

# Strategies for Disseminating and Implementing COVID-19 Vaccines in Rural Areas

Beth Prusaczyk<sup>1</sup>

Department of Medicine, Washington University School of Medicine in St. Louis, St. Louis, Missouri, USA

The United States has well-documented rural–urban health disparities, and it is imperative that these are not exacerbated by an inefficient rollout of coronavirus disease 2019 (COVID-19) vaccines to rural areas. In addition to the preexisting barriers to delivering and receiving health care in rural areas, such as high patient:provider ratios and long geographic distances between patients and providers, rural residents are significantly more likely to say they have no intention of receiving a COVID-19 vaccine, compared with urban residents. To overcome these barriers and ensure that rural residents receive the vaccine, officials and communities should look to previous research on how to communicate vaccine information and implement successful vaccination programs in rural areas for guidance and concrete strategies to use in their local efforts.

## Graphical Abstract

### Strategies for Disseminating and Implementing COVID-19 Vaccines in Rural Areas



Prusaczyk, *Open Forum Infectious Diseases*, 2021  
 @bethp\_DI

Copyright © 2021 Infectious Disease Society of America  
 All rights reserved. Published by Oxford University Press

Open Forum Infectious Diseases


**IDSA**  
 Infectious Diseases Society of America


**hivma**  
 hiv medicine association

**Keywords.** COVID-19; coronavirus; rural; vaccine; vaccination.

Received 20 January 2021; editorial decision 22 March 2021; accepted 23 March 2021.

Correspondence: Beth Prusaczyk, PhD, Washington University School of Medicine in St. Louis, 600 S. Taylor Avenue, Suite 102, Campus Box 8005, St. Louis, MO 63110 ([beth.prusaczyk@wustl.edu](mailto:beth.prusaczyk@wustl.edu)).

Open Forum Infectious Diseases®2021

© The Author(s) 2021. Published by Oxford University Press on behalf of Infectious Diseases Society of America. This is

an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs licence (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial reproduction and distribution of the work, in any medium, provided the original work is not altered or transformed in any way, and that the work is properly cited. For commercial re-use, please contact journals.permissions@oup.com  
 DOI: 10.1093/ofid/ofab152

In early 2020, the majority of coronavirus disease 2019 (COVID-19) cases were in urban parts of the United States, and the conversation was focused on how to disseminate and implement prevention strategies in rural areas [1].

Unfortunately, there are now cases of COVID-19 in nearly every rural community in the United States, and some have seen cases increase at a faster rate than anywhere else in the country [2]. If there was a hope that rural America could be spared the brunt of the pandemic, that hope is long gone.

Fortunately, with the approval of effective vaccines, the conversation is now shifting to disseminating vaccine information and implementing vaccinations [3], particularly in rural areas. A recent study found that rural residents were significantly more likely to say they had no intention of receiving the vaccine, compared with urban residents [4]. Ensuring that rural residents receive the vaccine means taking into consideration the challenges and cultural context in rural areas. Looking to previous research on how to communicate vaccine information and implement successful vaccination programs in rural areas can offer guidance and concrete strategies that officials and communities can use in their local efforts.

### **IMPORTANCE OF COMMUNITY LEADERS AND ORGANIZATIONS**

Community leaders and organizations influence the community on many topics, including health. In a study of the human papillomavirus (HPV) vaccine in rural areas, religiosity was an important factor in whether parents chose to vaccinate their children [5]. Parents reported that their vaccine-related decisions and beliefs were influenced by other church members and saw the church as an active disseminator of health information. In fact, most parents reported a desire for their pastors to present information specifically on the HPV vaccine. Parents who did not report this desire indicated that this was driven by concern that the pastor lacked the training to discuss the topic and that it was better left to someone educated on the vaccine. If religious leaders were informed and educated about the COVID-19 vaccines, there might be wide

acceptability in them discussing the topic with their congregations.

In another study, researchers implemented a comprehensive, community-wide campaign to increase HPV vaccine rates among children [6]. Their campaign included presentations about the vaccine and HPV at school- and community-based events. They also distributed educational materials to health clinics in the community and, importantly, used Facebook, local radio stations, and newspapers to provide a description of their program and advertise events. Using this approach, they were able to significantly increase vaccination rates among children in the community.

