Variation in Occupational Activities and Infection Prevention Practices in Healthcare Personnel Based on Exposure to COVID-19 Units

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Introduction

- Healthcare personnel (HCP) may be at increased risk for SARS-CoV-2
- Which occupational activities are associated with greatest risk are unknown
- CDC recommends cohorting hospitalized patients with COVID-19; it is unknown if HCP exhibit different behaviors in COVID-19 units compared to non-COVID-19 units
- **COPE study** (**CO**VID-19 **P**revention in **E**mory healthcare personnel) aims to determine the rate of SARS-CoV-2 infection in HCP over 6 months and identify high risk occupational activities

Methods

- 5/6 – 6/12: Enrolled HCP from 4 Atlanta hospitals
- REDCap questionnaire & serology testing (IgG antibodies against spike protein)
- For a subset of frontline HCP, we used logistic regression to examine occupational activities stratified by exposure to COVID-19 units: low (0% of shifts), medium (1-49% of shifts) or high (≥50% of shifts).
- Evaluated occupational risk factors for seropositivity at enrollment through multivariable logistic regression

Results

- 353 HCP enrolled in COPE study (90% direct patient-care, 10% administration)
- 76% female, 69% white, median age 37 (IQR 30-49)
- Most common work settings: Inpatient medical or surgical location (48%), ICU (24%), and emergency department (15%)
- 56% worked at least some shifts in COVID-19 units in prior 2 weeks and 27% performed ≥ 1 AGP in those units
- PPE use: 99% reported wearing a face covering and 100% reported wearing gloves all the time in COVID-19 units
- For a subset of non-administrative HCP (Table 1), HCP with high exposure to COVID-19 units were just as likely as HCP with low or medium exposure to spend > 50% of their shift at bedside, consistently social distance, and practice universal masking
- 23 (6.5%) HCP had SARS-CoV-2 antibodies at enrollment. Risk factors are identified in Table 2

Table 2: Risk factors associated with COVID-19 seropositivity in HCP (n = 353)

Variable	Seropositive (n = 23)	Multivariable OR (95% CI)
Age < 40 years	9 (39)	0.4 (0.2, 1.1)
Female	18 (78)	0.6 (0.2, 2.1)
Race		
Asian	2 (9)	2.4 (0.3, 10.9)
Black	9 (41)	8.4 (2.7, 27.4)
Other	3 (14)	4.5 (0.8, 19.4)
White	8 (36)	Ref
Hispanic or Latino ethnicity	3 (13)	3.5 (0.6, 15.1)
Worked in COVID-19 units	14 (61)	1.6 (0.6, 4.7)
Worked >50% of shift directly at bedside	16 (70)	3.4 (1.2, 10.5)
Performed ≥ 1 AGP in COVID-19 unit	5 (22)	0.4 (0.1, 1.3)
COVID-19 incidence by zip code/10,000 population	317 (177, 836)	1.4 (0.5, 3.5)

Table 1: Occupational and infection prevention activities of HCP stratified by exposure to COVID-19 units (n =211)

Variable	Level of exposure to COVID-19 units				
	Low (n = 73) (n (%))	Medium (n = 41) (n (%))	OR (95% CI)	High (n = 95) (n (%))	OR (95% CI)
Occupation					
ED provider	35 (48)	18 (44)	Reference	24 (25)	Reference
Inpatient MD/APP	14 (19)	6 (15)	0.7 (0.2, 2.0)	13 (14)	0.7 (0.3, 1.5)
Inpatient RN	17 (23)	14 (34)	1.7 (0.7, 4.0)	42 (44)	2.6 (1.3, 5.2)
Respiratory therapist	3 (4)	1 (2)	0.6 (0.0, 4.7)	8 (8)	2.1 (0.6, 10.1)
Radiology technician	4 (5)	2 (5)	0.9 (0.1, 4.7)	8 (8)	1.6 (0.5, 6.1)
Worked > 50% of shift directly at bedside	48 (66)	25 (61)	0.8 (0.4, 1.8)	65 (68)	1.1 (0.6, 2.2)
Able to social distance from co-workers	29 (40)	15 (37)	0.9 (0.4, 1.9)	26 (27)	0.6 (0.3, 1.1)
Practicing universal masking at work	58 (79)	31 (76)	0.8 (0.3, 2.0)	71 (75)	0.8 (0.4, 1.6)

Conclusions

- The proportion of time spent in COVID-19 units does not appear to influence time HCP spend directly at the bedside or ability to adhere to infection prevention measures in the workplace
- SARS-CoV-2 seropositivity was associated with Black race and routinely spending greater than half of a shift at the patient's bedside

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