2318. Prevalence of Influenza-like Illness in Sheltered Homeless Populations: A Cross-Sectional Study in Seattle, WA

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Background. Individuals experiencing homelessness are at an increased risk of respiratory illness due to high prevalence of underlying chronic conditions, inadequate ventilation and crowding in shelters, and difficulty accessing health services. Few studies have investigated the prevalence and transmission of viral respiratory infections within shelters. We sought to determine the prevalence and risk factors for influenza-like illness (ILI) at two homeless shelters in Seattle, WA.

Methods. Between January and April 2019, we conducted a cross-sectional study of adults experiencing homelessness who identified their primary residence as one of the two shelters in Seattle. Participants voluntarily enrolled if they self-reported at least two symptoms of acute respiratory illness in the past week. Demographic, clinical, and behavioral data were ascertained via questionnaire, and a mid-nasal swab was collected. ILI was defined as fever with cough or sore throat. Chronic lung disease was defined as chronic obstructive pulmonary disease, asthma, and/or chronic bronchitis.

Results. Among the 480 participants enrolled in the study, 204 (42.5%) reported ILI symptoms. Of those enrolled, 144 (30.0%) had chronic lung disease. The prevalence of ILI was higher among individuals with chronic lung disease (53.5% vs. 42.5%, P = 0.001). A total of 422 (87.9%) had health insurance; the prevalence of ILI was lower among those with health insurance (42.4% vs. 57.8%, P = 0.66). 216 (45.0%) of participants received flu vaccine; the prevalence of ILI was similar among those who received the vaccine than those that did not (42.6% vs. 42.4%, P = 1.00). 129 (30.6%) of those with health insurance sought care for their reported symptoms; ILI was more prevalent in those that sought care than those that did not throughout the observation period (33.8% vs. 21.7%, P = 0.002). Of those with ILI that sought care, 46 (54.8%, P = 0.42) received antivirals or antibiotics. Laboratory results for the corresponding mid-nasal swabs are pending.

Conclusion. A large proportion of our study population self-reported ILI and chronic lung disease. Despite high insurance coverage, a low proportion of homeless enrolled sought care for their symptoms or received treatment.

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1.46, 95% CI 1.30–1.63, *P* < 0.0001), lower adjusted peak heart rate (OR 0.79, 95% CI 0.69–0.90, *P* = 0.0005), higher initial oxygen saturation (OR 1.07, 95% CI 1.03–1.12 *P* = 0.002) and lower adjusted respiratory rate (OR 0.74, 95% CI 0.64–0.87, *P* = 0.0002) were significant predictors for having PCR-confirmed influenza. However, this model had poor calibration and discriminatory ability.

**Conclusion.** Higher respiratory rate adjusted for age and lower initial oxygen saturation were significant predictors of hospitalization among young children with PCR-confirmed influenza, but were not reliable discriminators of having influenza infection.

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2320. The Role of Ultraviolet Light, Atmospheric Ozone, and Humidity in Influenza Activity

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**Background.** The interaction between influenza activity and environmental factors such as ultraviolet light index (UVI), atmospheric ozone (AO), and other related meteorological variables remains poorly understood. In the midst of climate change and increasingly poor performance of influenza vaccination, more information on influenza activity and its interaction with meteorological variables is critically needed.

**Methods.** Influenza A and B tests results by PCR from respiratory sources were collected from two large hospitals in Phoenix, AZ and Jacksonville, FL from January 1, 2014 to December 31, 2017. Publicly available meteorological data for each location was obtained from the National Oceanic and Atmospheric Administration. We excluded cases residing beyond 0.5° of longitude and latitude radius of the given meteorological data. A weekly index activity and maximum weekly values of meteorological variables were matched, and performed a correlation and regression analysis.

**Results.** A total of 5,238 influenza tests were performed during the study period. The influenza index showed an statistically significant weakly positive correlation with maximum CSUVI (r = 0.15, *P* = 0.0227) and mean zenith (r = 0.17; *P* = 0.0047). An statistically significant, positive correlation was observed between influenza index and atmospheric ozone (r = 0.23; *P* = 0.0001). Significant negative correlations were also observed with DFT, DPT, RH and HI (r = −0.27, r = −0.39, r = −0.13, r = −0.33, respectively; *P* < 0.04). The influenza index showed significant interactions in a univariate linear regression (Table 1). A relationship between influenza index and dew point temperature was observed in a multivariate model (OR = 0.66; 95% CI 0.44–0.97).

**Conclusion.** To the best of our knowledge, this is the first report showing a significant interactions between influenza index, UV1 and atmospheric ozone in two geographically distant locations. Further studies are needed to define the role of complex climatological patterns and influenza.

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2321. FluMex: A New Clinical Severity Index in Mexican Hospitalized Patients with Influenza

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**Background.** Influenza virus infection is frequently characterized by a complex clinical behavior and outcomes can be fatal. There are many published scoring methods aimed for pulmonary infections and sepsis severity nevertheless they lack adequate sensitivity and specificity in patients with Influenza.

**Methods.** From 2013 to 2018, hospitalized patients from five hospitals from the Christus Muguerza health group from Monterrey, Mexico who had a positive rapid influenza-test and/or positive PCR for Influenza virus were enrolled. Risk factors for severity and mortality were evaluated calculating odds ratio with a binary logistic regression model and were adjusted for other factors. The new index was then compared with pneumonia severity scores by assessing area under the curve(AUC), sensitivity and specificity.

**Results.** We analyzed data from 125 patients hospitalized with confirmed Influenza infection. Less than 1% had received the corresponding seasonal influenza vaccine. Type 2 diabetes (T2D) and hypertension (HT) were the most prevalent comorbidity factors. Odds ratios were significant for age > 65 years, body mass index (BMI) > 30, T2D, HT, pulse oximetry < 90%, respiratory rate > 22 per minute, altered mental status, blood urea nitrogen (BUN) > 19 mg/dL, elevated lactate dehydrogenase (LDH), and an abnormal chest X-ray. The FluMex score was applied to a control group of 125 admitted patients with confirmed Influenza infection. AUC was 0.63 (CI 95%, 0.52–0.74; *P* < 0.05) for severity and 0.90 (IC 95%, 0.83–0.97; *P* < 0.05) for mortality, showing better predictive performance than other pneumonia and sepsis scores such as CURB-65, PSI, CROMI, SIRS, SOFA, qSOFA and ILI (Table 1).

**Conclusion.** The FluMex scoring system can be a useful tool for patients with suspected Influenza infection in predicting severity and mortality, helping to improve care and resource management.

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**Table 1. Univariate linear regression of weekly influenza index and maximum weekly meteorological variables.**

| Variables                      | OR   | CI95%       | p-value |
|-------------------------------|------|-------------|---------|
| Mean Zenith                   | 1.18 | 1.05 to 1.32| 0.0047  |
| Clear sky UVI                 | 2.12 | 1.11 to 4.03| 0.0227  |
| Cloudy sky UVI                | 0.78 | 0.40 to 1.52| 0.4636  |
| Cloud transmission            | 0.30 | 0.06 to 1.61| 0.1605  |
| Aerosol transmission          | 1.07 | 0.31 to 3.70| 0.9112  |
| Atmospheric ozone             | 1.11 | 1.05 to 1.17| 0.0001  |
| Hourly dry bulb temperature   | 0.72 | 0.62 to 0.82 | <0.0001 |
| Dew point temperature         | 0.64 | 0.56 to 0.73 | <0.0001 |
| Relative humidity             | 0.91 | 0.84 to 0.99 | 0.0362  |
| Heat Index                    | 0.67 | 0.58 to 0.77 | <0.0001 |