The role of managed care clinical pharmacists in improving COVID-19 vaccination rates for culturally specific Medicaid populations

Oyinda Osibanjo Pharm.D., MPH, Ph.D.1 | Kristen Benkstein Pharm.D.1 | James Slater Pharm.D.1 | Amit Shah M.D.2

1Pharmacy, CareOregon Inc, Portland, Oregon, USA
2Medical Management, CareOregon Inc, Portland, Oregon, USA

Abstract
Clinical pharmacists are an untapped resource in the fight against health disparities. As frontline workers, they are embedded in communities and interact on a regular basis with patients managing chronic conditions. In particular, managed care clinical pharmacists have access to population-wide data to identify gaps and mobilize resources to proactively address disparities across their community.

Amid the current pandemic, there have been vast inequities regarding access to the coronavirus disease 2019 (COVID-19) vaccine, particularly for low income and underserved culturally specific populations. The pandemic has provided a case study for how clinical pharmacists can collaborate across managed care and community-based settings to work toward achieving health equity.

Recent data indicates that culturally specific populations have received less COVID-19 vaccines than the White population. To address this inequity, a team of clinical pharmacists at CareOregon, a health plan in Oregon that serves Medicaid, collaborated with retail pharmacists from both chain and independent pharmacies to improve COVID-19 vaccination rates for this unique population.

This paper describes the process and strategies implemented to ensure vaccine access for culturally specific populations enrolled with CareOregon. Strategies to expand vaccine access to this population involved data sharing with community pharmacists, direct scheduling of culturally specific members for vaccine appointments and partnering with other stakeholders such as community-based organizations (CBOs) to provide COVID-19 vaccine confidence training. This paper also highlights the impact of the strategies to improve COVID-19 vaccination rates for this population. Lastly, challenges and barriers are addressed, as well as lessons learned from this process.

KEYWORDS
clinical pharmacist, COVID-19 vaccination, culturally specific populations, health equity, managed care
Disparities in health care have always existed. The coronavirus disease (COVID-19) pandemic has further shone a light on these disparities. Recent data on COVID-19 vaccination rates indicates that less than 40% of culturally specific populations have received COVID-19 vaccination.\(^1\) Black, Indigenous, and Hispanic populations have been impacted by COVID-19 to a greater extent, as shown by weekly case rates per 100 000 in the American Indian/Alaska Native and Hispanic populations with higher case rates than the White population.\(^2\)\(^-\)\(^3\) Nationally, the percentage of cases in the Hispanic population was 24.8% as of December 8, 2021, while Hispanics make up 18.45% of the US population.\(^4\) A similar pattern exists in Oregon, where the case rate per 100 000 in American Indian/Alaska Native (12 988), Black (10 679), and Pacific Islander (13 014) all exceed the White case rate per 100 000 of 5850.\(^5\)\(^-\)\(^6\) Many factors contribute to higher COVID-19 case rates and lower vaccination rates among low income and culturally specific populations. For instance, individuals at or below the poverty line are more likely to live in crowded residential housing which might limit their ability to implement physical distancing, in turn increasing the spread of the virus or causing adverse outcomes.\(^7\) In addition, low income and underserved populations are more likely to experience worse health outcomes from COVID-19 infection due to increased prevalence of co-morbid conditions, such as asthma, diabetes, cardiovascular disease, and other health related challenges.\(^8\)\(^-\)\(^11\) Moreover, discrimination and inequality of care are deep-rooted in the United States of America health care system due to systemic and institutionalized racism. This in turn leads to limited or no access to resources, including health care services (eg, testing and treatment) and support services, which negatively impacts of social determinants of health.\(^12\)\(^-\)\(^13\) Ultimately, this adds additional challenges to social factors, such as misinformation about COVID-19 and COVID-19 vaccines, which contributes to higher COVID-19 case rates and lower vaccination rates among low income and culturally specific populations.

Of note, low income and underserved populations are mainly served by the Medicaid program. Medicaid is a federal program run by each state and is a powerful tool for improving access to care and affordability across racial and ethnic groups.\(^14\) In Oregon, it is referred to the Oregon Health Plan (OHP), which is overseen by the Oregon Health Authority (OHA). OHA is the government agency that oversees Oregon’s health-related programs including physical health, behavioral health, and public health.

