COVID-19 Prevalence among People Experiencing Homelessness and Homelessness Service Staff during Early Community Transmission in Atlanta, Georgia, April–May 2020

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Jane C. Yoon,[1] Martha P. Montgomery,[2] Ann M. Buff,[2] Andrew T. Boyd,[2] Calla Jamison,[2] Alfonso Hernandez,[1] Kristine Schmit,[2] Sarita Shah,[3] Sophia Ajoku,[4] David P. Holland,[1,4] Juliana Prieto[4], Sasha Smith[4], Mark A. Swancutt,[4] Kim Turner,[4] Tom Andrews,[5] Kevin Flowers,[5] Alyssa Wells,[5] Cathryn Marchman,[6] Emaline Laney,[7] Danae Bixler,[2] Sean Cavanaugh,[2] Nicole Flowers,[2] Nicholas Gaffga,[2] Jean Y. Ko,[2] Heather N. Paulin,[2] Mark K. Weng,[2] Emily Mosites,[2] Sapna Bamrah Morris[2]

[1]Division of Infectious Diseases, Emory University School of Medicine, Atlanta, GA, USA, [2]COVID-19 Emergency Response, Centers for Disease Control and Prevention, Atlanta, GA, USA, [3]Rollins School of Public Health, Emory University, Atlanta, GA, USA, [4]Fulton County Board of Health, Atlanta, GA, USA, [5]Mercy Care, Atlanta, GA, USA, [6]Partners for HOME, Atlanta, GA, USA, [7]Emory University School of Medicine, Atlanta, GA, USA

Corresponding Author:
Jane C. Yoon, MD
Emory University School of Medicine
Department of Medicine
Division of Infectious Diseases
jcyoon@emory.edu

Abstract

Background:
In response to reported COVID-19 outbreaks among people experiencing homelessness (PEH) in other U.S. cities, we conducted proactive testing events for PEH living sheltered and unsheltered and homelessness service staff in Atlanta, Georgia. We describe SARS-CoV-2 prevalence, associated symptoms, and review shelter infection prevention and control (IPC) policies.

Methods:
PEH and staff were tested for SARS-CoV-2 by reverse transcription polymerase chain reaction (RT-PCR) during April 7–May 6, 2020. A subset of PEH and staff was screened for symptoms. Shelter assessments were conducted concurrently at a convenience sample of shelters using a standardized questionnaire.

Results:
Overall, 2,875 individuals at 24 shelters and nine unsheltered outreach events underwent SARS-CoV-2 testing, and 2,860 (99.5%) had conclusive test results. SARS-CoV-2 prevalence was 2.1% (36/1,684) among PEH living sheltered, 0.5% (3/628) among PEH living unsheltered, and 1.3% (7/548) among staff. Reporting fever, cough, or shortness of breath in the last week was 24% sensitive and 85% specific for identifying COVID-19 cases compared with RT-PCR. Prevalence by shelter ranged 0%–27.6%. Repeat testing 3–4 weeks later at four shelters documented decreased SARS-CoV-2 prevalence (0%–3.9%). Nine of 24 shelters completed shelter assessments and implemented IPC measures as part of the COVID-19 response.

Conclusions:
PEH living in shelters experienced higher SARS-CoV-2 prevalence compared with PEH living unsheltered. Facility-wide testing in congregate settings allowed for identification and isolation of COVID-19 cases and is an important strategy to interrupt SARS-CoV-2 transmission.

Introduction

Background

- Risk of SARS-CoV-2 infection may be higher among PEH due to challenges in preventing respiratory disease transmission in shelter settings; PEH may also be at increased risk for severe COVID-19 due to a high prevalence of untreated, chronic medical conditions and obstacles to accessing healthcare [1-3].
- Fulton County, which includes 90% of the city of Atlanta, reported the first COVID-19 case on March 2, 2020. A sharp increase in cases was recorded in mid-April 2020. Reports of high SARS-CoV-2 infection rates and outbreaks within shelters in other metropolitan areas, in parallel with increasing local case-rates, led to concerns for widespread transmission in Atlanta shelters [4-6].

Objectives

- To understand SARS-CoV-2 prevalence and prevent transmission among PEH in Atlanta, homeless service agencies partnered with local and federal government agencies to:
  1) Determine SARS-CoV-2 prevalence among sheltered and unsheltered PEH and staff through viral testing;
  2) Describe the clinical status of PEH and staff at the time of testing;
  3) Evaluate the sensitivity and specificity of symptom screening for COVID-19 detection; and
  4) Review shelter infection prevention and control (IPC) policies.

Methods

- Participants included PEH living in shelters, PEH living unsheltered, and staff in Atlanta, GA, between April 7 – May 6, 2020.
- Screening interviews, specimen collections, and shelter assessments were conducted on-site at shelters and community outreach events serving PEH.
- PEH living in shelters who tested positive were isolated in a separate housing unit or transported to an isolation hotel. Staff with positive results isolated at home.
- At shelters with >5 people positive for SARS-CoV-2 on initial testing, clients and staff were re-tested 3-4 weeks later.

