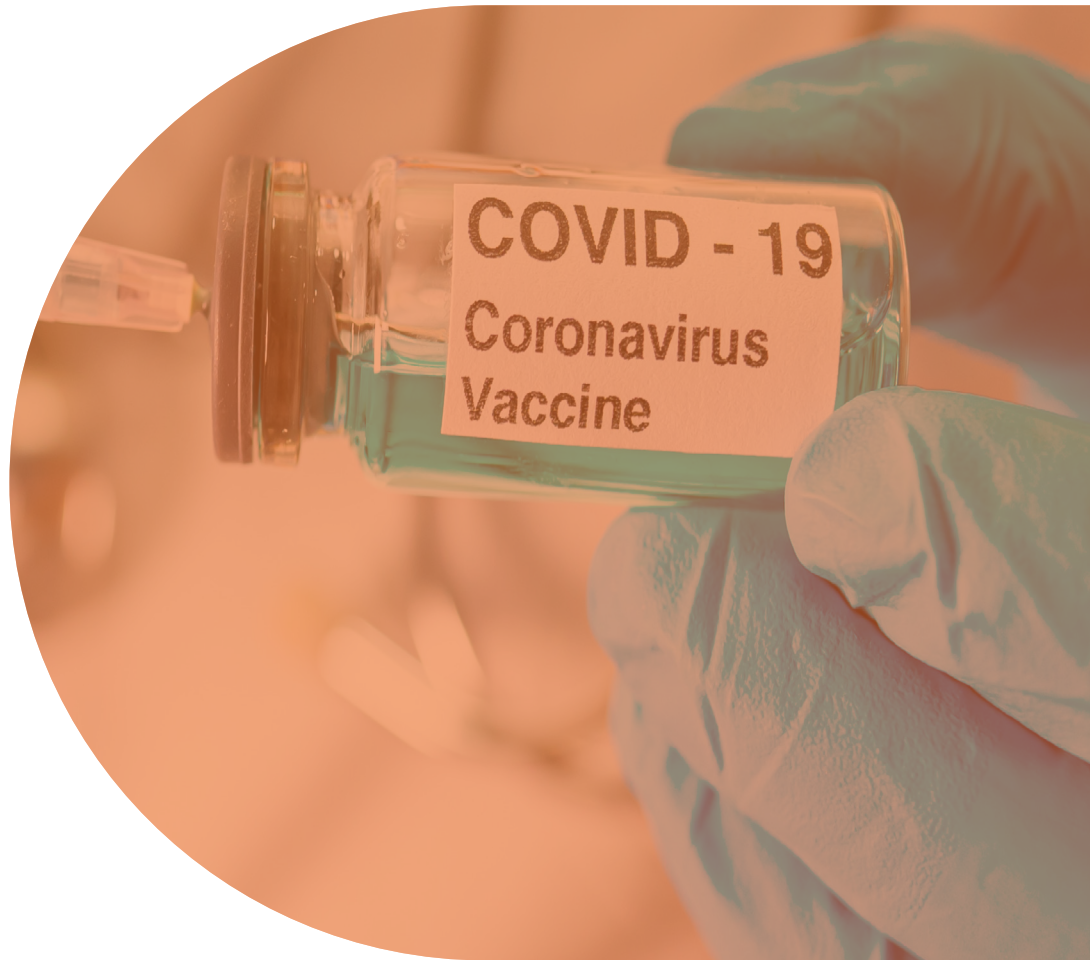


# SMS Campaign to Increase COVID-19 Vaccine Take Up in Tanzania



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## 1. The Problem of COVID-19 Vaccine Hesitancy in Tanzania

The World Health Organization defines vaccine hesitancy as a “delay in acceptance or refusal of safe vaccines despite availability of vaccine services (MacDonald, 2015). Hesitancy may also be the result of disinformation and conspiracy theories shared online, notably via social media (Mills et al., 2020).