In 2012, Oregon transformed its Medicaid program by creating coordinated care organizations (CCOs) to help control the rising costs of health care. CCOs consist of local health entities that deliver health care for those who qualify for Medicaid in Oregon. These CCOs are charged with integrating physical, behavioral, and dental health care, and achieving the triple aim of improving health, controlling costs, and improving care for their population. CCOs focus on primary care and prevention and are accountable for quality health outcomes in key areas such as access to care, quality of health care service as well as patient satisfaction and engagement. As a result, CCO performance is measured based on these key health outcomes.\(^15\) For instance, CCOs are responsible for ensuring that providers meet quality measures established by OHA that are aligned and consistent across CCOs, such as childhood vaccination rates, diabetes control, and language access. In turn, CCOs can earn bonus funds if they have shown improvement in the quality measures. They have one global budget that is held to a fixed rate of growth. CCOs have the flexibility to support new models of care to reduce health disparities.\(^15\)

CareOregon is a health plan that supports three CCOs in Oregon—serving more than 500 000 Oregonians—and employs clinical pharmacists that work directly with the CCO. The team of clinical pharmacists acts as a liaison with the provider network by providing pharmacy benefit knowledge and helping to implement clinical interventions to support quality initiatives. The clinical pharmacists have developed several interventions to improve health outcomes for CareOregon members. These include implementing point-of-care hemoglobin A1c testing in clinic pharmacies to increase access to testing which may help improve diabetes management for members. In addition, treatment pathways were created based on national guidelines and CareOregon’s formulary to provide a streamlined approach to medication management for members with chronic conditions such as diabetes, asthma, and COPD. Education and training for healthcare providers was conducted regarding the importance of increasing naloxone access to members at risk of overdose. The team of clinical pharmacists are also heavily invested in the elimination of Hepatitis C and have provided quarterly gap lists of untreated members with Hepatitis C infection to clinics for outreach and treatment. Most importantly, they disseminate best practices and analyze medication trends to identify opportunities to improve costs and reduce inappropriate utilization.

Clinical pharmacists, particularly within the managed care setting, are uniquely poised to help address COVID-19 vaccination inequity and gaps identified in the culturally specific Medicaid population. Because of their unique position as managed care pharmacists, they have a comprehensive view of health care utilization both from the provider and member perspective. For example, they are able to access both pharmacy and medical claims, so they can understand the utilization of members and prescribing patterns of providers. As a result, they can develop strategies to address the unique needs of members and support network providers. This article will describe the managed care clinical pharmacists’ strategies to improve COVID-19 vaccination rates in a culturally specific Medicaid population through collaboration with other stakeholders, including retail pharmacists (ie, independent and chain) and community-based organizations (CBOs).
vaccination status. Data analysis was an iterative process that involved several stages. The managed care clinical pharmacist team conducted an initial review of the ALERT-IIS data to identify culturally specific members. Next, member-level data was stratified based on the COVID-19 vaccination status (ie, members that were vaccinated or unvaccinated). Lastly, analysis was conducted to identify retail pharmacies most utilized by culturally specific members with unvaccinated status. Data were reviewed for consistency and accuracy. Consequently, this process was team-based and employed reliability checks.

2.1 Identification of unvaccinated culturally specific members by pharmacy utilization

CCO member eligibility data were stratified by race/ethnicity and language. Of note, most of Oregon’s population and those who qualify for Medicaid with CareOregon identify as White, however the strategies focused on the minority population—Hispanic, Black or African American, Asian or Native Hawaiian, and American Indian or Alaska Native members. As such, it was important to include language to further delineate race/ethnicity data to help identify specific groups that were not identified through race/ethnicity alone. For example, a member’s race may be listed as White but identified language is Russian. Disaggregating data by language helped capture these unique categories that might have been missed if data were analyzed solely based on race/ethnicity. Of note, the most spoken languages among CareOregon members other than English include Spanish, Russian, Vietnamese, Chinese, Arabic, and Somali.