### **ROLE OF SOCIAL MEDIA AND INTERNET**

Social media and the Internet should be leveraged in the dissemination of information about the COVID-19 vaccines. In a study of women in rural Kentucky, anonymous sources of health information were preferred to interpersonal sources, such as a family member, friend, or health care professional [7]. Concern about stigma was associated with preferring an anonymous source, and the internet was the most preferred anonymous source. Given that rural Americans report having less intention to get a COVID-19 vaccine [4] and given the influence of community leaders and friends/family on health intentions, having accurate but anonymous sources of information about COVID-19 vaccines, especially on the internet and social media, will be critically important to ensuring that all those who want to learn about the vaccines can do so.

In a separate study, researchers looking at the uptake of the influenza vaccine in one rural town found that both residents who received the vaccine and those who did not believed the vaccine was affordable, convenient, and quick to receive [8]. The main difference between those who received the vaccine and those who did not was whether they believed the vaccine made them sick and whether they believed getting the vaccine was

worthwhile (the former being associated with not receiving the vaccine and the latter with receiving it). However, half of those who believed the vaccine was worthwhile still did not get it. This suggests that there are additional barriers to receiving the vaccine that are not related to affordability, access, or worth, and perhaps facilitating the dissemination of accurate information via trusted channels, such as community leaders and social networks, could overcome these barriers.

### **ALTERNATIVE DISTRIBUTION SITES AND MODELS**

Given the challenges of providing and receiving health care in rural areas [9, 10], vaccine rollout will certainly require specialized strategies. In a study of the differences in location of influenza vaccinations, those in rural areas were more dependent on traditional, clinical locations, such as a physician's office, hospital, or health department, than those in urban areas [11]. The authors believed this was due to a lack of alternative distribution sites such as retail clinics or pharmacies in rural areas. The lack of alternative distribution sites in rural areas, as well as the overall lack of clinical sites, likely contributes to the overall lower vaccination rates in rural areas [12, 13]. Therefore, increasing both clinical and alternative distribution sites may significantly increase access to COVID-19 vaccines in rural areas.

Pharmacies are one such alternative distribution site for which there is considerable evidence of effectiveness. In 1 study of vaccine distribution in Texas, if pharmacists were considered vaccine providers, 18% of previously inadequately covered rural census tracts (defined by provider-to-resident ratio) would become adequately covered [14]. In addition to pharmacists being more geographically dispersed in rural areas, rural residents frequently report positive relationships with their pharmacists [15], which could facilitate residents seeking out a COVID-19 vaccine (or information on it) from them. Furthermore, rural

pharmacies are already aware of the important role they could play in vaccine distribution [16].

Despite the promise of rural pharmacies as vaccine distribution sites, the number of independent pharmacies in rural areas has been steadily declining [17], and therefore additional alternative vaccine distribution sites must be explored. Often taking the form of vans, mobile health units or clinics (MHUCs) can successfully reach rural residents who do not have adequate access to other types of health care [18]. MHUCs in rural Appalachia were found to mitigate many of the access barriers presented to rural residents [19]. The researchers also found that the private, trusted environment MHUCs offered, coupled with the fact that MHUCs often serve patients who do not receive routine health care, led to the discovery or disclosure of multiple problems with patients beyond their initial complaint [19]. For example, an MHUC may be specifically targeting breast cancer screening but during that encounter additional concerns such as hypertension or intimate partner violence may be discovered. This would also very likely be the case in the event that MHUCs are used to distribute COVID-19 vaccines, and as such, MHUCs should have protocols in place to address these additional concerns. This may mean having additional providers on hand who are trained to triage these concerns or having a robust

referral database to direct patients to for additional follow-up.

## CONCLUSIONS

Nearly a year into this pandemic, there is finally a light at the end of the tunnel. We must now focus our efforts on ensuring that every rural resident who wants a COVID-19 vaccine receives one and, importantly, that rural residents are not the last to receive them. Despite the challenges to providing health care in rural areas, there are also, fortunately, effective strategies to overcome these challenges, specifically as they relate to vaccinations. Learning from and utilizing these existing evidence-based strategies can ensure that the COVID-19 vaccines are rolled out efficiently and equitably in rural areas.