While vaccinations appear to be a potential approach to ending the pandemic, vaccine hesitancy remains a substantial barrier to stopping the spread of the virus. The only sure way out of the COVID-19 pandemic, according to the World Health Organization and many other public health professionals, herd immunity achieved through vaccination, Vaccine hesitancy, however, remains a major restriction in Tanzania, independent of vaccine supply concerns (McMahon et al., 2020; Nuwarda et al., 2022).

In Tanzania, the government’s position on COVID-19 vaccines has been somehow controversial. The late president of the United Republic of Tanzania, Dr. John Pombe Magufuli, was known for downplaying the severity of the pandemic and refusing to accept international aid or acknowledge the existence of local transmission. He was sceptical about the safety and effectiveness of COVID-19 vaccines and thus discouraged their use (Mfinanga et al., 2021). After the death of Dr. Magufuli in 2021, the current President of Tanzania, Hon. Samia Suluhu Hassan, took a more proactive approach to addressing the pandemic: she acknowledged the existence of local transmission and made efforts to secure and distribute COVID-19 vaccines (Mhagama, 2022). However, the efforts have faced challenges because of persistently high vaccine hesitancy in Tanzania, and as a result, vaccination coverage remains relatively low.

While continuing to encourage residents to adhere to wearing masks, hand sanitizing, and maintaining social distancing, the government is now dedicated to ensuring Tanzanians are able and willing to get the vaccine (Minja, 2021). Official statements by the president emphasize the need to use and trust scientific evidence as key to ending the pandemic and have also encouraged research on COVID-19 (Schwikowski, 2021; Gigova, 2021).

1. Despite the government's efforts to ensure the availability of vaccines, the public has shown a poor willingness to get the COVID-19 vaccine. Finding efficient and cost-effective approaches for reducing vaccine hesitancy among Tanzanians has therefore been a key challenge for policymakers. Among the efforts deployed to promote vaccination, the government launched a vaccination campaign targeting healthcare workers and others in high-risk groups, but the campaign has faced challenges, including shortage of funds, and vaccine take up has remained low among the general population (Ayenigbara et al., 2021). This may be due, at least in part, to persistent COVID-19 denial among some political figures, including ministers (Rajshekhhar et al., 2023).

**The fact is that most of the policies implemented by the government did not capture the fundamental problem of vaccine hesitancy, nor did they understand the underlying causes. Fears about side effects, misunderstanding about vaccine safety and effectiveness, and a lack of trust in the healthcare system** are important vaccine concerns in Tanzania. Policymakers and other authorities must therefore aim to address these underlying concerns through delivery of correct and accessible information about vaccines to help boost confidence in the vaccination process and increase people's willingness to get vaccinated.

## **2. Assessing Different Options for Government Intervention**

### **2.1 Alternatives Strategies Available to Improve COVID-19 Vaccine Take-Up in Tanzania**

- Evidence suggests that various strategies can be effective in improving take up of the COVID-19 vaccine ("12 COVID-19 Vaccination Strategies," 2022; Yego et al., 2023; Berger et al., 2021). These may include involving trustworthy community members to improve public vaccine awareness, applying behavioural insights, coordinating implementing partners, and providing supportive supervision (an approach to supervision that promotes mentorship, joint problem-solving, and communication between supervisors and supervisees).

- In 2021, a team of local researchers in Tanzania received support from the Partnership for Economic Policy to conduct an experimental impact evaluation of a particular strategy to increase COVID-19 vaccine take up. Related to the application of behavioural insights, the intervention consisted of an SMS campaign through which a variety of messages regarding the impact of COVID-19 were sent, all of them aimed at understanding whether such information would encourage people in the community to be vaccinated. The selection of this strategy for assessment is explained below.
- The objective of the study was to provide evidence that could be used to inform decisions related to initiatives to tackle vaccine hesitancy. To situate their findings into a broader context of alternative options available for government interventions to improve vaccine take up, however, the research project team also identified two other sets of strategies that have been implemented in Tanzania:
  - Engagement of community health workers (community health workers) and use of vaccine ambassadors
  - Development partners' support, coordination, and results-based supportive supervision
- The researchers analysed and compared the pros and cons of the three options, which are outlined in the following strategies:

