

Mali



Photo: PATH/Ibrahima Togola

## Implementing evidence-based digital messaging tools to generate vaccine demand

### COUNTRY-DEFINED CHALLENGE

It is estimated that only 45 percent of children in Mali receive all essential vaccinations.<sup>1</sup> Further, 14 percent are so-called zero-dose children who have received no vaccination at all, depriving them of protection from common yet preventable diseases.<sup>1</sup> Against a global backdrop of increasing disease outbreaks, such gaps represent a serious risk for the health and well-being of Mali's population—both now and in the face of future epidemics.

Like many other countries, Mali faces immunization-related challenges related to supply chain gaps, a need for continuous training given frequent staff turnover, and misinformation, which triggers fear and lack of demand for vaccination. These fears are exacerbated by community mistrust and the rapid spread of misinformation, particularly via digital platforms and social media.

The Mali Ministry of Health and Social Development (MOHSD) is committed to tackling these challenges to support the national goal of increasing coverage of routine vaccinations for preventable childhood disease—particularly for zero-dose children—and strengthening the country's overall immunization system to better prepare for future pandemics. Digital solutions such as integrated digital messaging for social and behavior change (SBC) communication offer a promising solution for reaching users to help improve vaccine acceptance and uptake. Until now, however, the MOHSD did not have a way to connect their vaccination data platform to improved communications to reach more people with appropriate messaging about vaccination.



## SOLUTION

# Adding SMS functionality to Mali's digital immunization platform

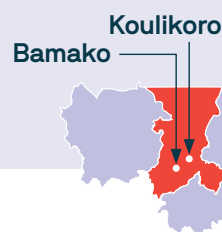
Mali currently uses one District Health Information Software 2 (DHIS2) Tracker instance for routine childhood immunization data and a separate DHIS2 Tracker instance for COVID-19 vaccination data for people aged 12 and older. In discussions with DRIVE Demand Mali, the MOHSD identified the need to improve the functionality of both DHIS2 platforms by adding a gateway for Short-Message Service (SMS) and pushed audio messaging—to reach the 69 percent<sup>2</sup> of the Malian population who are unable to read—in local languages. A gateway enables a software system to send and receive texts and audio messages to and from mobile phones. Through such messaging, the MOHSD could communicate routine appointment reminders and scheduling, notifications of vaccine availability, and SBC messages to improve vaccine awareness and uptake among target populations.

Digital Square worked with MOHSD and many partners to design the SMS gateway. This process involved user advisory groups (*Comités Locaux d'Appui à la Vaccination*, or CLAVs), integration with DHIS2, technical workshops, and pilots with health districts. In consultation with MOHSD, the project focused its efforts on the Bamako and Koulikoro regions given the ability to reach a large portion of the population with messaging. DRIVE Demand Mali then further selected focus communities within these regions with the lowest vaccination coverage rates.

The CLAVs helped review and share all audio and SMS messages in six local languages (Bambara, Fulfuldé, Soninké, Songhay, Tamasheq, and French) for optimal reach. Both the SMS gateway and the separate interface for sharing audio messages via WhatsApp were integrated into DHIS2 to foster improved sharing of messages by MOHSD to individuals and caregivers of young children.

Informed by all these inputs, the SMS gateway became fully functional in December 2023. The final version enables the MOHSD to pull individuals' vaccination records, identify children and caregivers in the system with upcoming vaccinations or past-due vaccinations, and send SMS and audio reminders with SBC-informed messaging. As of early 2024, 34,808 SMS messages (6,195 COVID-19 messages and 28,613 routine immunization messages) had been shared and 175,192 messages had been scheduled. The audio messages are projected to reach an additional 210,000 recipients. This evergreen functionality can be leveraged by MOHSD and other partners and donors for years to come to share messages related to immunization or other health events or emergencies.

DRIVE Demand Mali focused efforts on the Bamako and Koulikoro regions given their low vaccination rates.



## SOLUTION

# Improving vaccine uptake through evidence-based messaging

To ensure the most accurate and effective messaging to use with the DHIS2 SMS and pushed audio approaches, DRIVE Demand Mali worked with the MOHSD to use an SBC research framework to define what messages to send, how often, and to whom.

In the first year of the project, the team laid the foundation for conducting SBC qualitative research in Bamako and Koulikoro districts. Digital Square led active engagement with several partners to determine appropriate and impactful research to drive demand for immunization and enhance the project's SMS gateway adaptation. Ultimately, MOHSD and DRIVE Demand Mali agreed on three activities:



A health worker stands in front of an education sign intended to improve vaccination uptake.  
Photo: PATH/Ibrahima Togola



## 1 Hold focus group discussions with target populations to better understand and lessen vaccine hesitancy and barriers.

To understand hesitancy and inform SBC messaging, DRIVE Demand enlisted the Busara Center for Behavior Economics to conduct behavioral research in four locations across the DRIVE Demand project: Bamako, Mali; Dar es Salaam, Tanzania; Kampala, Uganda; and Lusaka, Zambia. The study was designed to use focus group discussions to gather information on three populations: adults who had not received the COVID-19 vaccine in the past year; pregnant people who had not received the COVID-19 vaccine in the past year; and health care providers who delivered vaccinations. In Mali, at the request of MOHSD, Busara also included focus group discussions for caregivers of children under two years of age. Focus group discussions occurred in Bamako in April 2024. Findings across the four countries are presented in *Dynamics of Vaccine Hesitancy: A Practitioner Playbook*.<sup>3</sup>



DRIVE Demand aimed to understand and improve vaccine confidence among caregivers of children. Photo: PATH/Ibrahima Togola

## 2 Curb misinformation and drive vaccine acceptance in communities via targeted communications.

To identify SBC messages to reduce hesitancy and increase vaccine acceptance in Mali, DRIVE Demand Mali, the MOHSD, and national partners reviewed and validated existing messages during a workshop, translated them, and then recorded the audio messages in five local languages. Leveraging the CLAVs, the team identified WhatsApp as the most-used platform, especially for health care workers and CLAV-moderated mothers' groups.

