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High Uptake and Series Completion of COVID-19 Vaccine at Community-Based Vaccination for Latinos With Limited English Proficiency

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ABSTRACT
Background: Despite the disproportionate impact of COVID-19 on Latinos, there were disparities in vaccination, especially during the early phase of COVID-19 immunization rollout. **Methods:** Leveraging a community-academic partnership established to expand access to SARS-CoV2 testing, we implemented community vaccination clinics with multifaceted outreach strategies and flexible appointments for limited English proficiency Latinos. **Results:** Between February 26 and May 7 2021, 2250 individuals received the first dose of COVID-19 vaccination during 18 free community events. Among them, 92.4% (95% confidence interval [CI], 91.2%-93.4%) self-identified as Hispanic, 88.7% (95% CI, 87.2%-89.9%) were limited English proficiency Spanish speakers, 23.1% (95% CI, 20.9%-25.2%) reported prior COVID-19 infection, 19.4% (95% CI, 16.9%-22.25%) had a body mass index of more than 35, 35.0% (95% CI, 32.2%-37.8%) had cardiovascular disease, and 21.6% (95% CI, 19.2%-24.0%) had diabetes. The timely second-dose completion rate was high (98.7%; 95% CI, 97.6%-99.2%) and did not vary by outreach method. **Conclusion:** A free community-based vaccination initiative expanded access for Latinos with limited English proficiency at high risk for COVID-19 during the early phase of the immunization program in the US.

KEY WORDS: COVID-19 vaccination, disparities, Latinos

The Centers for Disease Control and Prevention estimates that in 2020, there was a 54% excess mortality among Latinos compared with 12% among non-Hispanic Whites and that deaths from COVID-19 occurred at younger ages among Latinos.[1-3] Latinos are more likely to be hospitalized and die from COVID-19 than non-Hispanic Whites.[4,5] Despite these disparities, Latinos lagged on COVID-19 vaccination during the early phase of vaccination rollout. As of May 24, 2021, 32% of Latinos had received a COVID-19 vaccine compared with 43% of non-Hispanic Whites.[6]

The COVID-19 pandemic has been particularly difficult for low-income Latino immigrants.[7-9] Evidence shows heightened risk of infection among undocumented and limited English proficiency (LEP) Latinos, due to lack of eligibility for unemployment benefits

or stimulus checks, the need to work in high-risk essential jobs, and crowded housing conditions.[8-13] Language barriers, concerns about immigration status, and lack of familiarity navigating the US health care system tragically delayed lifesaving care for many.[8,11] Similar issues have hampered access to vaccines in this community. In the early stages of COVID-19 vaccination rollout in the United States, almost 60% of undocumented Latinos reported uncertainty about their eligibility, 58% worried about social security or government ID requirements, and 43% did not know where to go.[14]

Baltimore City has an emergent Latino community, including undocumented immigrants and mixed-status families with lower educational attainment, income, and insurance coverage than the general Latino population in the United States.[15-17] Early in the pandemic, a coalition was established between the Johns Hopkins Health System, religious leaders, and community organizations to open a bilingual COVID-19 hotline and implement free SARS-CoV2 community-based testing.[18,19] Once COVID-19 vaccinations received Emergency Use Authorization, the coalition participated in more than 40 Spanish language community informational forums, and the clinical director was designated a bilingual Maryland GoVAX COVID-19 vaccine ambassador.[20] In February 2021, the coalition partnered with the Maryland Vaccine Equity Taskforce[21] to expand access to the COVID-19 vaccine for low-income Latino immigrants.

This article describes the preliminary findings from this initiative in early vaccine rollout, including characteristics of vaccinees. Results from the current study can inform future vaccine equity initiatives for marginalized communities.

Methods

Event description

Eighteen free community vaccination events with bilingual staff were conducted between February 26, 2021, and May 7, 2021. Of these, 13 were first-dose vaccination clinics (10 with Moderna, 1 with Johnson & Johnson, and 2 with Pfizer/BioNTech COVID-19 vaccines based on allocation by the Maryland Department of Health), and 5 were second-dose vaccination clinics. Between 150 and 200 first doses per week were allocated for this initiative.