## Acknowledgments

**Financial support.** This work was supported by the Washington University Institute of Clinical and Translational Sciences grant UL1TR002345 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH).

**Potential conflicts of interest.** All authors: no reported conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

**Patient consent.** This study was not human subjects research and does not include factors necessitating patient consent.

## References

1. Prusaczyk B. Strategies for disseminating and implementing COVID-19 public health prevention practices in rural areas. *J Rural Health* **2021**; 37:142–4.
2. COVID-19 stats: COVID-19 incidence, by urban-rural classification—United States, January 22–October 31, 2020. *MMWR Morb Mortal Wkly Rep* **2020**; 69:1753.

3. Mbaeyi S, Cohn A, Messonnier N. A call to action: strengthening vaccine confidence in the United States. *Pediatrics* **2020**; 145:e20200390.
4. Fisher KA, Bloomstone SJ, Walder J, et al. Attitudes toward a potential SARS-CoV-2 vaccine: a survey of U.S. adults. *Ann Intern Med* **2020**; 173:964–73.
5. Thomas T, Blumling A, Delaney A. The influence of religiosity and spirituality on rural parents' health decision making and human papillomavirus vaccine choices. *ANS Adv Nurs Sci* **2015**; 38:E1–12.
6. Kaul S, Do TQN, Hsu E, et al. School-based human papillomavirus vaccination program for increasing vaccine uptake in an underserved area in Texas. *Papillomavirus Res* **2019**; 8:100189.
7. Simmons LA, Wu Q, Yang N, et al. Sources of health information among rural women in Western Kentucky. *Public Health Nurs* **2015**; 32:3–14.
8. Bednarz J Jr, Mok D, Zieren J, et al. Personal opinions seem to be the major contributor to the influenza vaccination disparity in Sneedville, TN. *Cureus* **2020**; 12:e7015.
9. Bolin JN, Bellamy GR, Ferdinand AO, et al. Rural healthy people 2020: new decade, same challenges. *J Rural Heal* **2015**; 31:326–33.
10. Moscovice I, Rosenblatt R. Quality-of-care challenges for rural health. *J Rural Health* **2000**; 16:168–76.
11. Bennett KJ, Pumkam C, Probst JC. Rural-urban differences in the location of influenza vaccine administration. *Vaccine* **2011**; 29:5970–7.
12. Swiecki-Sikora AL, Henry KA, Kepka D. HPV vaccination coverage among US teens across the rural-urban continuum. *J Rural Health* **2019**; 35:506–17.
13. Bennett KJ, Bellinger JD, Probst JC. Receipt of influenza and pneumonia vaccinations: the dual disparity of rural minorities. *J Am Geriatr Soc* **2010**; 58:1896–902.
14. Shah PD, Trogon JG, Golden SD, et al. Impact of pharmacists on access to vaccine providers: a geospatial analysis. *Milbank Q* **2018**; 96:568–92.
15. McKeirnan KC, Garrelts MacLean L. Pharmacist, physician, and patient opinions of pharmacist-treated minor ailments and conditions. *J Am Pharm Assoc (2003)* **2018**; 58:599–607.
16. Adunlin G, Murphy PZ, Manis M. COVID-19: how can rural community pharmacies respond to the outbreak? *J Rural Heal* **2021**; 37:153–5.
17. Salako A, Ullrich F, Mueller KJ. Update: independently owned pharmacy closures in Rural America, 2003–2018. *Rural Policy Brief* **2018**; 2018:1–2.
18. Yu SWY, Hill C, Ricks ML, et al. The scope and impact of mobile health clinics in the United States: a literature review. *Int J Equity Health* **2017**; 16:178.
19. Carmack HJ. “What happens on the van, stays on the van”: the (re)structuring of privacy and disclosure scripts on an Appalachian mobile health clinic. *Qual Health Res* **2010**; 20:1393–405.