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Short communication

Clinicians championing flu vaccine equity: what minority-serving clinics in the United States do and need

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ABSTRACT

Objective: Significant disparities in flu vaccination in underserved communities of color persist. To address these disparities, National Minority Quality Forum Center for Sustainable Health Quality and Equity collaborated with over 45 clinical practices throughout the United States to advance quality improvement (QI) programs aimed at increasing equity in vaccination and evaluate progress.
Methods: To assess effectiveness of the QI programs, we surveyed participating clinics online in March and April 2024. Separately we gathered data via email from practices to report on vaccination rates.
Results: Influenza vaccination rates increased one percent to 45% in 37 responding practices. Sixty percent of practices reported >90% staff vaccination rates. Higher patient vaccination rates were reported in clinics with staff vaccination requirements. Eighty percent of clinics reported vaccine champions. The top three needs cited in getting patients vaccinated were free vaccines for the uninsured, family and caregiver education resources, and staff training on addressing hesitancy.
Conclusions: Education and support for clinicians working in these communities increases flu vaccination rates. The Flu DRIVE program had a positive effect on these rates in Black and Hispanic populations. Support for QI programs, immunization-related resources and increasing staff vaccination and hesitancy training could help further improve flu vaccination disparities.

1. Introduction

Despite overall improvements in national influenza (flu) vaccination rates, significant disparities in underserved communities of color persist. As of April 26, 2025, Centers for Disease Control and Prevention (CDC) reported White adults aged 18 and over had a cumulative flu vaccination rate of 50.0% compared to 43.3% in Black adults and 39.4.% in Hispanic adults (CDC, 2026a). Similarly, 2025 data showed that in an older cohort of Medicare beneficiaries analyzed by the National Minority Quality Forum Center for Sustainable Health Care Quality and Equity (NMQF-SHC), White adults had a higher flu vaccination rate than Black or Hispanic adults (48.6% vs 35.5% and 28.9%, respectively) (Mahmud et al., 2021; Centers for Medicare and Medicaid Services, O. o. M. H, 2026). Reasons for these disparities vary and include a lack of awareness, lack of trust, concerns about affordability, access, not believing the vaccine is needed, or implicit bias and systemic racism (Mahmud et al., 2021; Centers for Medicare and Medicaid Services, O. o. M. H, 2026; Chen et al., 2006; Quinn et al., 2017a). To address these disparities, NMQF-SHC has been working with groups of clinicians in over 45 practices throughout the United States (U.S.) to advance quality improvement (QI) programs aimed at increasing equity in vaccination. Through engagement with NMQF-SHC, clinics gain access to a **D**emonstrating **R**eal **I**mprovement in **V**alue and **E**quity (DRIVE) Online Toolkit, and hands-on support to help clinic champions increase flu vaccination rates that will ultimately impact health outcomes. Clinics utilize these tool kits in a variety of ways to help customize communications and develop activities which are targeted towards the needs of their community and practice.

The viewpoints of practices on QI efforts are not well documented or understood, particularly for adult vaccination and few data on reaching underserved communities and sharing of best practices for reaching Black and Brown communities are published. A post-intervention survey was conducted to help inform future needs.

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2. Methods

2.1. Study design and population

Post 2023–24 flu season, we developed a questionnaire via SurveyMonkey to evaluate the effectiveness and needs of the QI intiative and help identify current gaps. The survey was reviewed by a group of vaccine equity experts and clinicians. An email with a link to the survey was sent out to all 45 participating US clinics in NMQF-SHC flu vaccination QI programs in March and April 2024. No incentives were provided for practices to complete the survey. Vaccination rates were gathered separately for all practices via email. This study was reviewed and approved by the WCG IRB (IRB approval number 1-1741794-1). Completion of the survey implied consent to participate in the study.

2.2. Measures

This survey gathered demographic data and descriptive characteristics of clinics including practice setting, staff vaccination requirements, proportion of staff vaccinated, roles of vaccine champions, how hesitant patients were handled, and proportion of Black and Latino populations. We included a series of attitude and perception questions using a five-point Likert scale to measure degree of agreement of whether most people were vaccinated against Flu, even if hesitant, and whether other factors contributed to whether people got vaccinated or not. Respondents were also asked to specify future training, patient education and resource needs.

2.3. Statistical Analysis

Results are presented in summary and cross-tabulation format. We conducted a Pearson Correlation Analysis on selected data to understand strength and direction of linear relationships between variables identified in cross-tabulations. We also conducted an analysis of variance (ANOVA) to determine whether groups of respondents differered from each other. We performed a chi-square test on slected binary variables and t-test for Likert-type variables to further test the relationship to staff vaccination status in a sub analysis (supplementary material). Clinics reported flu vaccination rates from electronic health records in 2023-24 and 2024-25 seasons to MNQF-SHC separately and these were evaluated by the program team to provide context to the effectiveness of the activity. Numiqo online statistical software was used for ANOVA and correlation analysis. IBM SPSS® Statistics software was used for chi-square and t-tests.

