

Dr Hawa Diarra showing imams a behaviourally-informed training video on MUAC tape use. Mali, 2021

## Improving the uptake of family mid-upper arm circumference screening in Mali



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### KEY MESSAGES

- This article explores how behavioural science and user-centred design (UCD) processes were used to identify barriers to the family mid-upper arm circumference (MUAC) approach and to generate and prototype solutions in Mali.
- Primary barriers to MUAC screening by caregivers included their beliefs about outcomes, lack of perceived tangible benefits and low social accountability.
- To address low levels of social accountability to screening, a reminder system was developed and implemented through weekly/monthly women's savings group meetings (known as "tontines"), and imams and husbands, alongside behaviourally informed video-based training, and a testimonial from a caregiver in the community. This will be tested in a small pilot study across five communities in the Nara region.

### Background

The United Nations estimates that, of the 14.3 million children aged under five who were affected by severe wasting in 2019, only 40% (5.7 million) received "life-saving treatment" (2020). Case identification and referral to treatment remain the biggest gaps to improving coverage, especially where access to provider-led screening is limited. However, research indicates that caregivers and other family members can be trained to accurately identify risk of wasting using colour-coded mid-upper arm circumference (MUAC) tapes, an approach commonly referred to as Family MUAC.

Family MUAC is a promising approach to expanding the scale and frequency of screening, resulting in higher referrals to treatment in some settings (Gnamien et al, 2021). In 2017, delivery of Family MUAC training began in Mali through community health volunteers

(CHVs) in health facilities and community "relays"<sup>1</sup> in the community. Since the implementation of COVID-19-related restrictions in 2020, training has been delivered at the household level by CHVs. However, the success of the Family MUAC approach has been inconsistent. For example, 2020 programme data from the International Rescue Committee (IRC) showed that, in the Nara district of Mali where 90% of women had been trained to conduct MUAC assessments, only 20% of treatment admissions resulted from family referrals.

This article describes an exploration of barriers to the uptake of Family MUAC in the Nara region of Mali, where the IRC supports wasting treatment, the Family MUAC training of community health workers and the supervision of community-based Family MUAC programming. Findings from this process were used to identify opportunities and programmatic ideas to address

these barriers. These ideas were visually represented and presented to clients for feedback and refinement in three Nara communities.

### Methods to identify barriers to Family MUAC and solutions

A combined behavioural science<sup>2</sup> and user-centred design (UCD)<sup>3</sup> approach was used to understand why caregivers in the Nara region were not regularly (monthly/weekly) using MUAC tapes to screen children under the age of five. Prototyping, a process of making ideas concrete to enable interactions and feedback from caregivers and other stakeholders, was used to refine early ideas for overcoming prioritised barriers. Specific steps in the process are outlined below.

### Behavioural journey mapping and barrier validation

Workshops were conducted with Mali-based nutrition colleagues and CHVs to break down caregiver-led monthly screening into "target behaviours" – i.e., actions that caregivers need to

<sup>1</sup> Community relays (from the French word "relais") are community members who liaison with community health workers and are sometimes recruited to conduct health campaigns, such as screening for wasting.

<sup>2</sup> Behavioural science combines theories and evidence from economics, psychology, anthropology and cognitive science to build an understanding of human behaviours and decision-making processes. These insights can be tested and applied to the design of interventions, like Family MUAC, for effective delivery and adoption by users.

<sup>3</sup> UCD defines problems from the client's perspective through qualitative interactions to understand their experiences and preferences. It is designed to lead to surface insights, not the creation of generalisable data. Through prototyping, solution ideas can be made visual to facilitate early client feedback.