To identify pharmacies (ie, retail and outpatient) most utilized by culturally specific members, pharmacies were stratified by total paid claims, total distinct members, and race/ethnicity and language to determine the most utilized pharmacy in the last 12 months and the most utilized pharmacy in the last 3 months for each race/ethnicity and language. Data from 2019 was excluded for several reasons—it was pre-pandemic, members who were enrolled in 2019 might not have remained enrolled in subsequent years, and patterns of pharmacy utilization may have changed. To provide an accurate view of pharmacy utilization of members during the COVID-19 pandemic, only pharmacy utilization data from 2020 and 2021 was analyzed which included continuous enrollment from 2020 to 2021. As a result, pharmacies most utilized by culturally specific members during the pandemic were identified (Figure 1).

Figure 1 shows the 10 most utilized retail pharmacies by the CareOregon culturally specific population stratified by race/ethnicity for each pharmacy. The ethnicity group White was not included in this analysis. These pharmacies were mainly retail pharmacies within the members’ community. Finally, COVID-19 vaccination data for the membership was matched with pharmacy level data to identify unvaccinated members and their most utilized retail pharmacy.

[Diagram: Overview of Pharmacies Utilized by Culturally Specific Populations by Race/Ethnicity]

FIGURE 1 Ten most utilized pharmacies by race/ethnicity for culturally specific populations
STRATEGIES TO IMPROVE COVID-19 VACCINATION RATES

The team of clinical pharmacists, led by the Vice President of Pharmacy at CareOregon, began meeting on a regular cadence in April 2021 to review COVID-19 vaccination rates to identify gaps and opportunities. The team lead was in close communication with representatives from OHA, county public health, and CBOs so they received regular updates on vaccination progress and potential barriers. As a result, health plan operations strategies and communication efforts were developed with the retail pharmacy network to improve COVID-19 vaccination for culturally specific populations. Using the pharmacy data analysis described in methods section above, the team reached out to the retail pharmacists at the most utilized pharmacies by culturally specific members to identify areas of opportunity to improve COVID-19 vaccination rates. Next, key strategies were designed, developed, and implemented to address disproportionate access of COVID-19 vaccines to low income culturally specific members. These strategies will be described below.

3.1 | Strategy 1: Data sharing and advocacy

As a health plan with access to both ALERT-IIS and pharmacy claims data, the clinical pharmacist team was able to share data on culturally specific members who were unvaccinated with retail pharmacists (ie, both independent and chain). Of importance, only data was provided to pharmacists that had existing relationships, that is, pharmacists who had filled at least one prescription and therefore already providing services to these members. The goal was to leverage the existing relationship between pharmacists and culturally specific members to facilitate outreach to improve COVID-19 vaccination rates. Many of these pharmacists used the lists to conduct targeted outreach efforts to improve access for these culturally specific members.

While the COVID-19 pandemic caused a lot of disruption in health care services, it equally heightened the need to improve communication with network partners and OHA to ensure that the coordinated efforts were efficient and effective. One of the primary roles was serving as a liaison between the network partners and OHA. By strengthening communication with OHA through regular meetings, there was opportunity to advocate for COVID-19 vaccine supply for some network partners. For instance, the team was able to directly contact the OHA pharmacy coordinating vaccine distribution for the state on behalf of retail pharmacies to facilitate access to vaccine supply and distribution to these retail pharmacies. As such, the team was also able to support pharmacists in smaller independent settings that did not initially receive supply of COVID-19 vaccine by advocating for vaccine supply with OHA.

3.2 | Strategy 2: COVID-19 vaccination deserts

As a result of continuous monitoring of COVID-19 vaccination rates for CareOregon culturally specific members, specific zip codes were found to have disproportionately lower vaccination rates compared to other areas—described as COVID-19 vaccination deserts. These are areas where access to vaccinations was poor due to limited vaccination clinics within the geographic area. To address this gap, retail pharmacies in these zip codes who were providing COVID-19 vaccination were identified and lists of unvaccinated members who utilized their pharmacy were shared with them to conduct targeted outreach. In addition, interested pharmacists’ contact information was provided to behavioral health clinics, care homes, and CBOs who needed pharmacists’ support to conduct vaccine clinics.