Data Collection and Analysis

- Descriptive statistics were used to characterize the population tested and the proportions with current and recent symptoms, underlying medical conditions, and positive SARS-CoV-2. Continuous variables were compared using Student's t-test, and categorical variables were compared using the chi-square test.

Results

Table 1. SARS-CoV-2 prevalence and demographic characteristics of 2,875 sheltered and unsheltered clients and homelessness service staff tested in Atlanta, Georgia, United States, April–May 2020

	Total N=2,875 n (%)	Sheltered Clients n=1,690 n (%)	Unsheltered Clients n=636 n (%)	Homelessness Service Staff n=549 n (%)
SARS-CoV-2 Prevalence (missing=15)	46 (1.6)	36 (2.1)[a]	3 (0.5)[a]	7 (1.3)[a]
Characteristic				
Age				
Mean age, years	46.6	44.1	51.2	49.1
Median age, years	50.7	48.5	54.3	51.5
<18 years	134 (4.7)	130 (7.7)	3 (0.5)	0 (0.0)
18–34	534 (18.6)	364 (21.5)	79 (12.4)	92 (16.8)
35–49	701 (24.4)	386 (22.8)	154 (24.2)	161 (29.3)
50–64	1,306 (45.4)	722 (42.7)	334 (52.5)	250 (45.5)
≥65	200 (7.0)	88 (5.2)	66 (10.4)	46 (8.4)
Sex (missing=2)				
Male	1,967 (68.5)	1,123 (66.5)	541 (85.1)	303 (55.2)
Female	834 (29.0)	503 (29.8)	89 (14.0)	242 (44.1)
Other	72 (2.5)	62 (3.7)	6 (0.9)	4 (0.7)
Race and Ethnicity (missing=36)				
Black, non-Hispanic	2,169 (76.4)	1,299 (78.3)	497 (78.6)	373 (68.2)
White, non-Hispanic	466 (16.4)	250 (15.1)	67 (10.6)	149 (27.2)
Hispanic	101 (3.6)	51 (3.1)	37 (5.9)	13 (2.4)
Other[b]	103 (3.6)	60 (3.6)	31 (4.9)	12 (2.2)

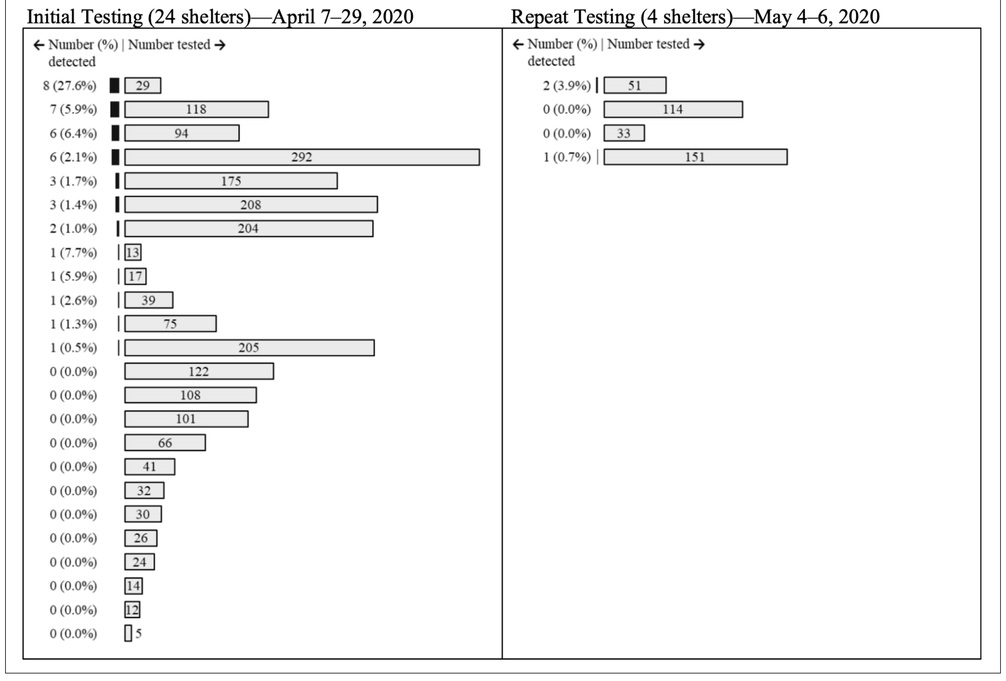
[a]chi-square test P=0.01
[b]Includes American Indian/Alaskan Native, Asian, Native Hawaiian/Pacific Islander, and other. Not reported individually due to small size.

