68, -0.16| 0.002 |
| 2                                                   | -0.56| -0.69, -0.43| <0.001 |
| 3                                                   | -0.68| -0.93, -0.43| <0.001 |
| Month of hospital admission                         |      |         |         |
| 1                                                   | 0.09 | -0.27, 0.45 | 0.620 |
| 2                                                   | -1.1 | -1.6, -0.60 | <0.001 |
| 3                                                   | -1.4 | -1.8, -1.0  | <0.001 |
| 4                                                   | -1.4 | -1.7, -1.0  | <0.001 |
| 5                                                   | -1.7 | -2.1, -1.3  | <0.001 |
| 6                                                   | -1.6 | -2.0, -1.2  | <0.001 |
| 12                                                  | -1.7 | -2.1, -1.2  | <0.001 |
| 24                                                  |      |         |         |
| Time between positive test and admission            | 0.00 | -0.02, 0.01 | 0.557 |
| Intensive care unit admission                       | 1.0  | 0.89, 1.1  | <0.001 |
| Hospital length of stay                             | -0.02| -0.03, -0.02| <0.001 |
| Steroid treatment                                   | 1.2  | 1.1, 1.3   | <0.001 |
| Remdesivir treatment                                | -0.07| -0.17, 0.03| 0.165 |
| Immunomodulatory treatment                          | 1.1  | 0.93, 1.2  | <0.001 |

**Random effects**

- Sta3n.sd__(Intercept) 0.23
- Sta3n.1.sd__test_to_hosp 0.00
- Sta3n.2.sd__race_cat2 0.23

1 CI = Confidence Interval

No. Obs. = 43,222; Sigma = 1.00; Log-likelihood = -8,219; AIC = 16,540; BIC = 16,982; Deviance = 16,273; Residual df = 43,171

2 Months 7 to 11 and 13 to 23 omitted from table due to space constraints
**eTable 14. Model Specifications and Coefficients for 60-day Death**

| Characteristic                                      | beta  | 95% CI | p-value |
|------------------------------------------------------|-------|--------|---------|
| (Intercept)                                          | -5.3  | -6.1, -4.4 | <0.001 |
| ns(Age, df = 5)1                                     | 1.9   | 1.2, 2.6  | <0.001 |
| ns(Age, df = 5)2                                     | 2.0   | 1.3, 2.8  | <0.001 |
| ns(Age, df = 5)3                                     | 3.2   | 2.8, 3.6  | <0.001 |
| ns(Age, df = 5)4                                     | 4.3   | 2.7, 5.9  | <0.001 |
| ns(Age, df = 5)5                                     | 4.7   | 4.3, 5.2  | <0.001 |
| Male sex                                             | 0.46  | 0.26, 0.66 | <0.001 |
| Charlson Index                                       | 0.12  | 0.11, 0.13 | <0.001 |
| Black race                                           | -0.16 | -0.25, -0.07 | <0.001 |
| Proportion of Black patients                         | -0.15 | -0.46, 0.15 | 0.320 |
| Non-Hispanic Ethnicity                               | 0.11  | -0.03, 0.25 | 0.114 |
| Unknown Ethnicity                                    | -0.23 | -0.46, -0.01 | 0.045 |
| Area deprivation index                               | 0.00  | 0.00, 0.00 | 0.251 |
| Mechanical ventilation                               | 1.5   | 1.4, 1.6  | <0.001 |
| Vasopressors                                         | 1.5   | 1.4, 1.6  | <0.001 |
| Renal replacement therapy                            | 0.49  | 0.36, 0.62 | <0.001 |
| **Number of mRNA vaccinations**                      |       |        |         |
| 1                                                     | -0.57 | -0.76, -0.38 | <0.001 |
| 2                                                     | -0.51 | -0.61, -0.41 | <0.001 |
| 3                                                     | -0.47 | -0.63, -0.31 | <0.001 |
| **Month of hospital admission**                      |       |        |         |
| 1                                                     | -0.57 | -0.76, -0.38 | <0.001 |
| 2                                                     | -0.51 | -0.61, -0.41 | <0.001 |
| 3                                                     | -0.47 | -0.63, -0.31 | <0.001 |
| 4                                                     | -0.57 | -0.76, -0.38 | <0.001 |
| 5                                                     | -0.51 | -0.61, -0.41 | <0.001 |
| 6                                                     | -0.47 | -0.63, -0.31 | <0.001 |
| 12                                                    | -0.64 | -1.0, -0.32 | <0.001 |
| 24                                                    | -0.55 | -0.87, -0.23 | <0.001 |
| **Time between positive test and admission**         |       |        |         |
| Intensive care unit admission                        | 0.86  | 0.79, 0.93 | <0.001 |
| Hospital length of stay                              | -0.01 | -0.01, -0.01 | <0.001 |
| Steroid treatment                                    | 0.53  | 0.45, 0.61 | <0.001 |
| Remdesivir treatment                                 | -0.25 | -0.33, -0.17 | <0.001 |
| Immunomodulatory treatment                           | 0.81  | 0.69, 0.92 | <0.001 |