Outreach to identify candidates for vaccination followed Maryland's phased distribution plan and evolved over time.[22] Initially, vaccine candidates were identified through probabilistic linkage of 2 databases from community testing and the bilingual hotline associated with this project (see Supplemental Digital

Content Appendix, available at http://links.lww.com/JPHMP/B41). The candidates were ranked by age and comorbid conditions and contacted by bilingual community health workers (CHW) to offer a vaccine appointment (active phone outreach). The number of the bilingual COVID-19 hotline was distributed to vaccinated individuals to share with their networks and advertised through Spanish language local media outlets and community partners (passive outreach). In addition, the CHWs canvased Latino neighborhoods and laborer sites to offer appointments for vaccination (Street outreach). On April 12, vaccine became available to any individual 16 years of age and older in Maryland, and walk-up appointments were allowed (Walk-up).

Clinics were mostly conducted after hours. Staff and volunteers included bilingual navigators, registrars, prevaccination consenters and screeners, and clinical lead (K.R.P.);[23] a site lead (B.F.B.); a pharmacist; vaccinators (n = 5-8); a postvaccination observer; and Spanish language interpreters (n = 2-3). The CHWs sent, called, or sent text messages to remind patients of their second-dose appointment and facilitated rescheduling, if necessary.

Data sources

Individuals were preregistered for appointments using a Research Electronic Data Capture database (REDCaP), capturing basic demographics, occupation, and comorbid conditions. No identification, health insurance, or proof of occupation was required. Vaccine administration was recorded in the Johns Hopkins Health System electronic health record system and reported to the state of Maryland. Patients who walked up without preregistering did not have data recorded in REDCaP.

Analysis

Data on patient demographics and vaccination status were extracted from the electronic health record system and REDCaP. Descriptive vaccinee characteristics by outreach method were calculated with 95% confidence intervals using the Wilson score method without continuity correction. All comparisons were made using Stata 16 software (StataCorp 2019. Stata Statistical Software: Release 16. College Station, Texas: StataCorp LLC.)

All participants provided written informed consent for vaccination. This analysis was deemed quality improvement and exempt by the Johns Hopkins Institutional Review Board (CIR00066868)

Results

A total of 2250 individuals received the first dose of COVID-19 vaccination at these events. The majority

TABLE 1

Characteristics of N = 2250 Patients at Community Vaccination Events Tailored for Latinx Communities Occurring February 26 Through May 8, 2021