### **Option 1: Applying Behavioural Insights to Improve COVID-19 Vaccine Take Up**

- To understand the behaviour that an intervention is intended to change and the environment in which that behaviour occurs, providers must not only speak the language of the targets but also understand the challenges they face.
- Indeed, substantial evidence indicates that adapting messaging to the intended audience increases the impact of those messages on behaviour. New research from the Behavioural insights Team has shown that effective messaging can increase willingness to get the COVID-19 vaccine (Milkman et al., 2021; "Increasing COVID-19 Vaccination," 2021;

“Messaging in a Bottle,” 2023). Using five large randomized controlled studies and feedback from fifteen focus groups, the Behavioural insights Team tested four messages with more than 30,000 people and found that each message increased confidence and willingness to vaccinate, including among members of at-risk groups.

- The PEP-supported SMS campaign experiment in Tanzania followed the model of similar initiatives:
- The United Nations Development Program in Sudan is conducting a series of perception surveys to better understand consumer behaviour and will use the results to craft messaging to discourage panic, among other things. In Egypt, the United Nations Development Program is collaborating with telecommunication firms to deliver SMS messages that fight disinformation and encourage proper hygiene, physical separation, and staying at home. These interventions were crafted with an understanding of the importance of information and awareness but may not be as effective as desired.<sup>1</sup>
- The London Borough of Havering works within the national vaccination distribution plan framework to identify and prioritize populations to target in their community. They first concentrate on the next vaccination cohort. This allows them to begin addressing people’s worries before being qualified to vaccinate. They then undertake a brief assessment of the literature and engagement sessions to identify some categories within that cohort that are more likely to be vaccinated (Michie, van Stralen & West, 2011).

## **Option 2: Engagement of Community Health Workers and Use of Vaccine Ambassador Programs**

Community health workers typically play essential roles in the introduction and use of COVID-19 vaccines including planning, target-group identification, community involvement and mobilization, service delivery, and tracking those lost to follow-up (Cometto et al., 2018). Evidence shows that it is important to prepare community health workers and their communities

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<sup>1</sup> Potential challenges such as limited reach, message fatigue, or lack of trust in the source could reduce the impact on behaviour change.

for vaccination campaigns through competency-based education and learning programs tailored to specific settings (“12 COVID-19 Vaccination Strategies,” 2022).

In Tanzania, community health workers have long been used in disease-related interventions because they link the community with health facilities. Each worker is taught to provide community health interventions and other key preventive services and must have completed secondary school before the training. The responsibilities of community health workers include a mix of health promotion and basic medical services delivered in the community. For example, since September 2021, CARE Tanzania, an NGO that has collaborated with the government to promote vaccine access across the country, has engaged community health workers to address misconceptions about vaccination, while improving health communication and data management tools to increase vaccine take up. Thanks to the NGO’s interventions, 268 health facilities were reached and 20,287 COVID-19 vaccines administered in the Tabora region (Turner, Lihwa & Sikder, 2022).

At the same time, the so-called vaccine ambassadors play a crucial role in addressing vaccine concerns by talking about vaccine myths versus the truth and sharing educational resources with their network of family, friends, and local organizations. Vaccine ambassadors are trusted community members who are trained to spread important health information in their neighbourhoods and increase public knowledge about the vaccine. A study conducted on the influence of social norms reported that people report that most others around them would like to get vaccinated have a much higher likelihood of getting vaccinated (Bronchetti, Huffman & Magenheimer, 2015; Quinn et al., 2017). In Tanzania, political leaders, religious leaders, and influential people such as musicians and actors have been employed as examples of trusted community members who act as vaccine ambassadors to improve the takeup of the COVID-19 vaccine.

