nonurban-adjacent rural (NAR) lines. Hospital admissions for UAR (OR 1.41, p< 0.001, 95% CI: 1.37 – 1.45) and NAR (OR 1.38, p< 0.001, 95% CI: 1.32 – 1.5) compared to urban populations. These associations persisted despite adjustments for significant differences in BMI, Charlson Comorbidity Index Score, gender, age, and the quarter of diagnosis for COVID-19.

Baseline Characteristics Hospitalized COVID-19 Positive Population by Rural Category, January 2020 – March 2021

This figure shows the adjusted and unadjusted odds ratios for being hospitalized or dying after hospitalization for the COVID-19 positive population in N3C. Risk is similar between adjusted and unadjusted models, suggesting a real impact of rurality on all-cause mortality. A shows the unadjusted odds ratios for admission to the hospital after a positive COVID-19 diagnosis for all N3C patients. B shows the unadjusted odds ratios for all-cause mortality at any point after hospitalization for COVID-19 positive patients. C shows the adjusted odds ratios for being admitted to the hospital after a positive COVID-19 diagnosis for all N3C patients. D shows the adjusted odds ratios for all-cause mortality for all N3C patients. Adjusted models include adjustments for gender, race, ethnicity, BMI, age, Charlson Comorbidity Index (CCI) comorbidity score, rurality, and quarter of diagnosis. The data provider is included as a random effect in all models.

Conclusion. In N3C, we found that hospitalizations and all-cause mortality were greater among rural populations when compared to urban populations after adjustment for several factors, including age and co-morbidities. This study also identified key demographic and clinical disparities among rural patients that require further investigation.

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34. Long-term clinical outcomes following SARS-CoV-2 infection include persistent symptoms and cardiovascular disease beyond 3 months post-infection. Stephanie A. Richard, PhD, MHS; Simon Pollett, MBBS; Nusrat I. Epsi, n/a; Ryan C. Maves, MD; Ryan C. Maves, MD; Gregory Utz, MD; Tahaniyat Lalani, MBBS; Rupal Mody, MD; Anuradha Ganesan, MBBS, MPH; Rhonda E. Colombo, MD, MHS; Chris Colombo, MD; David A. Lindholm, MD; David A. Lindholm, MD; Cristian Madar, MD; Sharon Chi, PhD; Nikhil Huprikar, MD; Derek Larson, MD; Robert C. English, BA; Edward Parmelee, MS; Katriin Mende, PhD; Mark Simons, PhD; Timothy Burgess, MD, MPH; David Trible, MD, DrPH; Brian Agan, MD; Infectious Disease Clinical Research Program, Department of Preventive Medicine and Biostatistics, Uniformed Services University of the Health Sciences, Bethesda, MD and Henry M. Jackson Foundation, Bethesda, MD, Bethesda, Maryland; 3Unversified Services University of the Health Sciences, Bethesda, Maryland; 3HIE, Bethesda, Maryland; 4Naval Medical Center San Diego, San Diego, CA and Infectious Disease Clinical Research Program, Bethesda, MD, San Diego, California; 5Naval Medical Center San Diego, Infectious Disease Clinical Research Program, Bethesda, MD, and Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., Bethesda, MD, San Diego, California; 6Infectious Disease Clinical Research Program, Bethesda, MD, The Henry M. Jackson Foundation, Bethesda, MD, and Naval Medical Center Portsmouth, VA; Portsmouth, Virginia; 7WRAMC, El Paso, Texas; 8Infectious Disease Clinical Research Program and the Henry M. Jackson Foundation, Bethesda, MD, and Naval Medical Center Portsmouth, VA; 9Infectious Disease Clinical Research Program and the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., Bethesda, MD, Tacoma, Washington; 10Madigan Army Medical Center, Joint Base Lewis-McChord, Washington; 11Uniformed Services University of the Health Sciences; 12Brooke Army Medical Center, San Antonio, TX; 13Tripler Army Medical Center, Honolulu, Hawaii; 14Tripler Army Medical Center, Walter Reed National Military Medical Center (WRNNMC), Bethesda, Maryland; 15Fort Belvoir Community Hospital Infectious Disease, Fort Belvoir, Virginia; 16Carl R. Darnall Army Medical Center, Fort Hood, Texas; 17USUHS, Bethesda, Maryland; 18Infectious Disease

This figure shows a survival plot of COVID-19 positive hospitalized patients in N3C by rural category (A), Charlson Comorbidity Index (B), Quarter of Diagnosis (C), and Age Group (D) from hospital admission through day 30. Events were censored at day 30 based on the incidence of death or transfer to hospice care. These four factors had the highest predictive power of the covariates evaluated in this study.