3. Results

3.1. Descriptive characteristics

We received 44 responses from individuals representing 37 clinics participating in NMQF-SHC QI programs. Descriptive characteristics are presented in Table 1. Baseline flu vaccination rates in 2023–24 ranged from 15% to 45% of patient populations. Post-program, rates increased by one percent to 45% in 2024–25.

3.2. Factors Associated with Flu Vaccination

The following variables *we check vaccination status of all patients, the doctor speaks to patients when they are hesitant, I would benefit from hesitancy training, family/caregiver education needed, and staff vaccination required* explained 32.74% of the variance from the dependent variable *most people get the flu shot even if hesitant.* The effect was significantly different from zero, $F = 3.70$, $p = .01$, $R^2 = 0.33$. Staff vaccination had a coefficient +0.53 in our model ($p = .05$). Other variables were non-significant.

Table 1
Demographics and descriptive characteristics of 44 survey responders in 37 clinics in the United States.

Characteristic	*n* (%)
Age	
25–34	9 (20.5)
35–44	9 (20.5)
45–54	14 (31.8)
55–64	9 (20.5)
65+	3 (6.8)
Gender	
Female	36 (81.8)
Male	7 (15.9)
Missing	1 (2.3)
Highest level of school	
High school degree or its equivalent	2 (4.5)
Some college but no degree	2 (4.5)
Associate degree	7 (15.9)
Bachelor's degree	9 (20.5)
Graduate degree	24 (54.5)
Practice setting	
Urban	21 (47.7)
Rural	11 (25.0)
Suburban	11 (25.0)
Other	1 (2.3)
Flu vaccine staff required	
Yes	20 (45.5)
No	24 (54.5)
Proportion of staff vaccinated	
More than 90%	26 (59.1)
More than half	12 (27.3)
About half	4 (9.1)
Less than half	1 (2.3)
Missing	1 (2.3)
Have a vaccine champion at clinic	
Yes	37 (84.1)
No	7 (15.9)

3.3. Staff vaccination policies

Sixty percent of the practices reported >90% of their staff were vaccinated; only one practice vaccinated 50% or less of staff. Half of the practices did not require staff to be vaccinated. Practices with staff vaccination requirements were more likely to strongly agree that most hesitant patients still get vaccinated versus practices without requirements. The practices with mandatory staff vaccination policies had higher rates of staff vaccination, were more likely to check vaccine status for each patient (90%), send hesitant patients to another person in the practice to discuss (15%) and less likely to list the need for free vaccines to increase vaccination rates (50%) as compared to respondents in practices where vaccination was not required. Mandatory vaccination policies were associated with strong agreement that all patients should get a flu shot every year (75%) versus practices where staff vaccination was not required (32%).

3.4. Impact of vaccine co-administration and staff turnover

Over half of the respondents (52%) asserted that the opportunity to vaccinate with multiple vaccines brings in more people to get their flu shot; only 25% stated that patients want to focus on one vaccine per visit. Sixty percent disagreed with the statement that staff turnover has presented a challenge to flu vaccination.

3.5. Champions

Over 80% of practices reported having a vaccine champion. Various staff roles were identified as vaccine champions, with physicians and nurses being most cited (27% each) and nurse practitioners representing another 14%. Champions played various roles, including ensuring vaccination is recommended (83%), ordering vaccines (59%), keeping organized and a variety of tasks ranging from obtaining patient communication materials, vaccine tracking, educating staff, organizing community clinics, and even making it fun (10%).

3.6. Vaccine hesitancy

Nearly 60% of practices engaged a physician to convince vaccine-hesitant patients.

A similar proportion of practices also felt they had the tools and knowledge to convince hesitant patients; nonetheless, 61% said they would benefit from additional training.

3.7. Barriers to vaccination

The top three things cited that make the biggest difference in getting patients vaccinated were free vaccines for the uninsured, family and caregiver education resources, and training for staff on addressing hesitancy. Education resources correlated with the use of physicians to answer questions, higher staff vaccination rates and checking vaccine status. (Table 2). Additionally, all rural practices also indicated a need for family and caregiver education to increase vaccination while 62% of urban practices and 52% of suburban practices indicated that need.