**Table 1** Behavioural journey mapping: step-by-step target behaviours and barriers

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
<b>Target behaviour to support Family MUAC</b>	Families receive the tape and actively participate in the training	Families understand the training content	Families store the tape in a safe and easily accessible place that they will remember	Families use the tape at least once a month/when the child's health is deteriorating	Families use the tape correctly and understand the measurements	Families take quick/immediate action to confirm with health staff if the measurement is red or yellow
<b>Example of hypothesised barriers</b>	Women are not always permitted to go to training sessions by their husbands + Insecurity, distances and lack of access restrict participation +	Training uses language that women have difficulty understanding – Tension occurs between CHVs and caregivers due to expectations around compensation for screening –	Women store the tape in a place that's "too safe" to keep it protected and therefore forget about it +	Women do not care about malnutrition and/or do not understand what it is –	Women forget how to use the MUAC tape correctly over time +	Women receive mixed messages on what action to take in response to the MUAC reading +
<b>Examples of barriers identified through qualitative research</b>	Some women are poorly trained by other women instead of by trained CHVs or relays	Training sessions are often rushed and/or incomplete, either due to participants' or trainers' lack of time Women do not practise using the tape or ask questions about its use because they lack time or are embarrassed	Some women misplace the tape after training or do not receive one to begin with	Women do not have the time or mental bandwidth to do the screening, as it is not one of the many tasks and chores expected by the family * Women are habituated to using physical symptoms to monitor their child's health status *	Women do not feel self-efficacy or confidence in their own ability to use the tape, especially if they don't get a chance to practise	Families experience stigma around having a malnourished child in some locations * Women are discouraged due to their own, or others', past negative experiences of being denied, or being ineligible for, treatment *

Notes: MUAC = mid-upper arm circumference; CHV = community health volunteer. \* indicates a barrier that was prioritised, – indicates a hypothesised barrier that was invalidated by the research and + indicates a hypothesised barrier that was validated by the research.

take for the programme to be successful in the Nara region. A step-by-step ideal caregiver behavioural journey (Table 1) was conceptualised and the perceived barriers to each step identified. To validate the hypothesised barriers experienced by caregivers and to elucidate their actual behavioural journey, consultations were conducted with caregivers, mothers-in-law, husbands, community leaders, community health workers and facility-based providers. This involved semi-structured interviews and focus group discussions led by a female Malian qualitative researcher to explore participants' attitudes, beliefs and existing practices around wasting prevention and treatment, as well as their experiences of MUAC training and of seeking treatment at facilities.

Six CHVs responsible for MUAC training were also shadowed and interviewed to provide an understanding of their working conditions and the nature of their interactions with the community. Finally, observations were made of trained caregivers using the MUAC tapes to understand their levels of confidence and skill.

### Barrier prioritisation

The generation of a validated behavioural map informed the prioritisation of key barriers at each step. Each barrier was scored according to the anticipated level of impact on the nutrition outcome (impact) and IRC's perceived ability to influence it (feasibility).

Five barriers were prioritised for subsequent work.

1. *Mothers experience competing demands for their limited time, attention and mental bandwidth:* Mothers may deprioritise screening their children due to their many time-consuming responsibilities and household tasks
2. *Stigma:* Caregivers may not conduct screenings or seek care due to the stigma associated with having a malnourished child and the assumption that they may

not be a good caregiver

3. *Lack of social accountability:* Other members of the family may not be aware of the need to screen or may not encourage or value it, since it is neither a social norm nor a familial expectation
4. *Physical symptoms take precedence:* Caregivers are habituated to using physical symptoms (rather than a screening tape) to determine their child's health status
5. *Beliefs about outcomes:* Caregivers may neither see the immediate outcomes of screening nor the tangible benefits of conducting regular screening beyond receiving ready-to-use therapeutic food (RUTF) for treatment.

### Identification of potential solutions using behavioural science

Evidence from the behavioural science literature was used to identify potential solutions to overcome the prioritised barriers to Family MUAC. For example, behavioural interventions that have been used to effectively improve the adoption of, and adherence to, new habits from other contexts – such as behavioural reminders and goal setting, and revealing hidden social norms – were considered for adaptation to the Malian context.

