

CORRESPONDENCE

Risk Factors for SARS-CoV-2 in a Statewide Correctional System

TO THE EDITOR: More than 2 million persons are incarcerated in the United States, and many of them are vulnerable to infection because of chronic medical conditions. Correctional settings are considered to be high-risk environments for transmission of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).¹⁻⁴ However, data on risk factors for SARS-CoV-2 infection and outcomes in this population are limited.

We conducted both symptom-based and mass testing by reverse-transcriptase–polymerase-chain-reaction assay (Quest Diagnostics) to detect SARS-CoV-2 infection among incarcerated persons in the Connecticut statewide correctional system (prisons and jails combined) from March 13, 2020, when the first case of Covid-19 was identified in the correctional system, through June 26, 2020. A total of 10,304 persons underwent testing, with at least 14 days of follow-up after testing to monitor clinical status, such as Covid-19–related symptoms, as well as hospitalization, intensive care unit (ICU) admission, and death. The baseline characteristics of the study population are provided in Table S1 in the Supplementary Appendix, available with the full text of this letter at NEJM.org. While increased testing of asymptomatic persons was undertaken over the period of the study, the SARS-CoV-2 positivity rate in the correctional system decreased over time and plateaued on approximately June 12 (Fig. S1).

We used multilevel, multivariate logistic-regression analysis to identify risk factors associated with SARS-CoV-2 infection, hospitalization, ICU admission, and death (Table S2).⁵ Chronic conditions, demographic characteristics, and facility-level factors were covariates. Associations are reported as odds ratios with 95% confidence intervals. The widths of confidence intervals have not been adjusted for multiplicity and should not be used to draw inferences about definitive as-

sociations. A random-effects intercept term for each facility was used to account for clustering. For the SARS-CoV-2 prevalence model, we included only 9699 men because no female inmates tested positive. Other models included only those inmates who tested positive.

Among the 1240 SARS-CoV-2–positive men (approximately 13% of the male population in the system), there were 62 hospitalizations, 20 ICU admissions, and 7 deaths. Risk factors for SARS-CoV-2 infection were dormitory housing (odds ratio, 35.3; 95% confidence interval [CI], 7.9 to 157), Hispanic or Latino ethnic group (as compared with White race) (odds ratio, 1.4; 95% CI, 1.2 to 1.6), and older age (odds ratio, 1.2 per decade; 95% CI, 1.2 to 1.3). Predictors of hospitalization were heart disease (odds ratio, 7.2; 95% CI, 2.8 to 18.5), dormitory housing (odds ratio, 0.22; 95% CI, 0.06 to 0.74), and older age (odds ratio, 2.3 per decade; 95% CI, 1.9 to 2.9). Predictors of ICU admission were heart disease (odds ratio, 7.7; 95% CI, 1.8 to 33.6), autoimmune disease (odds ratio, 13.5; 95% CI, 2.2 to 82.6), and older age (odds ratio, 2.4 per decade; 95% CI, 1.6 to 3.5). Older age was the only predictor of death (odds ratio, 3.3 per decade; 95% CI, 1.7 to 6.3).

The finding that dormitory housing was the strongest risk factor for SARS-CoV-2 infection is consistent with an earlier study involving multiple prison and jail systems and suggests that social distancing is more challenging in such settings than in cells that house one or two inmates.⁴ Dormitory housing may also have been protective with respect to hospitalization, and we speculate that sick inmates from dormitories were identified early and housed in cells before testing and subsequent hospitalization.

Both individual factors and facility-level factors such as dormitory housing rather than cell housing were associated with SARS-CoV-2 infection

and outcomes in a statewide correctional system. Whether these findings are generalizable to other correctional systems is uncertain.

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Disclosure forms provided by the authors are available with the full text of this letter at NEJM.org.

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