	Total			Active Phone Outreach			Passive Outreach (Hotline Callers)			Street Outreach			Walk-ups[a]		
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI[b]
Total	2250	100.0%	...	588	100.0%	...	606	100.0%	...	335	100.0%	...	721	100.0%	...
Age															
Age in years, mean (SD)	...	47.1	(13.82)	...	54.6	(11.51)	...	47.4	(12.82)	...	41.9	(12.28)	...	43.0	(14.32)
<18	26	1.2%	0.7%-1.6%	0	0.0%	0.0%-0.6%	6	1.0%	0.4%-2.1%	3	0.9%	0.3%-2.5%	17	2.4%	1.4%-3.7%
18-29	187	8.3%	7.2%-9.5%	7	1.2%	0.5%-2.4%	33	5.4%	3.9%-7.5%	48	14.3%	10.9%-18.4%	99	13.7%	11.4%-16.4%
30-44	795	35.3%	33.3%-37.3%	97	16.5%	13.7%-19.7%	227	37.5%	33.6%-41.3%	157	46.9%	41.5%-52.2%	314	43.6%	39.9%-47.1%
45-64	1009	44.8%	42.7%-46.9%	373	63.4%	59.4%-67.2%	285	47.0%	43.0%-51.0%	113	33.7%	28.8%-38.9%	238	33.0%	29.6%-36.5%
65-74	175	7.8%	6.7%-8.9%	81	13.8%	11.2%-16.7%	41	6.8%	5.0%-9.0%	13	3.9%	2.2%-6.5%	40	5.5%	4.1%-7.4%
>74	58	2.6%	1.9%-3.3%	30	5.1%	3.5%-7.1%	14	2.3%	1.3%-3.8%	1	0.3%	0.05%-1.6%	13	1.8%	1.0%-3.0%
Gender															
Female	1134	50.4%	48.3%-52.4%	318	54.1%	50%-58.0%	312	51.5%	47.5%-55.4%	171	51.0%	45.7%-56.3%	333	46.2%	42.5%-49.8%
Male	1116	49.6%	47.5%-51.6%	270	45.9%	41.9%-49.9%	294	48.5%	44.5%-52.4%	164	49.0%	43.6%-54.2%	388	53.8%	50.1%-57.4%
Race															
White	119	5.3%	4.4%-6.2%	26	4.4%	3.0%-6.4%	24	4.0%	2.6%-5.8%	21	6.3%	4.1%-9.3%	48	6.7%	5.0%-8.7%
Black or African American	103	4.6%	3.7%-5.5%	7	1.2%	0.5%-2.4%	3	0.5%	0.1%-1.4%	13	3.9%	2.2%-6.5%	80	11.1%	9.0%-13.5%
Asian	8	0.4%	0.1%-0.7%	4	0.7%	0.2%-1.7%	1	0.2%	0.02%-0.9%	2	0.6%	0.1%-2.1%	1	0.1%	0.02%-0.7%
Other	1913	85.0%	83.4%-86.4%	495	84.2%	81.0%-86.9%	550	90.8%	88.1%-92.8%	287	85.7%	81.5%-89.0%	581	80.6%	77.5%-83.3%
Multiple	102	4.5%	3.7%-5.4%	56	9.5%	7.4%-12.1%	28	4.6%	3.2%-6.5%	12	3.6%	2.0%-6.1%	6	0.8%	0.3%-1.8%
Unknown	5	0.2%	0.1%-0.5%	0	0.0%	0.0%-0.6%	0	0.0%	0.0%-0.6%	0	0.0%	0.0%-1.1%	5	0.7%	0.2%-1.6%
Ethnicity															
Non-Hispanic	171	7.6%	6.5%-8.7%	16	2.7%	1.6%-4.3%	7	1.2%	0.5%-2.3%	30	9.0%	6.3%-12.45%	118	16.4%	13.8%-19.2%
Hispanic	2079	92.4%	91.2%-93.4%	572	97.3%	95.6%-98.3%	599	98.8%	97.6%-99.4%	305	91.0%	87.5%-93.6%	603	83.6%	80.7%-86.1%
Preferred language															
English	236	10.5%	9.2%-11.8%	39	6.6%	4.8%-8.9%	9	1.5%	0.7%-2.7%	29	8.7%	6.0%-12.1%	159	22.1%	19.1%-25.2%
Spanish	1995	88.7%	87.2%-89.9%	546	92.9%	90.4%-94.6%	595	98.2%	96.7%-98.9%	304	90.7%	87.1%-93.4%	550	76.3%	73.0%-79.2%
Other	7	0.3%	0.1%-0.6%	3	0.5%	0.1%-1.4%	2	0.3%	0.09%-1.1%	2	0.6%	0.1%-2.1%	0	0.0%	0.0%-0.5%
Unknown	12	0.5%	0.3%-0.9%	0	0.0%	0.0%-0.6%	0	0.0%	0.0%-0.6%	0	0.0%	0.0%-1.1%	12	1.7%	0.9%-2.8%
Medical history[c]															
Prior COVID-19	351	23.1%	20.9%-25.2%	128	21.9%	18.7%-25.4%	158	26.1%	22.7%-29.7%	65	19.6%	15.7%-24.2%	...	...	...
Obesity[d]															
BMI >35	167	19.4%	16.9%-22.25%	71	18.3%	14.8%-22.5%	41	17.3%	13.0%-22.6%	55	23.4%	18.4%-29.2%	...	...	...
BMI >40	63	7.3%	5.7%-9.2%	30	7.8%	5.4%-10.8%	13	5.5%	3.2%-9.1%	20	8.5%	5.5%-12.7%	...	...	...

(continues)

TABLE 1

Characteristics of N = 2250 Patients at Community Vaccination Events Tailored for Latinx Communities Occurring February 26 Through May 8, 2021 (Continued)

