Response to the COVID-19 pandemic among people experiencing homelessness in congregant living settings in San Diego, CA

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Abstract

During April-August 2020, a preemptive testing strategy combined with accessible isolation and symptom screening among people experiencing homelessness in congregant living settings in San Diego contributed to a low incidence proportion of COVID-19: 0.9%. Proactively addressing challenges specific to a vulnerable population may significantly prevent spread and community outbreaks.

SARS-CoV-2, the viral etiology of the respiratory disease COVID-19, has caused more than 29.5 million infections worldwide and 6.7 million infections in the US (*1*). The clinical manifestations of the disease range from asymptomatic to severe, including death from respiratory failure. Because the virus is transmitted through respiratory droplets and potentially aerosolized droplet nuclei, efficient transmission through congregant living settings that serve the large US population of people experiencing homelessness (PEH) is possible (*2,3,4*).

As of January 2019, there were more than 568,000 PEH in the US on any given night, with approximately 8,000 individuals located in San Diego County, California (the 5th largest population of any county in the US) (*5*). PEH may be uniquely vulnerable to COVID-19 due to the overlapping epidemiology of a variety of health risks, including poverty, chronic disease, overcrowding in shelters, and mental health and substance use disorders (*3*). Despite the deployment of non-pharmaceutical interventions, such as social distancing, hand sanitization, and the use of facial coverings, large cluster outbreaks have been reported in congregant living settings throughout the US, including homeless shelters (*4*). With growing evidence characterizing the spread of COVID-19 from pre-symptomatic and asymptomatic individuals and a higher prevalence in congregant livings settings, targeted testing and containment strategies may be necessary to prevent cluster outbreaks (*6*).

On March 10, 2020, with only one travel-related positive COVID-19 case, the Health and Human Services Agency of the County of San Diego provided local healthcare and homeless service providers with guidance to prepare for a COVID-19 outbreak. By April 1, *Operation Shelter to Home* was launched to prevent the spread of the virus among the homeless population (*7*). The County of San Diego secured hotel rooms and meal plans for individuals under investigation to observe a ten-day isolation period at no cost to the individual. Those already in shelters were relocated to the San Diego Convention Center (SDCC), and outreach staff brought in unsheltered individuals living on streets. In addition to common services, preventative measures were taken at the SDCC, including screening residents and staff daily via temperature check and verbal questionnaire on at least a daily

basis, washing and sanitizing hands upon entry or re-entry, mandatory face coverings, cleaning and sanitizing surfaces, and evaluating and isolating all individuals with symptoms (which was supported by collocated County Public Health Nurses). Public safety announcements were made every two hours from 8AM to 5PM, and roaming staff enforced wearing a face covering and physical distancing among all residents and staff.

In collaboration with local healthcare and homeless service providers, preemptive testing was undertaken to identify potential asymptomatic residents, staff, or volunteers with the goal of preventing a potential community outbreak. Any individual with a positive SARS-CoV-2 RT-PCR test was moved to an isolated area within the medical unit until transportation was arranged to the County's hotel rooms for those needing isolation. Individuals remained isolated with daily wellness checks and meals provided until it was deemed safe to return to the shelter or permanent housing, according to CDC guidelines (*8*).

Between April 16, 2020 and August 5, 2020, approximately 1,937 PEH underwent testing in the San Diego Convention Center, and concurrently, between May 7, 2020 and July 10, 2020, 523 PEH underwent testing at nine additional congregant living settings (drug and alcohol rehab centers and shelters). The total number of individuals who tested positive was 22, corresponding to an incidence proportion of 0.9%. The majority of those tested (73.3%) and who were positive (77.3%) were male. The mean (SD) age of those tested was 49.7 (13.0), the majority were white (58.8%), and non-Latinx/Hispanic (67.5%), and at least 16.1% were veterans. Meaningful differences by location of testing were not observed.

Since the emergence of SARS-CoV-2 in the US in January 2020, clusters of outbreaks in five homeless shelters in San Francisco, Seattle, and Boston have been observed (*4,9,10*). In each outbreak, testing within congregant living settings occurred as part of outbreak investigations, not as part of a preventative strategy (*4,9,10*). Overall, these investigations found a 31% infection prevalence among residents and a 21% infection prevalence in staff, markedly higher than the average COVID-19

prevalence rate in the US (*1*). In contrast, two shelters in Atlanta implemented preemptive testing where there were no reported cases and subsequently found a 4% prevalence among residents and 2% in staff (*4,9,10*). These findings align closely with those observed in San Diego.

Taken together, our findings suggest that a preemptive testing strategy in congregant living settings, combined with accessible isolation of individuals found to be positive and consistent symptom screening of individuals found to be negative, may be sufficient to avoid large outbreaks among PEH. The success of *Operation Shelter to Home* in San Diego provides an example of how proactively addressing challenges specific to a vulnerable population may prevent spread and community outbreaks.

Acknowledgments

Conflicts of Interest

CR reports grants and speaking, teaching, and consulting for Gilead Sciences and AbbVie and speaking, teaching, and consulting for Viiv and TheraTechnologies, outside the submitted work. There are no other conflicts of interest.

References:

1. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Inf Dis. 20(5):533-534.

2. Jayaweera M, Perera H, Gunawardana B, Manatunge J. Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy. Environ Res. 2020;188:109819.

3. Tsai J, Wilson M. COVID-19: a potential public health problem for homeless populations. *Lancet Public Health*. 2020;5(4):e186-e187.