Unadjusted and Adjusted Odds Ratios for Hospitalization and All-Cause Mortality by Rural Category, January 2020 – March 2021

Survival Curves in Hospitalized Patients Over 30 Days from Day of Admission

| Characteristic | Urban (OR 95% CI) | Rural Category, January 2020 – March 2021 |
|----------------|------------------|------------------------------------------|
| Male           | 1.25 (1.23, 1.27) | <0.001                                  |
| White          | Reference         | Reference                                |
| Black or AA    | 1.09 (1.07, 1.09) | 0.39                                   |
| Asian or API   | 1.03 (1.00, 1.03) | <0.001                                  |
| Other          | 1.03 (1.00, 1.03) | <0.001                                  |
| Missing/Unknown| Reference         | Reference                                |

| Category       | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|----------------|------------------------|----------------------|
| Urban          | Reference               | Reference            |
| Rural          | 1.14 (1.36, 1.44)       | 1.15 (1.36, 1.44)    |
| Nonurban-adjacent rural (NAR) | 1.13 (1.36, 1.43)       | 1.14 (1.36, 1.44)    |
| Urban-adjacent rural (UAR)     | 1.13 (1.37, 1.50)       | 1.14 (1.37, 1.50)    |
| Nonurban       | 1.12 (1.35, 1.50)       | 1.13 (1.35, 1.50)    |

The adjusted odds ratios are similar to the unadjusted odds ratios, indicating that the associations between rurality and hospitalization/mortality are consistent across the rural categories.
Clinical Research Program, Uniformed Services University of the Health Sciences, Rockville, Maryland; 11Infectious Disease Clinical Research Program, Bethesda, MD, The Henry M. Jackson Foundation, Bethesda, MD, and Brooke Army Medical Center, Fort Sam Houston, TX, San Antonio, TX; 12IDCRP, Bethesda, Maryland; 13Infectious Disease Clinical Research Program, Bethesda, Maryland; 14Uniformed Services University, Bethesda, MD; 15Infectious Disease Clinical Research Program, USUH/JHF, Bethesda, Maryland

Session: O-07. COVID-19 Complications, Co-infections and Clinical Outcomes 2

Background. The long-term health effects after SARS-CoV-2 infection remain poorly understood. We evaluated health and healthcare usage after SARS-CoV-2 infection via surveys and longitudinal electronic medical record (EMR) review within the Military Health System (MHS).

Methods. We studied MHS beneficiaries enrolled in the Epidemiology, Immunoology, and Clinical Characteristics of Emerging Infectious Diseases with Pandemic Potential (EPICC) cohort from March to December 2020. COVID-19 illness symptom severity and duration were derived from surveys initiated in late 2020. In addition, multi-year healthcare encounter history before and after onset of COVID-19 symptoms was collected from the MHS EMR. Odds of organ-system clinical diagnoses within the 3 months pre- and post-symptom onset were calculated using generalized linear models, controlling for age, sex, and race, and including participant as a random effect.

Results. 1,015 participants were included who were SARS-CoV-2 positive, symptomatic, and had 3-month follow-up data available in the EMR (Table 1). 625 of these participants had survey data collected more than 28 days post-symptom onset, among whom 17% and 6% reported persistent symptoms at 28-84 days, and 85+ days, respectively. 9.6% had not resumed normal activities by one month. The most frequently reported symptoms persisting beyond 28 days were dyspnea, loss of smell and/or taste, fatigue, and exercise intolerance (Figure 1A). When compared with the period 61 to 90 days prior to symptom onset, the first month post-symptom onset period was associated with increases of pulmonary (aOR = 57, 95% CI 28-112), renal (aOR = 29, 95% CI 10-84), cardiovascular (aOR = 7, 95% CI 5-11), and neurological diagnoses (aOR = 3, 95% CI 2-4) (Figures 1B and 1C).