4. Discussion

A variety of strategies can facilitate flu vaccination, including, perhaps most importantly, a clinician's recommendation (CDC, 2026b). Health professionals play an important role as trusted messengers, including in underserved communities of color (Dada et al., 2022). Community norms also contribute to vaccination rates (Quinn et al., 2017b). Providing education and support for clinicians working in these communities not only increase vaccination rates but can result in better health outcomes and lower cost to the health system (Roussos and Fawcett, 2000).

Flu DRIVE program is an evidence-based quality improvement and education program that helps clinical teams increase flu vaccination equity, through provider and patient education, quality improvement activities, and community engagement (Center for Sustainable Healthcare and Quality Homepage, 2023). Our analysis showed that clinics serving a racially and ethnically diverse patient population could implement QI activities to increase flu vaccination rates.

The survey results suggest that higher rates of vaccination among clinic staff and vaccine mandates may be beneficial in increasing vaccination rates of hesitant patients, as our data and other evidence suggest those who are vaccinated themselves are more effective in convincing others (Godoy et al., 2015). Additional efforts should focus on increasing vaccination rates among staff, with or without mandates, which can facilitate higher rates, but in some cases may impactstaff turnover (Dubov and Phung, 2015).

Vaccine champions, involving a broad array of staff roles and responsibilities, along with increases in vaccination rates would suggest an impact although our data was not able to establish that direct link. Given the myriads of responsibilities in a primary care practice, understanding activities of implementation and facilitation that are most impactful in various adult immunization settings, including pharmacies and at

Table 2
Pearson correlation coefficients of variables from survey of 44 clinicians from 37 minority serving clinics across the United States participating in Quality Improvement programs during the 2023–2024 flu season.

	Most people vaccinated	Staff vaccination rates	We check vaccination status on each visit	Doctor speaks to hesitant patients	Staff turnover is a concern	I have the tools I need	I would benefit from hesitancy training	Free flu vaccines needed	Family education needed	Staff vaccination required in our clinic
Most people vaccinated	1.00	−0.16	0.40*	0.40*	−0.24	−0.05	0.04	−0.13	0.34*	0.36*
Staff vaccination rates	−0.16	1.00	0.11	0.25	0.09	0.53*	−0.06	0.19	0.37*	−0.46*
We check vaccination status on each visit	0.40*	0.11	1.00	0.21	−0.19	−0.04	0.08	−0.18	0.35*	0.46*
Doctor speaks to hesitant patients	0.40*	0.25	0.21	1.00	−0.19	0.06	0.08	−0.18	0.46*	0.14
Staff turnover is a concern	−0.24	0.09	−0.19	−0.19	1.00	−0.08	−0.35*	−0.07	−0.28	−0.25
I have the tools I need	−0.05	0.53*	−0.04	0.06	−0.08	1.00	−0.19	0.16	0.13	−0.42*
I would benefit from hesitancy training	0.04	−0.06	0.08	0.08	−0.35*	−0.19	1.00	−0.01	0.17	0.25
Free flu vaccine needed	−0.13	0.19	−0.18	−0.18	−0.07	0.16	−0.01	1.00	0.11	−0.51*
Family education needed	0.34*	0.37*	0.35*	0.46*	−0.28	0.13	0.17	0.11	1.00	0.03
Staff vaccination required in our clinic	0.36*	−0.46*	0.46*	0.14	−0.25	−0.42*	0.25	−0.51*	0.03	1.00

* Statistically significant ($p < .05$).

community events could assist in the efficient use of resources to address key needs (Kennedy et al., 2024).

Our survey elucidated broad areas where practices may benefit from further support. Concern about uninsured patients was the major issue identified by the respondents, which may be exacerbated as state and local health departments and Medicaid programs are threatened with budget cuts. Family and caregiver education resources as well as training on handling the hesitant patient were the next key issues identified by more than 50% of the respondents. These needs also may grow in today's environment given reductions in educational resources available from the CDC and state governments coupled with increased vaccine misinformation. Also of note is that several of the variables were correlated with each other (and the dependent variable most patients get their flu shot even if hesitant), reflecting the multiple factors that influence responses and the need for a comprehensive approach to addressing vaccination concerns.

NMQF-SHC working with DRIVE clinics will address these concerns in the coming flu seasons, including developing and disseminating flu vaccine education for clinic staff as well as patients and families; a guide to vaccine champion programming; a guide for resources to obtain vaccines; and training on optimal responses to vaccine hesitancy, including handling of misinformation. We also will work to connect clinics with information relevant to policy to empower their advocacy.

Our survey had some limitations. Ongoing evaluation of the program with comparison to a baseline will be important to enssure effective and efficient use of resources in an evolving and increasingly challenging vaccination environment. The sample size was small and statistical significance could not be shown for all variables. As data for vaccination and survey responses were gathered separately, we were unable to analyze the direct impact of variables on documented practice vaccination data, only self-reported estimates which may introduce bias.

