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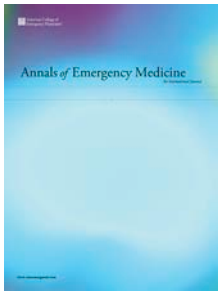

Prevalence of SARS-Cov-2 Antibodies in Emergency Medicine Providers

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Prevalence of SARS-Cov-2 Antibodies in Emergency Medicine Providers

Health workers who frequently care for infected patients may be at higher risk of COVID-19 compared to the general population.(1) The emergency department (ED) represents a high-risk environment, as the COVID-19 status of ED patients is frequently unknown, and ED providers must test for COVID-19 and perform aerosol generating procedures. A prior study of ED providers found SARS-CoV-2 antibodies in 23/50 (46%) ED providers in New York City. We conducted this study to estimate the seroprevalence of SARS-CoV-2 antibodies in ED providers at an academic ED and review the clinical history of providers with evidence of prior infection.

We conducted a prospective, cross-sectional study to estimate the seroprevalence of antibodies to SARS-CoV-2 among ED providers (attending physicians, nurses, mid-level practitioners, patient care technicians, and pharmacists) at an academic medical center from Sep 1 - Oct 15, 2020. Exclusion criteria were pregnancy or immunocompromise. Participants underwent venipuncture to measure SARS-CoV-2 IgG antibodies. Samples were tested with a chemiluminescent immunoassay for IgG antibodies to the nucleocapsid antigen (Abbott Architect SARS-CoV-2 IgG). Positives were confirmed by testing with a different chemiluminescent immunoassay for IgG antibodies to the S1/S2 spike antigens (Diasorin LIAISON® SARS-CoV-2 S1/S2 IgG). Both assays have excellent test characteristics.

Out of 360 ED patient care staff, 139 study participants were included: 90 (64.7%) female, 88 (63.3%) white, with a median age of 36 (IQR 27-61) years. 126/139 (90.6%) reported contact with COVID-19 positive patients, 10 of these (7.9%) without PPE. 5 (3.6%) participants judged that they had a 76-100% likelihood for having antibodies (Table 1). Four of the providers were positive for antibodies to SARS-CoV-2, resulting in a seroprevalence of

4/139 (2.9%, exact 95% CI = 0.8-7.2%). Three of the four seropositive participants were ED physicians who had a prior diagnosis of COVID-19 based on a prior positive PCR test and judged that they had a 76-100% likelihood of seropositivity. One seropositive participant, an ED nurse, had not received a prior diagnosis of COVID-19. This individual traveled at the beginning of February and subsequently developed fever and cough for 14 days, prior to the widespread availability of PCR testing.

A pediatric ED nurse reported traveling in February and subsequently experiencing symptoms of malaise, headache, loss of smell, and shortness of breath, leading to a positive PCR and positive antibody test in May 2020, who had a negative result in our study. Treating this individual as having had COVID-19 raises the prevalence of prior infection in our sample to 5/139 = 3.6% (exact 95% CI 1.2% - 8.2%).

It is likely that seroprevalence among frontline providers varies with the cumulative incidence of COVID-19 in the communities they serve. The prevalence of prior infection in our sample is lower than the seroprevalence in some studies of frontline and ED providers, such as Vanderbilt (3), Montefiore and Coney Island Hospital (4), reporting respective seroprevalences of 8.2, 31.2, and 46%. San Francisco has had a low seroprevalence of antibodies, with an age- and sex-adjusted seroprevalence of 1.0%.(5) We found a low SARS-CoV-2 seroprevalence among our ED providers, similar to other low community seroprevalence EDs.

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Table 1. Characteristics of the study participants

	Total N	139	
Sex			
	Female	90	64.7%
Race			
	Asian	31	22.3%
	African American	4	2.9%
	White	88	63.3%
	Other/Multiple	16	11.5%
Ethnicity			
	Latinx	15	10.8%
Age			
	Mean (SD)	38.2	9.5
	Median (IQR)	36	27-61
Site			
	Adult Hospital ED	112	80.6%
	Children's Hospital ED	27	19.4%
Provider Type			
	ED Nurse	64	46.0%
	Attending Physician	31	22.3%
	Resident Physician	23	16.5%
	Advanced Practice Provider	7	5.0%
	Patient Care Technician	9	6.5%
	Other	5	3.6%
Prior Diagnosis of COVID-19 based on PCR Testing			
	Yes	4	2.9%
SARS-COV2 IgG Test Result			
	Positive	4	2.9%