**Random effects**

|                   |       |
|-------------------|-------|
| Sta3n.sd_(Intercept) | 0.18  |
| Sta3n.1.sd__test_to_hosp | 0.00  |
| Sta3n.2.sd__race_cat2   | 0.18  |

CI = Confidence Interval

No. Obs. = 43,222; Sigma = 1.00; Log-likelihood = -13,595; AIC = 27,291; BIC = 27,733; Deviance = 27,014; Residual df = 43,171

Months 7 to 11 and 13 to 23 omitted from table due to space constraints
### eTable 15. Model Specifications and Coefficients for Hospital Readmissions

| Characteristic                               | beta  | 95% CI      | p-value |
|----------------------------------------------|-------|-------------|---------|
| (Intercept)                                  | -3.2  | -3.8, -2.6  | <0.001  |
| ns(Age, df = 5)1                            | 0.44  | 0.06, 0.81  | 0.022   |
| ns(Age, df = 5)2                            | 0.49  | 0.06, 0.91  | 0.024   |
| ns(Age, df = 5)3                            | 0.71  | 0.44, 1.0   | <0.001  |
| ns(Age, df = 5)4                            | 0.69  | -0.22, 1.6  | 0.139   |
| ns(Age, df = 5)5                            | 0.81  | 0.39, 1.2   | <0.001  |
| Male sex                                     | 0.11  | -0.03, 0.26 | 0.130   |
| Charlson Index                               | 0.13  | 0.12, 0.14  | <0.001  |
| Black race                                   | -0.05 | -0.13, 0.04 | 0.278   |
| Proportion of Black patients                 | 0.13  | -0.14, 0.41 | 0.330   |
| Non-Hispanic Ethnicity                       | -0.02 | -0.15, 0.11 | 0.767   |
| Unknown Ethnicity                            | 0.08  | -0.11, 0.28 | 0.411   |
| Area deprivation index                       | 0.00  | 0.00, 0.00  | 0.041   |
| Mechanical ventilation                       | -0.88 | -1.1, -0.67 | <0.001  |
| Vasopressors                                 | 1.1   | 1.0, 1.3    | <0.001  |
| Renal replacement therapy                    | 0.35  | 0.22, 0.49  | <0.001  |
| Number of mRNA vaccinations                  |       |             |         |
| 1                                            | 0.12  | -0.04, 0.28 | 0.142   |
| 2                                            | 0.00  | -0.09, 0.09 | 0.975   |
| 3                                            | 0.11  | -0.03, 0.24 | 0.116   |
| Month of hospital admission                  |       |             |         |
| 1                                            |       |             |         |
| 2                                            | 0.30  | -0.12, 0.73 | 0.159   |
| 3                                            | 0.64  | 0.20, 1.1   | 0.004   |
| 4                                            | 0.52  | 0.10, 0.93  | 0.015   |
| 5                                            | 0.37  | -0.02, 0.77 | 0.065   |
| 6                                            | 0.33  | -0.08, 0.75 | 0.111   |
| 12                                           | 0.22  | -0.17, 0.61 | 0.275   |
| 24                                           | 0.56  | 0.18, 1.0   | 0.004   |
| Time between positive test and admission     | -0.02 | -0.03, -0.01| <0.001  |
| Intensive care unit admission                | 0.85  | 0.78, 0.91  | <0.001  |
| Hospital length of stay                     | -0.03 | -0.03, -0.02| <0.001  |
| Steroid treatment                           | -0.02 | -0.09, 0.06 | 0.663   |
| Remdesivir treatment                         | -0.21 | -0.29, -0.13| <0.001  |
| Immunomodulatory treatment                  | -0.38 | -0.56, -0.21| <0.001  |