3.3 | Strategy 3: Texting outreach

The clinical pharmacy team was involved in the implementation of a targeted texting campaign to culturally specific members. The texting outreach was conducted in both Spanish and English. Input on specific members with comorbid conditions who were at high-risk of hospitalization or death due to COVID-19 was provided. The messaging included how to access COVID-19 vaccination sites and contact details for support. (Table 1).

3.4 | Strategy 4: COVID-19 rapid response team

The clinical pharmacists worked in collaboration with a team of nurses and care management staff to develop a Rapid Response Team (RRT) to provide telephone outreach to members who remained unvaccinated. Of note, care coordinators serve as the communication link between members and clinics to promote timely access to needed care. The team developed a script to ensure clear and accurate information, including the types of vaccines available and specific pharmacy locations that were providing COVID-19 vaccination. Outreach focused on specific high-risk groups, such as those with high-risk conditions, were immunocompromised, or within a culturally specific group. The goal was to help culturally specific members and other high-risk groups schedule COVID-19 vaccine appointments. This was particularly important with non-English-speaking members who faced

| TABLE 1 Sample of text message for COVID-19 vaccination outreach |
|---------------------------------------------------------------|
| CareOregon text message | English: |
| • Hi [Name], You're eligible for the COVID-19 vaccine and CareOregon wants to help you get an appointment. Contact us at 503-488-2818 for help scheduling an appointment. To stop receiving messages, reply with “STOP.” | • Hola [Nombre], Usted es candidato a recibir la vacuna contra el COVID-19 y CareOregon quiere ayudarle a conseguir una cita. Comuníquese con nosotros al 503-488-2818 para obtener ayuda para programar una cita. Para dejar de recibir mensajes, responda con “STOP.” |
| | Spanish: |
| • Hola [Nombre], Usted es candidato a recibir la vacuna contra el COVID-19 y CareOregon quiere ayudarle a conseguir una cita. Comuníquese con nosotros al 503-488-2818 para obtener ayuda para programar una cita. Para dejar de recibir mensajes, responda con “STOP.” |
language barriers. With the help of interpreter services, outreach to these groups who may have had difficulty navigating scheduling websites that are typically only in English was implemented. The RRT outreached to a total of 10,123 members, of which 528 were scheduled for vaccine appointments. Voicemail messages were left for 4,397 (43%) and 2,563 (25%) were unable to reach members. Other outcomes included 1,366 declined, 341 were already fully vaccinated, 358 had only one dose, and 634 had already self-scheduled for their COVID-19 vaccination. (Table 2).

**TABLE 2** RRT scripting

| Contact member |
|----------------|
| a. Let member know that you are calling from CareOregon on behalf of their pharmacy |
| b. Inform member that they are eligible to receive the COVID-19 vaccine |
| c. Ask member if they would like vaccine: |
| i. No: document in outreach list—let them know if they can reach out to their Primary Care Provider directly for more information or if they change their mind |
| ii. Yes: Offer options: |
| Schedule at pharmacy. |
| d. If the member is not available and a voicemail is left, please provide this message: |
| i. Hi this is [name of employee] calling from CareOregon, and we are working in partnership with your pharmacy (mention name of pharmacy). We are calling to sign you up for a waitlist to receive the COVID-19 vaccine. If you have any questions or would like to schedule a COVID-19 vaccine appointment, you can call at 503-488-2818. Stay safe and have a nice day. |

### 3.5 | Strategy 5: COVID-19 vaccine education

CareOregon’s clinical pharmacy team partnered with CBOs to provide information about COVID-19 vaccines. Education was provided to an African organization, a Hispanic organization, and a faith-based organization via virtual web conferences. This effort helped to build connections with individuals who serve members through other social service programs. For instance, education was provided to 35 Latina women who work in direct service and leadership positions at an organization that serves the Latina community and their families. The goal was to address vaccine hesitancy among culturally specific populations and increase confidence in vaccines so in turn they could advocate with their community members about the importance of getting vaccinated. Culturally specific questions about COVID-19 vaccines including myths, misconceptions, and misinformation were addressed. Moreover, CareOregon’s culturally specific clinical pharmacist was able to develop relationships with community members to serve as a resource when needed. Presentation slides were shared as a resource.

