COVID-19 Testing in Underserved Communities
Rapid Evidence Review

Background
Managing the impact of COVID-19 in underserved communities has been part of a rapidly developing area of research. The National Institutes of Health has invested substantially in these efforts. One example is the Rapid Acceleration of Diagnostics for Underserved Populations (RADx-UP) Initiative. The goal of the RADx-UP Initiative is to reduce disparities for underserved populations who are disproportionately affected by, have the highest infection rates of, and/or are most at risk for poor outcomes from the COVID-19 pandemic.¹ The mission of our RADx-UP project, CO-CREATE (Community-driven Optimization of COVID-19 testing to Reach and Engage underserved Areas for Testing Equity), is to use community-driven strategies to facilitate equitable access to COVID-19 testing in the San Ysidro, California, community. As part of CO-CREATE, we undertook a rapid evidence review to identify barriers to accessing COVID-19 testing and strategies to address these testing barriers for underserved communities.

Key Questions Guiding the Rapid Evidence Review
1) What are the key barriers preventing underserved communities from accessing COVID-19 testing?
2) What are effective strategies for increasing COVID-19 testing and follow up care for underserved communities?

Methods
We performed a rapid evidence review to summarize relevant literature on COVID-19 testing barriers and strategies. The evidence review consisted of four steps: 1) identifying proper search criteria and metrics; 2) creating eligibility criteria; 3) full text abstractions; 4) coding and synthesis of information gathered. These steps are summarized in Box 1.

¹ https://www.nih.gov/research-training/medical-research-initiatives/radx/radx-programs#radx-up
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Box 1: Rapid Evidence Review of COVID-19 Testing Barriers and Strategies in Underserved Communities

STEP 1: Identification of databases, timeframes, publication formats, and search algorithms
- **Search databases**: Preprints, Google Scholar, PubMed, and World Health Organization and CDC websites
- **Timeframe for search**: Publications preceding November 6, 2020
- **Priority publication formats**: systematic reviews, primary studies, landmark studies, and COVID-19 impact reports/reviews.
- **Search algorithms**: “Behaviors” which included test*, screen*, participat*, assess*, and access*; “What” which included COVID*, SARS-CoV-2, and Coronavirus; “Population” which included underserved, underrepresented, low resources, ethnic minor*, at-risk, unreach, underprivileged, low-income, immigrant, refugee. These terms were run with boolean operators AND between categories and OR between the terms within each category.

STEP 2: Eligibility criteria and cross-checking
- Abstracts from the final search results were reviewed for relevance using pre-determined inclusion and exclusion criteria by two members of the review team (NL and JA) independently, followed by a consensus approach to resolve disagreement in initial coding.
- **Inclusion criteria**: Addresses COVID-19 testing efficacy, investigates attitudes to testing, relates to different COVID-19 testing methods, relates to target population, mentions barriers/lack of access/etc. to interventions AND ways to overcome, in person testing
- **Exclusion criteria**: Addresses non-testing subjects only such as social distancing and mask utilization, addresses non-targeted populations, relates impact/effects of COVID-19 with other diseases, fails to address COVID-19

STEP 3: Abstraction of evidence
- **Full texts of included papers were abstracted** using a matrix approach based on the following categories: study design, specific strategies/facilitators, barriers/challenges, solutions to barriers/challenges, population, relevance to underserved groups, study sample size, and study setting.
- Two members (NL and JA) of the team reviewed the same three papers and met with the full review team (BR, NS) to discuss the abstractions and refine the process.
- The rest of the abstractions were completed independently by one member (NL or JA) of the team.

STEP 4: Coding and summarizing
- We created a summary of the type of study designs, populations, and study settings.
- **Abstracted information on specific strategies/facilitators, barriers/challenges, and solutions to barriers/challenges** were coded under two areas: barriers to COVID-19 testing and strategies to increase COVID-19 uptake. Additional sub-codes were created after reviewing content and identifying emergent codes by two members of the team (NL and JA).
- The number of total mentions of the codes and sub-codes across all included articles and the number of articles mentioning the codes and sub-codes were counted.