**Random effects**

|                     |       |
|---------------------|-------|
| Sta3n.sd__(Intercept)| 0.15  |
| Sta3n.1.sd__test_to_hosp | 0.00  |
| Sta3n.2.sd__race_cat2 | 0.16  |

^1 CI = Confidence Interval

No. Obs. = 38,782; Sigma = 1.00; Log-likelihood = -14,687; AIC = 29.476; BIC = 29.913; Deviance = 29,224; Residual df = 38,731

^2 Months 7 to 11 and 13 to 23 omitted from table due to space constraints
eFigure 1. Directed Acyclic Graph (DAG) Illustrating Potential Mediators of the Associations of Race With Treatment Outcomes and Potential Confounders of the Mediators

Color code:
Red: exposure
Yellow: mediator
Green: confounder
Blue: outcome
Gray: unobserved
eFigure 2. Unadjusted Treatment Outcomes by Race and Month

Proportion of patients who received treatment with steroids (A), Remdesivir (B), and immunomodulatory agents (C) by month of hospitalization.
Hospitals in the lowest quintile (<20th percentile) are to the left of the red dashed line, and hospitals in the highest quintile (>80th percentile) are to the right of the green dashed line. The Odds Ratio reflects the odds of receiving Steroid treatment for COVID-19 for Black versus White patients. An odds ratio of less than 1 indicates a lower likelihood of Black patients receiving steroids than White patients.
**eFigure 4.** Most Common Readmission Diagnoses Stratified by Race and Time Period

Period 1 included 170 readmissions between March 19 and August 6, 2020; Period 2 416 readmissions between May 23 and November 17, 2020; Period 3 2,297 readmissions between September 6, 2020, and December 2, 2021; Period 4 1,026 readmissions between June 14, 2021, and January 27, 2022; and Period 5 1,688 readmissions between November 4, 2021, and March 26, 2022.

1 U07 Covid-19 disease  
A41 Sepsis  
J96 Respiratory failure  
J15 Bacterial pneumonia  
I26 Pulmonary embolism  
I48 Atrial fibrillation and flutter  
F10 Acute alcohol intoxication  
I13 Hypertensive heart and renal disease  
J12 Viral pneumonia  
K92 Gastrointestinal hemorrhage  
N17 Acute renal failure  
E11 Diabetes mellitus
eFigure 5. Balance Plot for Covariates Before and After Matching

- ethnic_cathispanic
- ethnic_catnon-hispanic
- age_cat5
- month
- age_cat4
- age_cat6
- age_cat3
- Sta3n
- CKD2yrsTRUE
- sexF
- sexM
- madi_cat6
- madi_cat9
- madi_cat4
- madi_cat8
- NonInvasiveVentilation60dTRUE
- vaccines
- cci_cat3
- age_cat2
- age_cat7
- cci_cat0
- covid_mivicu_y
- cci_cat1
- madi_cat7
- madi_cat2
- cci_cat2
- madi_cat3
- madi_cat11
- Liver2yrsTRUE
- ethnic_catunknown
- madi_cat5
- age_cat1
- madi_cat1
- madi_cat10

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