The strategy also entails the development of communication tactics that reach people where they are, especially in rural areas where individuals may not have access to the Internet or other media. For example, the government has been using innovative methods such as television commercials, social media platforms, local radio stations, posters, and informative videos to

communicate about vaccination availability and education.

### **Option 3: Initiative for Global Vaccine Access (Global VAX), Coordination of Development Partners, and Results-Based Supportive Supervision**

June 2022 marked the launch of the Initiative for Global Vaccine Access (Global VAX), a pivotal moment in Tanzania's fight against COVID-19. This initiative ensures that vaccines reach rural and remote, hard-to-reach populations, while simultaneously enhancing healthcare workers' ability to support immunization efforts and track vaccine safety, data, and analytics (Mfinanga et al., 2021).

In addition to the direct benefits of initiatives like Global VAX, other critical areas must be addressed to sustain the broader health system, including pre-service and in-service training for health workers, maintaining adequate supplies (including hand hygiene products and personal protective equipment), and strengthening supervision and performance monitoring systems. It is also essential that expenditures for the COVID-19 vaccine rollout do not compromise other crucial health services (routine immunizations, for example), and additional resources are needed to reinforce infrastructure and ensure preparedness for future pandemics.

Strong leadership and coordination are necessary to respond effectively to health crises. Engaging and coordinating diverse stakeholders to achieve shared goals is vital for informed decision-making and efficient implementation. In Tanzania, development partners play a crucial role in supporting regional authorities to meet vaccination coverage targets. One key strategy for enhancing these efforts is the introduction of "partner coordination and results-based supportive supervision."

For example, in the Manyara Region, the WHO launched a "partner mapping" initiative to prevent fragmentation and duplication of efforts and ensure program coherence and alignment with targets. Through this coordinated approach, WHO facilitated better technical and financial support for vaccination campaigns. The Clinton Health Access Initiative, an implementing partner, expanded the campaign in Manyara, leveraging WHO's technical



leadership in Babati District Council to help the region meet its vaccination goals. Initially, Manyara had the lowest vaccination rate in Tanzania at 3.7%. However, with targeted campaigns, this rate surged to 20% in just a few days (“Manyara Region,” 2022). Furthermore, WHO supported the development of a “supportive supervisory plan” to closely monitor processes before, during, and after campaigns, ensuring thorough data collection, analysis, and documentation of lessons learned.

## **2.2 Evaluation of Alternative Strategies**

To assess the comparative advantages and disadvantages of the three proposed alternative strategies, the authors used two main sources of information: a structured consultation process, involving a series of in-person meetings, through which they collected the insights and opinions of multiple stakeholders, including healthcare providers, policymakers, and community leaders. a systematic literature review to gather evidence regarding COVID-19 vaccine take up, that focused on studies that addressed the effectiveness, efficiency, and equity effects of initiatives aimed at improving vaccination rates in similar settings.

The combination of stakeholder engagement and evidence-based research helped not only to identify the main advantages and disadvantages of the three proposed alternative strategies (see results in Table 1) but also to assess each option based on a series of policy-relevant criteria that could inform decision-making from a “government perspective” (see Table 2). For the latter, stakeholders’ feedback was of particular use in assessing the local context, political feasibility, and administrative factors.