	Total			Active Phone Outreach			Passive Outreach (Hotline Callers)			Street Outreach			Walk-ups[a]		
	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI[b]
Total	2250	100.0%	...	588	100.0%	...	606	100.0%	...	335	100.0%	...	721	100.0%	...
Comorbidities[e]															
Cardiovascular disease	399	35.0%	32.2%-37.8%	234	55.3%	50.5%-59.9%	108	23.3%	19.7%-27.3%	57	22.4%	17.7%-27.9%	...	...	...
Diabetes mellitus	246	21.6%	19.2%-24.0%	137	32.4%	28.1%-36.9%	76	16.4%	13.3%-20.0%	33	13.0%	9.4%-17.6%	...	...	...
Chronic pulmonary disease/asthma	84	7.4%	5.9%-9.0%	39	9.2%	6.8%-12.3%	26	5.6%	3.8%-8.1%	19	7.5%	4.8%-11.3%	...	...	...
Cancer within <12 mo	17	1.5%	0.9%-2.3%	9	2.1%	1.1%-3.9%	5	1.1%	0.4%-2.5%	3	1.2%	0.4%-3.4%	...	...	...
Chronic kidney disease	15	1.3%	0.7%-2.1%	7	1.7%	0.8%-3.3%	6	1.3%	0.5%-2.7%	2	0.8%	0.2%-2.8%	...	...	...
Other	125	11.0%	9.2%-12.9%	73	17.3%	13.9%-21.1%	41	8.9%	6.5%-11.7%	11	4.3%	2.4%-7.5%	...	...	...
Occupations[f]															
Construction	345	23.1%	21.1%-25.3%	113	19.7%	16.6%-23.1%	159	27.0%	23.5%-30.7%	73	22.2%	18.0%-26.9%	...	...	...
Janitorial/cleaning	281	18.8%	16.9%-20.8%	125	21.8%	18.6%-25.3%	111	18.8%	15.8%-22.2%	45	13.7%	10.3%-17.8%	...	...	...
Restaurant	181	12.1%	10.5%-13.8%	61	10.6%	8.3%-13.4%	75	12.7%	10.2%-15.6%	45	13.7%	10.3%-17.8%	...	...	...
Manufacturing	148	9.9%	8.5%-11.5%	34	5.9%	4.2%-8.1%	41	7.0%	5.1%-9.3%	73	22.2%	18.0%-26.9%	...	...	...
Grocery	81	5.4%	4.3%-6.6%	28	4.9%	3.4%-6.9%	31	5.3%	3.7%-7.3%	22	6.7%	4.4%-9.9%	...	...	...
Childcare	62	4.2%	3.2%-5.2%	39	6.8%	5.0%-9.1%	11	1.9%	1.0%-3.3%	12	3.6%	2.0%-6.2%	...	...	...
Transportation	42	2.8%	2.0%-3.7%	18	3.1%	1.9%-4.9%	16	2.7%	1.6%-4.3%	8	2.4%	1.2%-4.7%	...	...	...
Painting	34	2.3%	1.6%-3.1%	13	2.3%	1.3%-3.8%	18	3.1%	1.9%-4.7%	3	0.9%	0.3%-2.6%	...	...	...
Health care	15	1.0%	0.6%-1.6%	6	1.0%	0.4%-2.2%	2	0.3%	0.0%-1.2%	7	2.1%	1.0%-4.3%	...	...	...
Education	10	0.7%	0.3%-1.2%	2	0.3%	0.0%-1.2%	1	0.2%	0.0%-0.9%	7	2.1%	1.0%-4.3%	...	...	...
Agriculture	7	0.5%	0.2%-0.9%	3	0.5%	0.1%-1.5%	1	0.2%	0.0%-0.9%	3	0.9%	0.3%-2.6%	...	...	...
Other	91	6.1%	4.9%-7.4%	25	4.4%	2.9%-6.3%	27	4.6%	3.1%-6.5%	39	11.9%	8.7%-15.7%	...	...	...
Unemployed	269	18.0%	16.1%-20.0%	133	23.2%	19.9%-26.8%	113	19.2%	16.2%-22.5%	23	7.0%	4.7%-10.2%	...	...	...
Second-dose completion among patients requiring (Moderna or Pfizer) and due for second dose before May 8, 2021[g]															
Completed second dose	884	98.7%	97.6%-99.2%	473	99.4%	98.1%-99.7%	189	97.9%	94.7%-99.1%	126	96.9%	92.3%-98.7%	96	99.0%	94.3%-99.8%
Missing second dose	12	1.3%	0.7%-2.3%	3	0.6%	0.2%-1.8%	4	2.1%	0.8%-5.2%	4	3.1%	1.2%-7.6%	1	1.0%	0.1%-5.6%

Abbreviations: BMI, body mass index; CI, confidence interval.

[a]Data on medical history, obesity comorbidities, and occupation not collected for walk-ups.

[b]95% Confidence intervals calculated using Wilson score method without continuity correction.

[c]Medical history total n = 1522 (588 active phone outreach, 606 passive outreach, and 335 street outreach).

[d]Obesity total n= 859 (387 active phone outreach, 237 passive outreach, and 235 street outreach).

[e]Comorbidities total n = 1140 (423 active phone outreach, 463 passive outreach, and 254 street outreach); comorbidities counts are not mutually exclusive.

[f]Occupations total n = 1491 (573 active phone outreach, 589 passive outreach, and 329 street outreach); occupations counts are not mutually exclusive.