Table 2. Medical conditions and smoking status of 1,997 sheltered and unsheltered clients and homelessness service staff screened for SARS-CoV-2 in Atlanta, Georgia, United States, April–May 2020

	Total n=1,997 n (%)	Sheltered Clients n=1,037 n (%)	Unsheltered Clients n=636 n (%)	Homelessness Service Staff n=324 n (%)
No underlying conditions[a] (missing=5)	1,018 (50.9)	533 (51.5)	304 (47.9)	181 (55.9)
Diabetes (missing=9)	198 (10.0)	114 (11.0)	57 (9.0)	27 (8.4)
Cardiovascular disease (missing=4)	638 (32.0)	336 (32.5)	216 (34.0)	86 (26.6)
Chronic lung disease (missing=4)	293 (14.7)	144 (13.9)	108 (17.0)	41 (12.7)
Chronic kidney disease (missing=7)	50 (2.5)	27 (2.6)	16 (2.5)	7 (2.2)
Chronic liver disease (missing=5)	87 (4.4)	44 (4.3)	36 (5.7)	7 (2.2)
Immunocompromising conditions[b] (missing=3)	94 (4.7)	33 (3.2)	51 (8.0)	10 (3.1)
Neurological conditions[c] (missing=5)	129 (6.5)	57 (5.5)	59 (9.3)	13 (4.0)
Smoking status (missing=2)				
Current smoker	968 (48.2)	506 (48.8)	400 (63.0)	62 (19.1)
Past smoker	269 (13.6)	149 (14.4)	68 (10.7)	52 (16.0)
Never smoker	758 (38.2)	381 (36.8)	167 (26.3)	210 (64.8)
Pregnant (% women aged 15–44 years, missing=5)	8 (3.6)	6 (5.6)	2 (6.1)	0 (0)

[a]Underlying conditions include diabetes (type I or type II), cardiovascular disease, chronic lung disease, chronic kidney disease, chronic liver disease, immunocompromising conditions, and neurological conditions.
[b]Documented conditions within immunocompromising conditions included: human immunodeficiency virus infection, cancer, rheumatoid arthritis, sarcoidosis, lupus, chronic steroid use, hyperthyroidism, hereditary spherocytosis, polymyalgia rheumatica, hepatitis C, and sickle cell disease or trait.
[c]Documented conditions within neurological conditions included: spinal stenosis, epilepsy, neuropathy, migraine, tardive dyskinesia, meningitis.

Figure. SARS-CoV-2 test results by homeless shelter (clients and staff) during initial and repeat testing events —Atlanta, Georgia, United States, April–May 2020



Discussion

General Findings

- SARS-CoV-2 testing outreach efforts reached 24 shelters in Fulton County and approximately 70% of all PEH in Atlanta [7].
- Overall SARS-CoV-2 prevalence among PEH and staff in Atlanta (1.6%) was low compared with reports among PEH in other large, urban settings [4-6].
- SARS-CoV-2 prevalence was four times higher among PEH living in shelters (2.1%) compared to PEH living unsheltered (0.5%).
- Decreased prevalence seen on repeat testing in four shelters supports the use of universal, facility-wide testing for early identification and isolation of positive cases as a strategy to interrupt transmission in congregate settings.
- The low SARS-CoV-2 prevalence seen in this study reflects a proactive, universal testing approach coupled with low community prevalence and the impact of shelter-in-place orders.

Symptom Screening

- The sensitivity of symptom screening for detecting SARS-CoV-2 infection was low (14%-24%). While specificity was higher (81%-89%), screening would produce a high proportion of false positive results in low prevalence settings.
- Despite the limitations of symptom screening, CDC recommends that homeless service providers regularly assess both clients and staff for symptoms using a standardized protocol [8].

Shelter Assessments and IPC Measures

- Nine (37.5%) shelters completed a shelter assessment and reported policy changes and implementation or strengthening of IPC measures as part of COVID-19 preparedness and mitigation efforts.
- Shelters should increase physical distancing, mandate the use of face coverings, and have plans to isolate people with suspected or confirmed SARS-CoV-2 infection.

Limitations of Our Study

- These results represent a single point in time early in the COVID-19 pandemic.
- Our findings are not representative of all PEH or homeless shelters in Atlanta, since we did not screen or test all PEH or shelters.
- Misclassification of sheltered and unsheltered status might have resulted from movement between settings and difficulty of verifying unsheltered status.
- Symptom and medical condition screenings and shelter assessments were only conducted at a subset of testing events, so may not be generalizable.

Conclusion

- PEH living in shelters experienced higher SARS-CoV-2 prevalence compared with PEH living unsheltered.
- Facility-wide, proactive testing in congregate settings allowed for identification and isolation of COVID-19 cases and is an important strategy to interrupt SARS-CoV-2 transmission.

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