higher odds of developing secondary infections and expiring during their hospital stay. There were similar durations of antimicrobial therapy and treatment outcomes.

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### 342. Secondary Infections following Tocilizumab for Treatment of COVID-19

**Pneumonia**

Adam Warner, PharmD1; Mujahed Abbas, MD2; Benjamin S. Arner, MD2; Thomas E. Flynn, MD3; Todd A. Woloth, PharmD1; BCPS1, FCCM1; Brett W. Jagger, MD, PhD1; Bronson Healthcare Group, Kalamazoo, Michigan; 2Western Michigan University - Homer Stryker School of Medicine, Kalamazoo, Michigan; 3Eskenazi Health, Indianapolis, Indiana; 4Western Michigan University Homer Stryker MD School of Medicine, Kalamazoo, Michigan

**Session:** P-14: COVID-19 Complications, Co-infections, and Clinical Outcomes

**Background.** Guidelines recommend use of tocilizumab (TCZ), an inhibitor of pro-inflammatory IL-6 signaling, for hospitalized patients with progressive severe or critical Coronavirus disease 2019 (COVID-19). The incidence of infectious complications following the use of TCZ for COVID-19 has not been well described.

**Methods.** We conducted a retrospective, observational matched cohort study of severely ill, hospitalized adult patients with confirmed COVID-19 who were treated with TCZ between 2/24/2021 and 6/6/2021. The intervention group, comprised of patients who received a single dose of TCZ, was matched based on c-reactive protein (CRP) and fraction of inspired oxygen (FiO2) with a control group who did not receive TCZ, and were hospitalized between 10/12/2020 and 3/6/2021. The primary outcome of the study was diagnosis of a bacterial or fungal infection after day 3 of the index hospitalization. Secondary outcomes included all-cause mortality during the study period and length of stay.

**Results.** 75 patients who received TCZ were identified during the study period, and matched 1:1 with 75 control patients. Baseline CRP and FiO2 were similar between groups, while the median age in the TCZ group was younger (61 versus 71 years), reflecting the epidemiology of the outbreak during the TCZ and control study periods. 15 bacterial and fungal infections were identified in the TCZ group (20.0%) and 4 (5.3%) infections in the control group (p = 0.012). The majority of infections in both groups were bloodstream, with a disproportionate number of bloodstream infections in the TCZ group (7 [9.3%] vs 2 [2.6%]; p = 0.166). 28 patients (37.3%) died in the TCZ group compared to 39 (52.0%) in the matched control (p = 0.068). Median time to discharge was similar between TCZ and control patients (11 versus 12 days; 95% CI -2.2).

**Conclusion.** Secondary infections in adult patients with severe and critical COVID-19 were more common in patients who had received TCZ. Prospective studies are needed to confirm and further describe this association.

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### 343. RURAL-COVID-19 Trial: Retrospective Analysis of COVID-19 Coinfections in Hospitalized Urban and Rural Adults

Caroline Hamilton, PA-C, MHP1; Heather Frazier, BS2; Jose A. Vasquez, MD, FIDSA3; 1Augusta University/Medical College of Georgia, Augusta, Georgia; 2Augusta University Medical Center, Augusta, Georgia; 3Medical College of Georgia at Augusta University, Augusta, Georgia

**Session:** P-14: COVID-19 Complications, Co-infections, and Clinical Outcomes

**Background.** The impact of COVID-19 in rural communities has been well described. However, little is known regarding differences in coinfections among COVID-19 patients in rural vs. urban settings. Our primary objective is to evaluate community acquired coinfection (CACo) rates (< 72 hrs from admission) and healthcare-associated infection (HAI) rates (> 72 hrs from admission) in these populations. Secondary objectives include use of empiric antibiotics, pathogen prevalence, and patient outcomes.

**Methods.** Retrospective analysis of the first 255 adult patients admitted to a tertiary medical center with symptomatic COVID-19 and confirmed by PCR. Rural and urban categories were determined using patient address and county census data. Isolated pathogens were individually evaluated and considered coinfections if the patient met predetermined criteria.

**Predetermined Coinfection Criteria**

| Condition | **UR** | **RC** |
|-----------|--------|--------|
| Acute Respiratory Distress Syndrome | 0.047 | 0.027 |
| Acne Erythematosa | 0.07 | 0.069 |
| Acute Pancreatitis | 0.025 | 0.018 |
| Acute Kidney Injury | 0.028 | 0.024 |
| Acute Liver Failure | 0.024 | 0.028 |
| Acute Nephropathy, non-ICU | 0.044 | 0.046 |
| Acute Respiratory Failure | 1.01 | 1.01 |
| Acute Respiratory Failure, non-ICU | 1 | 1 |
| Acute Respiratory Failure, ICU | 1 | 1 |
| Acute Respiratory Failure, non-ICU | 1 | 1 |
| Acute Respiratory Failure, ICU | 1 | 1 |
| Acute Respiratory Failure, non-ICU | 1 | 1 |
| Acute Respiratory Failure, ICU | 1 | 1 |
| Acute Respiratory Failure, non-ICU | 1 | 1 |
| Acute Respiratory Failure, ICU | 1 | 1 |
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| Acute Respiratory Failure, ICU | 1 | 1 |
| Acute Respiratory Failure, non-ICU | 1 | 1 |
| Acute Respiratory Failure, ICU | 1 | 1 |
| Acute Respiratory Failure, non-ICU | 1 | 1 |
| Acute Respiratory Failure, ICU | 1 | 1 |