Conclusion. In this MHS cohort, a significant proportion of participants had persistent symptoms and cardiovascular disease diagnoses 3 months after COVID-19 illness onset. These findings emphasize the long-term morbidity of COVID-19 and the importance of mitigating SARS-CoV-2 infections. Further analyses will evaluate demographic, clinical, and biomarker predictors of medium-to-long term organ-specific post-acute sequelae.

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35. Health-related quality of life in COVID-19 survivors after 12 months, a prospective cohort study.
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Session: O-07. COVID-19 Complications, Co-infections and Clinical Outcomes 2

Background. The long-term effects of COVID-19 are still unknown. This study aims to assess the impact of COVID-19 among survivors after one year.

Table 1. Characteristics of SARS-CoV-2+ EPICC participants, and illness duration among those with 28+ days post-symptom onset survey data collection.

| Age group (years) | N=1015 | 95% CI |
|------------------|--------|--------|
| <18              | 21     | (2.3%) |
| 18-44            | 594    | (58.5%)|
| 45-64            | 288    | (28.4%)|
| 65+              | 112    | (11.0%)|
| Male             | 631    | (62.2%)|

| Race/ethnicity  | N=1015 | 95% CI |
|-----------------|--------|--------|
| Hispanic        | 162    | (16.0%)|
| Other           | 116    | (11.4%)|
| White           | 461    | (45.4%)|

| Military status | N=1015 | 95% CI |
|-----------------|--------|--------|
| Active duty     | 493    | (48.6%)|
| Dependent       | 281    | (27.7%)|
| Missing         | 2      | (0.2%) |
| Retired military| 238    | (23.5%)|

| With survey information beyond 28 days post-symptom onset | N=639 | 95% CI |
|----------------------------------------------------------|-------|--------|
| New home oxygen therapy                                 | 24    | (3.8%)|
| Illness/recovery                                         | 606   | (94.8%)|

| Time to recovery | Median (Q1, Q3) | Min - Max | N  |
|------------------|-----------------|-----------|----|
| Median (Q1, Q3)  | 14.0 (8.0, 25.0)| 0.0 - 387.0| 606|
| Min - Max        | 636             | 0.0 - 387.0| 606|

| Resolved illness duration category | N=1015 | 95% CI |
|-----------------------------------|--------|--------|
| <28                               | 466    | (76.9%)|
| 28-84                             | 106    | (17.5%)|
| 85+                               | 33     | (5.6%) |

| Time ill (if not recovered) | Median (Q1, Q3) | Min - Max | N  |
|-----------------------------|-----------------|-----------|----|
| Median (Q1, Q3)             | 46.0 (33.0, 87.0)| 28.0 - 355.0| 33 |
| Min - Max                   | 636             | 0.0 - 387.0| 606|

| Maximum symptom severity reported in survey | N=1015 | 95% CI |
|---------------------------------------------|--------|--------|
| Mild (noticeable but not impairing)         | 300    | (47.5%)|
| Moderate (impairing but not disabling)      | 226    | (35.8%)|
| Severe (disabling, can’t perform duties)    | 91     | (14.4%)|
| Critical (life threatening)                 | 14     | (2.2%) |

Disclosures. Simon Pollett, MBBS, Astra Zeneca (Other Financial or Material Support, HIE in support of USU IDCRP, funded under a CRADA to augment the conduct of an unrelated Phase III COVID-19 vaccine trial sponsored by AstraZeneca as part of USG response (unrelated work)). Ryan C. Maves, MD, EMD Serono (Advisor or Review Panel member); Heron Therapeutics (Advisor or Review Panel member); David A. Lindholm, MD, American Board of Internal Medicine (Individual(s) Involved: Self): Member of Auxiliary R&D Infectious Disease Item-Writer Task Force. No financial support received. No exam questions will be disclosed. Other Financial or Material Support.

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