4. Mosites E, Parker EM, Clarke KEN, et al. Assessment of SARS-CoV-2 Infection Prevalence in Homeless Shelters - Four U.S. Cities, March 27-April 15, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(17):521-522.

5. The U.S. Department of Housing and Urban Development. The 2019 Annual Homeless Assessment Report (AHAR) to Congress. 2020 Jan [cited 2020 Jul 9]. https://files.hudexchange.info/resources/documents/2019-AHAR-Part-1.pdf

6. Jatt LP, Winnett A, Graber CJ, Vallone J, Beenhouwer DO, Goetz MB. Widespread severe acute respiratory coronavirus virus 2 (SARS-Cov-2) laboratory surveillance program to minimize asymptomatic transmission in high-risk inpatient and congregate living settings. Infect Control Hosp Epidemiol [Internet]. 2020 Jun [cited 2020 Jul 9].

7. The City of San Diego. Operation Shelter to Home. 2020 Jul 9 [cited 2020 Jul 9]. https://www.sandiego.gov/coronavirus/sheltertohome

8. Centers for Disease Control and Prevention. Interim Considerations for Health Departments for SARS-CoV-2 Testing in Homeless Shelters and Encampments. 2020 Jul 1 [cited 2020 Jul 9].

9. Baggett TP, Keyes H, Sporn N, Gaeta JM. Prevalence of SARS-CoV-2 Infection in Residents of a Large Homeless Shelter in Boston. JAMA. 2020;323(21):2191–2192.

10. Tobolowsky FA, Gonzales E, Self JL, Rao CY, Keating R, Marx GE, et al. COVID-19 Outbreak Among Three Affiliated Homesless Service Sites – King County, Washington, 2020. MMWR Morb Mortal Wkly Rep. 2020 May 1;69(17): 532-526.

Table 1. COVID-19 test results by month and demographic characteristics among people experiencing homelessness in congregant living settings in San Diego, CA in 2020

Category	April I	April #	May I	May #	June I	June #	July I	July #	August I	August #	Total I	Total #
Total												
All	2 (0.3%)	593	4 (1.1%)	369	7 (1.0%)	728	2 (0.9%)	230	7 (1.3%)	536	22 (0.9%)	2456
Age												
17-29	0 (0.0%)	48	1 (1.5%)	65	0 (0.0%)	98	0 (0.0%)	16	0 (0.0%)	39	1 (0.4%)	266
30-39	1 (1.1%)	88	0 (0.0%)	74	4 (2.6%)	151	0 (0.0%)	42	0 (0.0%)	72	5 (1.2%)	427
40-49	0 (0.0%)	99	1 (1.7%)	60	2 (1.1%)	174	1 (2.9%)	34	0 (0.0%)	97	4 (0.9%)	464
50-59	1 (0.5%)	188	1 (1.0%)	100	1 (0.6%)	179	0 (0.0%)	82	4 (2.3%)	175	7 (1.0%)	724
60+	0 (0.0%)	170	1 (1.4%)	70	0 (0.0%)	126	1 (1.8%)	56	3 (2.0%)	153	5 (0.9%)	575
Sex at Birth												
Male	2 (0.5%)	426	3 (1.0%)	290	4 (0.8%)	525	2 (1.1%)	177	6 (1.6%)	383	17 (0.9%)	1801
Female	0 (0.0%)	167	1 (1.3%)	79	3 (1.5%)	203	0 (0.0%)	53	1 (0.7%)	153	5 (0.8%)	655
Ethnicity												
Latinx/Hispanic	1 (0.9%)	115	2 (2.2%)	92	3 (1.7%)	174	1 (2.0%)	50	0 (0.0%)	148	7 (1.2%)	579

	I	#	I	#	I	#	I	#	I	#	I	#
Non-Latinx/Hispanic	1 (0.3%)	374	1 (0.4%)	245	4 (0.8%)	506	1 (0.6%)	170	7 (1.9%)	362	14 (0.8%)	1657
Unknown	0 (0.0%)	104	1 (3.1%)	32	0 (0.0%)	48	0 (0.0%)	10	0 (0.0%)	26	1 (0.5%)	220

Race

	I	#	I	#	I	#	I	#	I	#	I	#
White	2 (0.6%)	314	3 (1.4%)	217	4 (0.9%)	442	0 (0.0%)	150	3 (0.9%)	321	12 (0.8%)	1444
Black	0 (0.0%)	142	1 (1.2%)	86	1 (0.6%)	162	1 (2.0%)	51	3 (2.6%)	114	6 (1.1%)	555
Other	0 (0.0%)	66	0 (0.0%)	41	2 (2.0%)	98	1 (4.0%)	25	1 (1.1%)	89	4 (1.3%)	319
Unknown	0 (0.0%)	71	0 (0.0%)	25	0 (0.0%)	26	0 (0.0%)	4	0 (0.0%)	12	0 (0.0%)	138

Veteran Status

	I	#	I	#	I	#	I	#	I	#	I	#
Veteran	0 (0.0%)	97	0 (0.0%)	54	4 (3.7%)	109	2 (3.2%)	63	2 (2.7%)	73	8 (2.0%)	396
Non-Veteran	2 (0.4%)	484	4 (1.3%)	314	3 (0.5%)	618	0 (0.0%)	165	4 (0.9%)	446	13 (0.6%)	2027
Unknown	0 (0.0%)	12	0 (0.0%)	1	0 (0.0%)	1	0 (0.0%)	2	1 (5.9%)	17	1 (3.0%)	33

I = incidence proportion, # = frequency