### 4 | IMPACT OF STRATEGIES ON COVID-19 VACCINATION RATES FOR CULTURALLY SPECIFIC POPULATIONS

The coordinated network strategies developed and implemented by CareOregon’s team of clinical pharmacists were associated with improved COVID-19 vaccination rates for culturally specific populations (Figure 2).
Figure 2 shows six retail pharmacy partners and the cumulative vaccinations given at those pharmacies from January 2021 through January 2022. The graph on the right shows the percentage of those vaccinated by race/ethnicity for each pharmacy. There was approximately a 50% increase in the COVID-19 vaccination rates for the culturally specific members who received a vaccine at these pharmacies. The sharp increase was seen mostly in the second through fourth quarters of 2021 (Figure 3).

Figure 3 shows the total vaccinations per month at the six partner pharmacies broken down by race/ethnicity for the culturally specific population. Outreach to retail pharmacists began in April and the figure shows a sharp increase in vaccinations in May and June. The increases in vaccinations continued throughout the third and fourth quarters as compared to the first quarter. Table 1 shows the demographic data for the culturally specific members who were vaccinated at outreached pharmacies. Overall, 56% of vaccinated members were female in all culturally specific race groups. Forty-five percent of those vaccinated were Hispanic or Latinx, followed by 26% Asian, Native Hawaiian, or Pacific Islander (Table 3).

While other factors such as increased accessibility of COVID-19 vaccines and increased mortality and morbidity due to the COVID-19 pandemic might have contributed to the rapid increase in COVID-19 vaccination rates, the clinical pharmacy team’s focused strategies played a key role improving overall vaccination rates among culturally specific populations. Specific attention was given to ensuring vaccination within the culturally specific Medicaid population with retail pharmacists. The continual monitoring of vaccination progress including vaccination rates by zip code and by race/ethnicity and language and the development of targeted outreach strategies to both members and retail pharmacists serving those communities factored into the success of improving vaccination rates in this population.

5 | EXISTING GAPS AND CHALLENGES

5.1 | Data lag

While the ALERT-IIS data was particularly useful in providing COVID-19 vaccination status for members, there was a data lag of about 1 week. This meant the list of unvaccinated members shared with community pharmacists might be outdated because the data was not in real time. Members might have had their COVID-19 vaccination, but this information would not have been reflected in the
5.2 | Retail pharmacy staffing capacity

Retail pharmacists in both the independent and chain pharmacy setting were stretched thin because of competing demands of providing COVID-19 vaccination, flu vaccination, filling prescriptions, and staffing shortages. The limited staffing capacity in-turn impacted support for members. For example, while lists of unvaccinated culturally specific members were shared with retail pharmacists, they did not always have the staff capacity to outreach to these members. As a result, CareOregon’s clinical pharmacy team utilized the RRT to outreach on their behalf to ensure culturally specific members got scheduled for their COVID-19 vaccination.

5.3 | Communication gaps

Efforts to ensure coordinated communication between members and providers to address inequity and access to COVID-19 vaccination fell short at times. The team experienced several communication challenges, which resulted in a loss of time and resources. Because there were multiple players working on this effort (OHA, county public health agencies, clinics, mass vaccination sites, hospitals, pharmacies, CBOs), it took time and effort to determine who was doing what. For instance, miscommunication occurred when working to provide COVID-19 vaccination for some members in an adult care home. One of the retail pharmacists had been assigned to provide COVID-19 vaccination at the home only to find out upon arrival that the county public health agency had already provided the vaccinations.

6 | LESSONS LEARNED

As the clinical pharmacy team faced several challenges in the process of implementing various strategies to improve COVID-19 vaccination rates for culturally specific populations, but these challenges served as learning opportunities to better serve the culturally specific Medicaid population. These lessons may be applicable to other clinical pharmacy settings to improve health equity for these unique populations.