Findings:
Out of the 261 articles considered in Step 1, 46 articles were included in the rapid evidence review. Articles came from both the United States and internationally, all with a common theme of underserved populations, low- and middle-income communities and countries (LMIC), as well as low resource settings. Across the 46 papers, there were 252 mentions of various barriers to COVID-19 testing and 317 mentions of strategies to address barriers. The abstracted articles additionally had various study designs, 25 of which included a review framework that examined current literature and public policy practices, while others focused on evaluative and observational designs based on their respective populations. Most of the studies were conducted in LMICs within the United States, which contained strong suggestions that the identified barriers and solutions could be generalized and applied to populations abroad. In each of the following figures, “n” represents the total number of mentions found in the articles analyzed and the subcategories are presented as percentages of the relevant main category.

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Barriers to COVID-19 Testing in Underserved Communities

We identified three overarching groups of barriers:
1. Socioeconomic barriers
2. Government and public health barriers
3. Barriers associated with physical inaccessibility

![Figure 1. Primary barriers to COVID-19 testing in underserved communities.](image)

Specific barriers within each group are provided in Figures 2a-2c.

![Figure 2a. Socioeconomic barriers for COVID-19 testing uptake in underserved communities.](image)
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Strategies to Increase COVID-19 Testing in Underserved Communities

We identified five key strategy groups to increase COVID-19 testing uptake in underserved communities:

1. Government and public health interventions
2. General testing considerations
3. Community engagement
4. Testing modalities
5. Technological advancement

Figure 3. Main groups of strategies to increase COVID-19 testing in underserved communities
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Specific strategies and solutions to increase COVID-19 testing uptake in underserved communities are provided in Figures 4a-4e.

Figure 4a. Government and public health strategies to increase COVID-19 testing in underserved communities.
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Figure 4b. General testing strategies to increase COVID-19 testing in underserved communities.

Figure 4c. Community engagement strategies to increase COVID-19 testing in underserved communities.
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Summary

The most frequently mentioned barriers to COVID-19 testing and strategies to increase COVID-19 testing are summarized in Table 1.

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Strategies</th>
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<tbody>
<tr>
<td>1. Lack of healthcare resources</td>
<td>1. Equitable distribution of resources</td>
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<tr>
<td>2. High prevalence of co-occurring illnesses</td>
<td>2. Cultural adaptation</td>
</tr>
<tr>
<td>3. Difficulty implementing public health interventions</td>
<td>3. Education about COVID-19 effects</td>
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<tr>
<td>4. Limited access to healthcare</td>
<td>4. Community outreach</td>
</tr>
<tr>
<td>5. Crowded living situation</td>
<td>5. Technological advancements</td>
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</tbody>
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COVID-19 has had widespread effects on communities all over the world. Through our rapid evidence review, we analyzed the barriers preventing underserved communities in accessing COVID-19 testing. The current literature suggests that the most common barriers are socioeconomic in nature. This can be further broken down into poor working conditions and financial instability, social barriers in the form of misinformation and cultural barriers, and general socioeconomic risk factors such as access to basic health resources and comorbid health risks. There are government/public health challenges, most notably a lack of healthcare resources, distrust in government, and general difficulty implementing public health interventions. Finally, there are noted cases of physical inaccessibility preventing individuals from reaching COVID-19 testing sites, such as lack of transportation and physical locations being far away from testing sites.

Despite the prevalent barriers affecting underserved communities, literature also highlights strategies that can address these challenges. The most common strategy is public health/governmental interventions, such
as physical distancing efforts and partnerships with local community resources, increased monitoring in the form of contact tracing and patterns, and population-specific strategies. There are also efforts to improve testing within these communities through community engagement and implementing equitable testing prioritization, as well as transitioning to better electronic records and testing modalities that can be done safely and independently from healthcare centers. Several strategies overlap and should be considered in a holistic implementation sense.

Next steps
This rapid evidence review identified several barriers and strategies to address COVID-19 testing in underserved communities. These findings can inform public health and clinical interventions addressing challenges faced by underserved communities. Our team works closely with public health, clinical, and community health partners to develop and refine culturally appropriate strategies to address COVID-19 testing inequalities. The implementation and evaluation of these co-created COVID-19 testing strategies is currently underway.
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https://medschool.ucsd.edu/research/actri/centers/DI R/Documents/COCREATE%20Rapid%20Evidence %20Review.pdf

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References