[g]Dose 2 completion (among those requiring and due for second dose) total n = 896 (476 active phone outreach, 193 passive outreach, 130 street outreach, and 97 walk-ups).

(n = 2130, 92.4%) received an mRNA vaccine (n = 1588, 70.6% Moderna and n = 492, 21.9% Pfizer/BioNTech)—only 7.6% (n = 170) patients received the single-dose Janssen vaccine. Among vaccinated individuals, 92.4% self-identified as Hispanic, and 88.7% were LEP Spanish speakers (Table 1). The mean age was 47.1 years and 49.6% were male. Approximately, a fifth (23.1%) reported prior COVID-19 infection, and comorbidities were common (19.4% body mass index: >35; 35.0% cardiovascular disease; 21.6% diabetes). Common occupations included construction (23.1%), janitorial (18.8%), and restaurant (12.1%) work.

Vaccinee characteristics varied by outreach method, which evolved on the basis of eligibility criteria and demand. Active phone outreach using linked medical history data targeted older people and those with comorbidities. Street outreach focused on essential workers, as evident by the low unemployment rate (7.0%), and overrepresentation of manufacturing (22.2%), due to outreach at a poultry processing factory. Vaccinees without prior appointments (walk-up) were more likely to be Black (11.1%) and English proficient (22.1%). Timely second-dose completion rate was very high (98.7%) and did not vary by outreach method.

Discussion

This free community-based vaccination initiative expanded access for LEP Latinos at high risk for COVID-19 during the early phase of the immunization program in the United States. The model demonstrates the effectiveness of reaching the most vulnerable populations by working with a trusted bilingual and bicultural workforce, flexible appointment scheduling, and full participation of community organizations using a high-touch and low-tech approach (ie, in-person outreach, hotline, Spanish language media, and word of mouth).

In Maryland, Latinos account for 11% of the population and 19% of all COVID-19 cases, but back in May 24, 2021, Latinos received only 8% of the vaccinations in the state.[6,24] Mass vaccination sites have expanded access to vaccine, but targeted community-based initiatives are equally important to advance equity in vaccine distribution. These initiatives overcome digital, transportation, health literacy, and language barriers, and mitigate vaccine hesitancy.[25,26] Full participation of trusted community leaders and organizations in planning, implementation, and dissemination is crucial to producing more effective public health programs, including reaching undocumented immigrants, as concerns about deportation can dampen health care utilization.[7,27,28]

The differences in vaccinee characteristics by outreach method largely mirrored evolving eligibility criteria, but findings can inform future vaccine initiatives for marginalized communities. A nimble and adaptive approach responsive to evolving community needs was needed. Initial phone outreach was labor-intensive as many people did not answer unknown calls. A key strategy to increase awareness, demand, and access was to advertise the bilingual hotline number through Spanish language local media outlets and distribute it to vaccinated individuals to share with their social networks. Street outreach helped identify essential workers at high risk with limited access to health care. Walk-up appointments were advertised in Spanish and English and attracted a more racially diverse population.

Despite concerns about hesitancy, uptake and vaccine series completion was high. Nationally, vaccine hesitancy has declined. As of May 3, 2021, 64% of Latinos reported that they had been vaccinated or planned to get vaccinated (up from 26% in December 2020)—only 9% said that they would not get vaccinated under any circumstance.[29] Improving access and normalizing vaccination can promote confidence in the vaccine. Second-dose reminder by trusted CHWs was labor intensive but likely contributed to high completion rate. As pent-up demand for vaccination has subsided, community-based initiatives that can leverage social networks and build community trust to reach marginalized or vaccine-hesitant individuals have become more critical. A recent Centers for Disease Control and Prevention report documented lower coverage among Latinos than non-Hispanic Whites for all recommended adult vaccinations, with the lowest coverage among adults with LEP or without health insurance or a primary care provider.[30]

Implications for Policy & Practice

The overall success of the US vaccination effort and recovery from the COVID-19 pandemic relies on an inclusive approach to all people living in the United States, regardless of immigration status. Organizations seeking to expand equitable access to LEP immigrants at high risk of COVID-19 should consider the following key findings:

- Community-based vaccination initiatives with bilingual and bicultural capacity and a good communication strategy are critical to establish trust.

- These initiatives must be nimble and flexible to adequately respond to the rapidly changing COVID-19 landscape.

- Multifaceted outreach efforts are labor intensive and require adequate funding and institutional and governmental support.

Although the focus of this study was COVID-19 vaccination, knowledge gained may be relevant to future vaccine equity initiatives.

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