6.1 | Understanding pharmacy setting/capacity

As the clinical pharmacist team began communicating with pharmacists at both independent and chain pharmacies, this provided insight on how to better coordinate with retail pharmacies. Working with pharmacists in chain pharmacies required more time and coordination with corporate leadership. On the other hand, independent pharmacists were more flexible with implementing new strategies and were able to provide support within a shorter turnaround time. As such, the team was able to tap into resources available through these independent pharmacists to support culturally specific members. As continued efforts are implemented to combat this pandemic, empowering independent pharmacists will be an important strategy to bridge the gap of health inequity.

6.2 | Communication alignment

In the managed care clinical pharmacist role as liaison between members and providers to reduce health inequities for unique populations, another very important lesson learned was communication alignment. The clinical pharmacy team identified communication...
gaps with stakeholders. This in-turn led to duplicated efforts and wasted resources. As a result, regular communication with stakeholders was essential to successfully implement the strategies. This required strategic communication planning. First, the clinical pharmacists were assigned as representatives at key stakeholder meetings with organizations such as OHA, CBOs, and network providers. Then these representatives would disseminate this information to the rest of the clinical pharmacy team to identify opportunities to support culturally specific members and judiciously channel resources. This helped to facilitate effective partnership with stakeholders. As continued efforts are being implemented to combat this pandemic, communication alignment with stakeholders both at the member and provider level will be essential to avoid duplicated efforts and wisely invest limited resources.

6.3 || Collaboration with other stakeholders

While managed care clinical pharmacists are not involved in direct patient care, they can leverage resources available to the health plan to support provider networks to improve COVID-19 vaccination rates for culturally specific populations. One of the secrets to success was the team’s intentional effort to collaborate with other stakeholders by sharing resources (eg, data) and involving stakeholders early in the process of developing and implementing strategies. In addition, collaboration with stakeholders, such as community pharmacists and CBOs, provided insight into the unique needs and challenges of members and helped to tailor the needed resources to support the Medicaid culturally specific population.

7 || CONCLUSION

Clinical pharmacists play a unique role in the health care system and are uniquely poised to address health disparities. As direct service providers, they are often the most accessible health care provider in communities. They work in accessible neighborhood settings, welcome walk-in conversations about health concerns and medications, and are in frequent contact with individuals managing chronic conditions. Likewise, pharmacists working in managed care settings have unparalleled access to population-wide data that can inform regional efforts to address disparities. This is especially true among pharmacists serving low-income Medicaid populations.

The strategies utilized by the managed care clinical pharmacists were associated with an increase in COVID-19 vaccination rates in a culturally specific Medicaid population. As public health, health care providers, and communities continue to strive to ensure health equity during the COVID-19 pandemic, clinical pharmacists play a vital role. However, efforts need not be siloed. Partnership across areas of practice and with other healthcare providers and CBOs will be important in improving COVID-19 vaccination rates for this population. Data sharing and outreach efforts to culturally specific populations in collaboration with other stakeholders will help address health disparities exacerbated due to COVID-19 pandemic. Moreover, continued education to culturally specific populations to improve confidence and reduce hesitancy associated with COVID-19 vaccines, particularly as the need for booster doses increases, will remain vital.

This case study shows the impact that partnership between pharmacists in community-based and managed care settings can have on individual and community health. Lessons learned here can be applied to not just COVID-19 vaccination efforts, but all future public health efforts targeting health improvements among hard-to-reach populations—especially those experiencing chronic conditions or when a clinical intervention is needed.

FUNDING INFORMATION

There was no external funding for this research.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ORCID

Oyinda Osibanjo https://orcid.org/0000-0002-1624-3977

REFERENCES

1. Ndugga N, Hill L, Artiga S, Haldar S. Latest data on COVID-19 vaccinations by race/ethnicity. Kaiser Family Foundation [Internet]. 2021 [cited 2021 Nov 17]. Available from: https://www.kff.org/ coronavirus-covid-19-issue-brief/latest-data-on-covid-19-vaccinations-by-race-ethnicity/

2. Chappell MJ. COVID, food, and the Parable of the Shmoo. Agric Human Values. 2020;37(3):593–594. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7215135/.