**Table 1: Evaluation of Policy Alternatives**

Advantages	Disadvantages
Strategy 1: Applying behavioural insights to improve COVID-19 vaccine take-up	
<p>Behavioral insights are compliant with WHO guidance and have been recognized as a critical element in reducing virus transmission. Behavioral insights can complement more restrictive policy measures with a deeper understanding of how people make decisions.</p>	<p>Results from the experimental study found no indication of a positive impact three weeks after the SMS campaign. While the observed null results may reflect the impact of other efforts (by the government and other stakeholders) to increase vaccination take up in the country, it may also mean that a simple message does not provide enough information for a person to decide to receive the vaccine.</p>
Strategy 2: Engagement of community health workers community health workers and use of community vaccine ambassador programs	
<p>The key advantage of community health workers is that they link the community with health facilities. Concerning the COVID-19 pandemic, community health workers are used to address health-related misinformation, planning, target-group identification, community involvement and mobilization, service delivery, and tracking</p>	<p>A key risk with community health workers is that they may hold localized, subjective views that contradict public health information. For example, in an online training of 1,100 community health workers in Mozambique in September 2020, only 48% answered correctly that the human-to-human spread of the COVID-19 disease occurs through</p>

<p>patients lost to follow-up.</p> <p>Vaccine ambassadors can engage trusted community members to spread vital health information in their communities to increase public knowledge about the vaccine.</p>	<p>contact with an infected person who coughs or sneezes close to another individual. In the same group, 42% responded that COVID-19 is a disease of the rich that did not affect the poor, while 38% answered that is the disease is not real, and another 20% were unsure.</p> <p>The biggest challenge related to the use of vaccine ambassadors is their lack of medical background and inadequate knowledge about vaccines and vaccine-preventable diseases. This means that the information they share should be cross-checked to make sure their fellow community members are not misinformed or misled as vaccination information is being promoted. Another important challenge pertains to the “maintenance” of these volunteer ambassadors. Financial support (e.g., for transportation, accommodation, and compensation for time invested) would be required to facilitate their work, and funds are not available to do so.</p>
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Strategy 3: Global VAX, partner coordination and results-based supportive supervision

<p>Utilizing Global VAX, partner coordination, and results-based supportive supervision offers several benefits in</p>	<p>However, the combined strategy also presents some challenges. The approach can be resource-intensive, requiring substantial</p>
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<p>improving COVID-19 vaccine take up in Tanzania. First, Global VAX enhances vaccine accessibility, especially in hard-to-reach and rural areas, by leveraging international resources and technical expertise. Partner coordination ensures that development efforts are aligned, preventing duplication of services and maximizing available resources. This constructive collaboration allows for more efficient resource allocation and greater reach in vaccination campaigns. Furthermore, results-based supportive supervision promotes accountability and continuous monitoring, helping to identify challenges and adjust strategies in real time. This integrated approach not only strengthens the health system’s capacity but also fosters collaboration across different stakeholders, including the government, development partners, and local communities.</p> <p>Partner coordination has helped to address the resource shortfall and duplication challenges affecting the vaccination exercise (Mathenge et al., 2023). The coordinating and supervisory structures have been an appropriate forum for the division of responsibilities among partners to</p>	<p>financial and human capital to ensure effective coordination and continuous supervision, which may strain existing health infrastructure. The complexity of managing multiple stakeholders, including international partners, can lead to bureaucratic delays or conflicts in decision-making, particularly if priorities or objectives differ. Additionally, while results-based supervision can improve accountability, it may inadvertently place pressure on local health workers, who could become overburdened by frequent monitoring and performance evaluations. This could reduce their efficiency and lead to burnout, especially in regions where the health workforce is already limited. Finally, the strategy’s partial effectiveness, as noted in some evaluations, suggests that while it improves access, it may not fully resolve vaccine hesitancy or logistical challenges in all regions.</p>
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collectively identify key challenges affecting COVID-19 vaccination and devise strategies to tackle them.	
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Each alternative strategy has also been evaluated based on a set of policy-relevant criteria that decision-makers will use when assessing their options for intervention: efficacy, effectiveness, equity, political feasibility, administrative feasibility/cost, and relevance to the local context. Efficiency means the policy can produce the desired results without wasting materials, time, or energy. Effectiveness means producing a result that is desired (increased vaccine takeup). Equity implies that the inputs are made available to all target beneficiaries, irrespective of their characteristics or attributes. Political feasibility refers to the option’s attractiveness to political leaders (i.e., the option is considered “politically feasible” if it increases the popularity of political leaders). Administrative feasibility has to do with the logistical challenges associated with implementing the intervention; this also largely entails assessing the cost or affordability of the option for the government. Relevance to the local context is self-explanatory.