**Results.** The rates of CACo for rural (n = 90) and urban (n = 165) residents were 11.1% and 13.3%, respectively. Non-respiratory coinfections, such as bloodstream and urinary tract infections, were more common in urban residents; however, empiric antibiotics were started in 75.1% of all subjects. *Methicillin resistant staphylococcus aureus* and *Escherichia coli* were the most common pathogens isolated on admission in both populations. HAI rates were 13.3% in the rural residents vs 13.9% in the urban residents with *Methicillin resistant staphylococcus aureus* as the most common respiratory pathogen, although *Pseudomonas aeruginosa* was the most prevalent overall pathogen. There was no significant difference in hospital length of stay or 30-day all-cause mortality among both populations.

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Patient Outcomes Among Rural and Urban Populations

| Hospital Length of stay | Rural Mean Days (Median) | Urban Mean Days (Median) | p-value |
|-------------------------|-------------------------|--------------------------|---------|
| Baseline                | 8.3 (7)                 | 8.6 (6)                  | 0.002   |
| Deceased                | 12.3 (11)               | 13.4 (12)                | 0.000   |
| Length of stay          | 11.9 (12)               | 13.4 (12)                | 0.005   |
| Acute Pancreatitis      | 0.067                   | 0.057                   | 0.303   |
| Acute Liver Failure      | 0.09                    | 0.09                    | 0.832   |
| Acute Nephropathy, non-ICU | 0.10 (11)          | 0.10 (11)                | 0.878   |
| Acute Respiratory Failure | 0.05 (6)             | 0.05 (6)                 | 0.084   |
| Acute Respiratory Failure, non-ICU | 0.05 (6) | 0.05 (6) | 0.084 |
| Acute Respiratory Failure, ICU | 0.05 (6) | 0.05 (6) | 0.084 |
| Acute Respiratory Failure, non-ICU | 0.05 (6) | 0.05 (6) | 0.084 |
| Acute Respiratory Failure, ICU | 0.05 (6) | 0.05 (6) | 0.084 |
| Acute Respiratory Failure, non-ICU | 0.05 (6) | 0.05 (6) | 0.084 |
| Acute Respiratory Failure, ICU | 0.05 (6) | 0.05 (6) | 0.084 |

**Conclusion.** There was no significant difference in the rate of CACo or HAI among rural or urban populations. Despite the high rate of antibiotic use to empirically cover community acquired respiratory infections at the start of the pandemic, only 1.9% of the subjects had a possible or proven respiratory coinfection on admission. Despite prior research showing worse outcomes for rural populations with COVID-19, our data demonstrates that coinfection rates and patient outcomes were similar among these populations when receiving medical care at an academic hospital.

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### 344. Prevalence and Impact of Post-Acute Sequelae of COVID-19 Among People Experiencing Homelessness in King County, WA Between September 2020 - May 2021

Emily M. Scott, MD/MPH1; Sarah N. Cox, MSPH1; Julia H. Rogers, MA2; Jessica Kauster-Waase, MPH3; Helen Y. Chiu, MD MPH4; 1University of Colorado, Denver, Colorado; 2University of Washington, Seattle, Washington; 3Public Health-Seattle & King County, Seattle, Washington

**Session:** P-14: COVID-19 Complications, Co-infections, and Clinical Outcomes

**Background.** Homeless shelters are high risk settings for SARS-CoV-2 transmission. People experiencing homelessness (PEH) have high rates of chronic illness, and have been disproportionately affected by COVID-19. The burden of post-acute sequelae of COVID-19 (DASC) in PEH has not been well-studied and PEH may be uniquely affected due to barriers to medical care and the potential exacerbation of existing threats to health, housing, employment, and self-care.
Methods. The Seattle Flu Study conducted community-based surveillance for SARS-CoV-2 in nine homeless shelters from September 1, 2020 and May 31, 2021. Individuals with and without respiratory symptoms were tested for SARS-CoV-2 infection using a PCR assay. We completed follow-up surveys with shelter residents age ≥18 years at days 5, 10, 30 and 60+ after positive or inconclusive diagnosis with SARS-CoV-2 infection. Individuals were asked about residual symptoms, impact on activities of daily living, access to medical care, and health-related quality of life.

Results. Of 51 eligible participants, 22 (43%) completed a follow-up survey, with six at day 5 or 10 survey; 11 at day 30, and 18 at day 60+. The median time from enrollment to last follow-up survey was 77 (range 49-138) days. Five (23%) participants reported at least one symptom at day 0, five (83%) at day 5 or 10, eight (73%) at day 30 and seven (39%) at day 60+ (Figure 1). Eight (36%) reported at least one symptom on a day 30 or 60+ follow-up survey that interfered or prevented their daily activities. Nine (41%) received medical care at the quarantine facility. Of those with symptoms persisting beyond day 10, four (30%) received medical care outside of a medical provider at the quarantine facility.