3. Evans MK. Covid’s color line—Infectious disease, inequity, and racial justice. N Engl J Med. 2020;383(5):408–410. https://doi.org/10.1056/NEJMp2019445.

4. Centers for Disease Control and Prevention. COVID data tracker. covid.cdc.gov [Internet]. 2021 [cited 2021 Dec 7]. Available from: https://covid.cdc.gov/covid-data-tracker/#/demographics

5. Oregon Health Authority. Oregon COVID-19 case demographics and disease severity statewide. oregon.gov [Internet]. 2021 [cited 2021 Dec 7]. Available from: https://public.tableau.com/app/profile/oregon.health.authority.covid.19/viz/OregonCOVID19CaseDemographicsandDiseaseSeverityStatewide/DemographicDataHosp?publish=yes

6. Taylor CA, Whitaker M, Anglin O, et al. COVID-19-associated hospitalizations among adults during SARS-CoV-2 delta and omicron variant predominance, by race/ethnicity and vaccination status—COVID-NET, 14 states, July 2021–January 2022. MMWR Morb Mortal Wkly Rep. 2022;71(12):466–473. Available from: https://www.cdc.gov/mmwr/volumes/71/wr/mm7112e2.htm#contribAff

7. Maroko AR, Nash D, Pavilonis BT. COVID-19 and inequity: A comparative spatial analysis of New York City and Chicago Hot Spots. J Urban Health. 2020;97(4):461–470. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7371785/.

8. Centers for Disease Control and Prevention Covid-Response Team. Preliminary estimates of the prevalence of selected underlying health conditions among patients with coronavirus disease. MMWR Morb Mortal Wkly Rep. 2019;69(13):382–386. Available from: https://www.cdc.gov/mmwr/volumes/69/wr/mm6913e2.htm.
9. Liu PP, Blet A, Smyth D, Li H. The science underlying COVID-19: Implications for the cardiovascular system. Circulation. 2020;142(1):68–78. https://doi.org/10.1161/CIRCULATIONAHA.120.047549.

10. Hu Y, Deng H, Huang L, Xia L, Zhou X. Analysis of characteristics in death patients with COVID-19 pneumonia without underlying diseases. Acad Radiol. 2020;27(5):752. https://doi.org/10.1016/j.acra.2020.03.023.

11. Emami A, Javanmardi F, Pirbonyeh N, Akbari A. Prevalence of underlying diseases in hospitalized patients with COVID-19: A systematic review and meta-analysis. Arch Acad Emerg Med. 2020;8(1):e35.

12. Paradies Y, Truong M, Priest N. A systematic review of the extent and measurement of healthcare provider racism. J Gen Intern Med. 2014;29(2):364–387. https://doi.org/10.1007/s11606-013-2583-1.

13. Shavers VL, Shavers BS. Racism and health inequity among Americans. J Natl Med Assoc. 2006;98(3):386–396.

14. Winkelman TNA, Segel JE, Davis MM. Medicaid enrollment among previously uninsured Americans and associated outcomes by race/ethnicity–United States, 2008–2014. Health Serv Res. 2019;54(suppl 1):297–306. https://doi.org/10.1111/1475-6773.13085.

15. Oregon Health Authority. Coordinated Care Organizations (CCO); oregon.gov [Internet]. 2021 [cited 2021 Dec 7]. Available from: https://www.oregon.gov/oha/HSD/OHP/Pages/Coordinated-Care-Organizations.aspx

16. Macqueen KM, McLellan E, Kay K, Milstein B. Codebook development for team-based qualitative analysis. Field Methods. 1998;10(2):31–36. https://doi.org/10.1177/1525822X980100020301.

How to cite this article: Osibanjo O, Benkstein K, Slater J, Shah A. The role of managed care clinical pharmacists in improving COVID-19 vaccination rates for culturally specific Medicaid populations. J Am Coll Clin Pharm. 2022;5(8):812–820. doi:10.1002/jac5.1662