5. Conclusion

The Flu DRIVE program had a positive effect on increasing flu vaccine rates in Black and Hispanic populations. Additional support for QI programs and other immunization-related resources for clinical teams could further improve flu vaccination disparities, including standardizing the role of champion, prioritizing efforts to ensure high staff vaccination rates, education for the whole clinical team on addressing hesitancy/patient questions and concerns, and the provision of culturally humble patient and family resources.

Access issues are important to address as well, given that it was identified as a major barrier for uninsured and underinsured individuals. Clinicians are key leaders in promoting vaccine equity and therefore warrant education and practice-based QI support.

CRediT authorship contribution statement

Lois Privor-Dumm: Conceptualization, Formal analysis, Writing - original draft, review and editing. **Chinoso Ukachukwu:** Data curation, Investigation, Writing - review and editing. **Henry Nuss:** Formal analysis, Methodology, Writing - review and editing. **Laura Lee Hall:** Conceptualization, Funding acquisition, Writing - Review and editing.

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Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: LPD served on advisory boards for Moderna and GSK and worked for Johns Hopkins. University at the time of the study. She currently works part-time as an independent consultant. All other authors declare that they have no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pmedr.2026.103446.

References

CDC, 2026a. Influenza Vaccination Coverage and Intent for Vaccination, Adults 18 Years and Older, United States. FluVaxView. Published April 23, 2025. https://www.cdc.gov/fluvaxview/dashboard/adult-coverage.html.

CDC, 2026b. Strategies for Increasing Adult Vaccination Rates. Vaccine Information for Adults. Published 2024. https://www.cdc.gov/vaccines-adults/hcp/vaccination-guidelines/index.html.

Centers for Medicare and Medicaid Services, O. o. M. H, 2026. Annual Influenza Vaccination Disparities in Medicare. Published Online September 2024. https://www.cms.gov/files/document/data-snapshot-annual-influenza-vaccination.pdf.

Chen, J.Y., Fox, S.A., Cantrell, C.H., Stockdale, S.E., Kagawa-Singer, M., 2006. Health disparities and prevention: racial/ethnic barriers to flu vaccinations. J. Community Health 32 (1), 5–20. https://doi.org/10.1007/s10900-006-9031-7.

Dada, D., Djiometio, J.N., McFadden, S.M., et al., 2022. Strategies that promote equity in COVID-19 vaccine uptake for black communities: a review. J. Urban Health 99 (1). https://doi.org/10.1007/s11524-021-00594-3.

Dubov, A., Phung, C., 2015. Nudges or mandates? The ethics of mandatory flu vaccination. Vaccine 33 (22), 2530–2535. https://doi.org/10.1016/j.vaccine.2015.03.048.

Godoy, P., Castilla, J., Mayoral, J.M., et al., 2015. Influenza vaccination of primary healthcare physicians may be associated with vaccination in their patients: a vaccination coverage study. BMC Fam. Pract. 16 (1). https://doi.org/10.1186/s12875-015-0259-0.

Homepage, 2023. Sustainable Health Care. Sustainable Health Care. Published September 20. https://shc.nmqf.org/.

Kennedy, K.L., Gilkey, M.B., Queen, T.L., et al., 2024. Conceptualizing vaccine champions from an implementation science perspective: findings from a national survey of primary care health professionals. Prev. Med. 108104. https://doi.org/10.1016/j.ypmed.2024.108104. Published online August 1.

Mahmud, S.M., Xu, L., Hall, L.L., et al., 2021. Effect of race and ethnicity on influenza vaccine uptake among older US Medicare beneficiaries: a record-linkage cohort study. Lancet Healthy Longev. 2 (3), e143–e153. https://doi.org/10.1016/s2666-7568(20)30074-x.

Quinn, S.C., Jamison, A., Freimuth, V.S., An, J., Hancock, G.R., Musa, D., 2017a. Exploring racial influences on flu vaccine attitudes and behavior: results of a national survey of white and African American adults. Vaccine 35 (8), 1167–1174. https://doi.org/10.1016/j.vaccine.2016.12.046.

Quinn, S.C., Hilyard, K.M., Jamison, A., An, J., Hancock, G.R., Musa, D., Freimuth, V.S., 2017b. The influence of social norms on flu vaccination among African American and white adults. Health Educ. Res. 32 (6), 473–486. https://doi.org/10.1093/her/cyx070.

Roussos, S.T., Fawcett, S.B., 2000. A review of collaborative partnerships as a strategy for improving community health. Annu. Rev. Public Health 21 (1), 369–402. https://doi.org/10.1146/annurev.publhealth.21.1.369.