The messages were shared—followed by interactive discussions—within 10 WhatsApp groups to help improve vaccination rates in areas where children are under-vaccinated or have not received any doses. In total, **701 members** of these groups were reached by the awareness messages communicated by the CLAVs. To enable use past the life of the project, Digital Square developed a user guide for the continuation of SBC messages by the CLAVs.

## 3 Conduct implementation research on the feasibility of a community-based vaccination 'pop-up' model to support vaccine uptake in priority at-risk groups

DRIVE Demand Mali worked with MOHSD to design and implement ten-day vaccination "pop-ups" at local markets in Bamako and Koulikoro in April 2023. Locations included Bamako's central market area and traditional gold mining areas of Koulikoro, chosen because of each area's lack of accessible health services and high number of under-vaccinated children. MOHSD helped coordinate the logistics for the pop-ups, including shipment of vaccines and supplies, recruitment of health workers, awareness-raising, and other needs. In total, **1,210 people** received immunizations in the Bamako pop-up and **1,803 people** received immunizations in the Koulikoro pop-up. DRIVE Demand evaluated and analyzed the pop-ups with MOHSD to understand the impact, costs, and benefits of the activity to inform future implementations.

Pop-up clinics in Bamako and Koulikoro were held in April 2024, during which the MOHSD was able to vaccinate over 3,000 people. In the top photo, a child receives a vaccine. In the bottom photo, a health worker fills out a paper-based vaccination card. Photos: PATH/Ibrahima Togola





## ENSURING PROJECT SUSTAINABILITY

As a two-year project, DRIVE Demand Mali sought to ensure that all activities could be sustainably carried on after the life of the project to enable lasting impact. To do this, the team partnered closely with MOHSD throughout the project to ensure alignment, a shared vision, and adequate capacity to manage efforts going forward. Importantly, MOHSD validated the project's final SMS gateway and took over ownership and management of the tool. In April 2024, the tool was fully transitioned from PATH servers to MOHSD-owned and maintained servers, and Digital Square handed over the DHIS2 SMS tracking dashboard and all relevant documents. DRIVE Demand also pre-paid for bulk SMS packages through Vonage, the mobile network partner, for MOHSD to continue to send messages through the end of 2024. Going forward, the tool will be managed by the MOHSD SMS technical team.

As active participatory members of the project with both the design and implementation of the SMS gateway as well as the SBC message delivery, the CLAVs will play an important role in carrying on project knowledge. Final discussions with MOHSD acknowledged the value of CLAVs. Plans are in place to maintain and expand them to support moderation of WhatsApp channels and message distribution.

As part of the project transition in May 2024, Digital Square presented a sustainability roadmap for the continuation of CLAVs, the use of SMS and audio reminders, and the installation of pop-up clinics in nontraditional settings. The roadmap detailed needs for human resources, costs, maintenance, and other considerations, including guidelines for engaging with local and regional telecommunications companies to procure SMS bundles to support future use of the gateway. With this messaging platform, the MOHSD is now equipped to send targeted, evidence-based messages to inform and influence behaviors for better health—both now and in future emergencies.

## RECOMMENDATIONS FOR THE MINISTRY OF HEALTH AND SOCIAL DEVELOPMENT

1. **Prioritize multi-channel and multi-lingual communication approaches** (e.g., through SMS, WhatsApp, pushed audio, and CLAV communication) to effectively reach a wider audience as well as Mali's diverse linguistic and cultural communities.
2. **Invest in strengthening the capacity of local stakeholders**, including MOHSD staff, health workers and community volunteers, to manage and sustain the project's digital tools and community engagement initiatives.
3. **Strengthen data updating and quality** to ensure continuous access to high-quality data in order to operationalize the SMS vaccination reminders and outbound call gateway services.
4. **Foster partnerships with local telecommunications providers** and other private sector entities to secure long-term support and resources for ongoing communications efforts.

### References

1. [The DHS Program STATcompiler](#). Funded by USAID. (Accessed May 13 2024).
2. UNESCO Institute for Statistics. UIS Stat Bulk Data Download Service. Accessed May 14, 2024. Available at: [apiportal.uis.unesco.org/bdds](https://apiportal.uis.unesco.org/bdds).
3. Busara Center for Behavioral Economics and PATH. *Dynamics of Vaccine Hesitancy: A Practitioner Playbook*. 2024.

### About DRIVE Demand

With support from The Rockefeller Foundation, Digital Square at PATH launched the Digital Results Improve Vaccine Equity and Demand (DRIVE Demand) project in June 2022 with the goal of increasing vaccine demand and acceptance rates in six countries: Honduras, Mali, Tanzania, Thailand, Uganda, and Zambia. By driving demand for COVID-19 vaccination awareness, acceptance, and activation, the project aims to increase each country's overall vaccine uptake while also strengthening the broader routine immunization program for long-term sustainability.