**Table 2: Comparative Evaluation of Alternative Strategies Based on Policy-Relevant Criteria**

	Behavioral insights (e.g., SMS campaign)	Community health workers and vaccine ambassador programs	Global VAX and partner coordination programs
Efficiency	Yes	Partially yes	Partially yes
Effectiveness	Yes	No	Partially yes
Equity	Yes	Yes	Yes
Political feasibility	Yes	Yes	Yes
Administrative feasibility (Costs)	Partially yes	Yes, but cost of the program likely to be higher	Partially yes
Relevance in context	Yes	Yes	Yes
Recommended	Yes	Yes	Yes

Although the findings from the PEP-supported research project (see above) did not reveal significant differences in effectiveness, evidence still

suggests that SMS campaigns are effective in improving COVID-19 vaccine take up (e.g., Milkman et al., 2021).

**Table 2 above presents a comparative analysis of three strategies across key evaluation criteria (i.e., efficiency, effectiveness, equity, political feasibility, administrative feasibility (cost), and relevance in context).**

The application of behavioral insights through SMS campaigns is not only effective in achieving the desired results but also requires fewer resources and can be scaled rapidly. It presents a clear advantage and emerges as the most efficient option (because it can deliver outcomes with less effort and time).

The other two options are rated as partially efficient as they are much more resource-intensive. The third option (Global Vax and partner coordination) is assessed as partially effective because it demonstrated some level of success, but these results were not consistent across all contexts. The option of community health workers and vaccine ambassador programs, on the other hand, is not considered effective because of operational constraints and resource limitations may prevent the impact of the intervention from being widespread or timely.

Costs (reflected under administrative feasibility) play a critical role in governmental decision-making. While community health workers and vaccine ambassador programs are considered feasible, these programs will require substantial investments in training, deployment, and logistical support. By comparison, we assess the other two options to be relatively more cost-effective.

## **Conclusions and Policy Recommendations**

Upon comprehensive evaluation of the three alternative strategies, the strategy combining Global VAX with partner coordination and results-based supportive supervision (Option 3) emerges as a highly recommended approach. This policy not only enhances vaccine access through global partnerships but also ensures accountability and support at the local level, thus improving overall effectiveness and administrative feasibility. Even if not perfectly efficient, this approach still provides the most practical balance among resources,

accountability, and vaccine access. Additionally, this option aligns well with political and equity considerations to the extent that it leverages international support to bolster national health initiatives.

Despite the observed null results from the experimental study, the strategy of applying behavioural insights (through targeted communication strategies and incentives) should still be considered a crucial approach to improve the efficacy and relevance of vaccination campaigns (because it contributes to addressing vaccine hesitancy and promoting positive health behaviours). Moreover, its cost-effectiveness and adaptability to local contexts make it a politically feasible and administratively viable option. However, to ensure effectiveness, messaging campaigns should be updated based on factors identified through an investigation of social and behavioural factors that influence vaccine acceptance and take up.

The recommendation is therefore to combine these two approaches, both of which are politically and administratively feasible, to offer a balanced solution that maximizes efficacy, ensures equitable access, and ultimately enhances the public-health response to the pandemic.

Meanwhile, and despite limitations related to related administrative costs, Tanzania can still proceed with engaging community health workers and the vaccine ambassador, a strategy that offers important outreach advantages as well. This should be complemented by enhanced outreach and education programs, including health-education campaigns, at the community level. Despite Tanzania's long and distinguished history with community health workers, a comprehensive needs assessment is necessary to determine their total value, including their size, distribution, and the roles they play.

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