Prevalence of self-reported symptoms at Day 0 (enrollment), Day 5 or 10, Day 30, and Day 60+ in shelter residents who tested positive or inconclusive for SARS-CoV-2.

Conclusion. PEH reported a high prevalence of persistent COVID-19 symptoms 30-60+ days after their SARS-CoV-2 detection. Few participants accessed medical care for their persistent illness. The impact of COVID-19 extends beyond acute illness and PASC may exacerbate existing challenges PEH face in health and wellbeing.

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345. Dermatological Manifestations in Patients with COVID-19 Pneumonia in Veracruz, Mexico
Luis Del Carpio-Orantes, MD; Sergio Garcia-Méndez; Jesús Salvador Sánchez-Díaz; Andrés aguilar-silva, na; Elisa Estefania Aparicio-Sánchez, na; Sonia Cruz-Albarrán, na; Jorge Luis Denis-Bravo, na; Iván Esparza-Mora, na; Karim Samantha González-Medel, na; Nelyda Verania Hernández-Zaleta, na; Edgar Alberto López-Cruz, na; Laura Guadalupe Montano-Montiel, na; Jennifer Ivonne Morgado-Hernández, na; José Alberto Muñoz-Aguilar, na; Edson Irving Priego-Parra, na; Reynaldo Reich Sierra, na; Noel Jhosimar Sánchez-Jiménez, na; María Fernanda Tress-Úz, na; Paola Velásquez-Ortegon, na; Instituto Mexicano del Seguro Social; Sociedad Mexicana de Virología, Veracruz, Veracruz, Mexico; Hospital Regional de Alta Especialidad de Oaxaca, Oaxaca, Oaxaca, Mexico; Instituto Mexicano del Seguro Social, Veracruz, Veracruz-Llave, Mexico; Hospital Regional de Alta Especialidad de Oaxaca, Oaxaca, Mexico; Instituto Mexicano del Seguro Social, Veracruz, Veracruz-Llave, Mexico

Session: P-14. COVID-19 Complications, Coinfections, and Clinical Outcomes

Background. A large number of viral infections are characterized by the presence of cutaneous manifestations. Multiple dermatological manifestations have been observed in patients with COVID-19. Dermatological lesions in patients infected by SARS-CoV-2 such as livedo reticularis, rash and vascular lesions may represent manifestations of secondary phenomena such as paraviral rashes or by participation of the innate or adaptive immune system that cause vasodilation, vascular leakage or procoagulant effects.

Methods. Descriptive and observational study, adult patients with COVID-19 pneumonia were selected, confirmed by RT-PCR and chest CT. General symptoms, hematocytometry results, pneumonia severity, prognosis as well as dermatological manifestations are characterized.

Results. 100 patients were included into the study, with an average age of 49.4 years, 54% male. The general symptoms with the highest incidence were: fever, cough and dyspnea characteristic of SARS-CoV-2 infection, followed by chest pain, headache, anemia and dysgeusia. The main alteration of the hemogram was lymphopenia, no leukopenia or plaquetopenia was demonstrated. 54% of those affected had mild pneumonia, the rest severe pneumonia. 75% progressed towards improvement and 25% died. Among the dermatological manifestations identified, all occurred in cases with severe pneumonia, the one with the highest incidence was the morbilliform viral exanthema in 18%, the presence of diffuse partial alopecia in 7% as well as manifestations of lividity and maceration in 1%. Regarding alopecia, in 6% it was reversible androgenetic alopecia, having manifested during the acute phase of pneumonia (all men), in 1% it presented alopecia areata (male) that has been persistent beyond the acute phase and in frank recovery.

Demographic and clinical variables

Table: 1. Result of the measurement of demographic and clinical variables.

| Variable            | Result |
|---------------------|--------|
| Age, years          | 49.4   |
| Gender, n (%)       | 19.3   |
| Women               | 46 (46)|
| Men                 | 54 (54)|

Table 2: Clinical manifestations.

| General Symptoms     | N (%) |
|----------------------|-------|
| Fever                | 95%   |
| Cough                | 95%   |
| Dyspnea              | 85%   |
| Chest pain           | 83%   |
| Headache             | 83%   |
| Arthralgias          | 80%   |
| Anoxemia             | 75%   |
| Myalgia              | 70%   |
| Diarrhea             | 60%   |
| Abdominal pain       | 40%   |
| Diastolic peristaltic| 25%   |
| Erythema             | 15%   |
| Delirium             | 10%   |
| Dermatological markers |     |
| Morbilliform rash    | 18%   |
| Alopecia             | 7%    |
| Livedo reticularis   | 1%    |
| Maceration of the skin | 1%    |

Conclusion. The incidence of dermatological manifestations is low in this study population, the most frequent being the morbilliform viral exanthema expected in a virus, however they present manifestations of low incidence such as reversible androgenetic alopecia associated with severity of the disease, a finding that has been documented recently as a manifestation associated with COVID-19.

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