### Client feedback on preferred solutions

Based on this literature and using the UCD approach, activity-based methods like sorting picture cards were used to engage with women, men, imams, mothers-in-law and CHVs on their preferences and priorities regarding over 35 potential solutions. For example, when exploring how to address barriers related to remembering to screen, women were asked to rank pictures of different reminder options (e.g. a calendar, a neighbour or an alarm) and explain their preferences. Appealing solutions included those that improved ease of use, were of low maintenance or cost or were social. Solutions were then refined based on client input.

### Idea generation

One of the key areas for which feedback on solution preferences informed exploration was how existing women's savings group meetings (known as "tontines") could be utilised to remind caregivers to use the MUAC tape. In most communities in Nara, tontines are run weekly or monthly by a respected female leader in the community. These meetings provide an opportunity for women to hold each other accountable for screening their children, while modelling the use of MUAC tapes and creating new social norms around their regular use. Women in the community, and the leaders themselves, believed tontine leaders were well-placed to remind women to screen their children during meetings or when they returned home. Men and imams were asked to supplement social accountability through gentle reminders, especially in communities where women are not part of these tontine groups.

Video-based training for Family MUAC was also identified as useful to standardise key behavioural science-informed messages and prompt behaviours, such as hands-on practice during trainings. The video included an emotional testimony by a woman who had started using the tape regularly after facing many of the common barriers identified by other women in the community (Table 1). Showing the training video to husbands and imams was also deemed helpful to encourage them to respectively remind their wives and community members to use MUAC tapes. Finally, a colourful image depicting a MUAC screening inside or outside the home was suggested as a salient reminder of the need for regular screening.

### Refining and prototyping final solutions

The identified programmatic elements were further refined through interactions with 350 people across six visits to the region. We turned these elements into prototypes, or "mock-ups",



of our solution ideas, to test them with users and get critical feedback to inform further iterations of these ideas. The four prototypes that received the most positive feedback were then tested for desirability as a package of prototype ideas in two villages in Nara for six weeks from December 2021.

## Results

### Social accountability and group reminders

Tontine leaders were asked to remind women to screen for MUAC at the start of each meeting and to facilitate group screenings during meetings. Mothers already bring their young children to tontines, which meet at least monthly, in keeping with the recommended cadence of MUAC screening. Tontine leaders liked this role and women appreciated the peer support and increased self-efficacy of screening their children as a group. However, women initially asked tontine leaders to screen their children directly, which took time and resulted in some leaders expecting financial compensation. Refining the role of the tontine leader to that of a screening “facilitator”, rather than trainer or implementer, will be tested in the next phase. The team will also test alternative entry points in communities where tontines are not common.

### Reminders by husbands and imams

Since not all women in tontine groups go to every meeting and not all women are part of tontines, husbands were also tasked with reminding women to screen. Imams, in turn, were asked to remind men of this role during religious gatherings. Husbands were supportive of reminding their wives to screen, liked learning more about wasting and felt the task of reminding their wives was feasible. Imams understood the link between their role as religious leaders and the aim of the intervention, but were unclear on what to do and how often. While most husbands said they completed their reminders with ease, only one imam reminded men about MUAC screenings more than once during religious gatherings. To clarify their roles, specific training videos for men and imams will be developed and tested.

### At-home visual reminders

Women received visual reminders and displayed them in communal spaces in their family compounds. Over time, however, they stopped noticing them, and this element was discontinued in favour of the better-performing group screenings and reminders by husbands.

### Training video

Drawing upon behavioural science, the video incorporated messaging to destigmatise and normalise messaging around wasting, provided simple rules of thumb for when and how to conduct MUAC screenings and recommending that viewers make concrete plans for how and when they will conduct regular screenings. The video also included a testimonial by a caregiver from the region who talked about her experience of realising the importance of screening and adapting her behaviour to screen more



Women in Nara district ranking ideas in order of preference. Mali, 2021

regularly. This aimed to normalise screening, increase the self-efficacy of caregivers and make the consequences of screening more salient and locally relevant to viewers. The woman’s story was repeatedly identified as a highlight for women, their husbands, and imams, as it appealed to their emotions and was relatable.

### Challenges and lessons learned

#### Training of imams, tontine leaders and husbands

While community-nominated CHVs are obvious candidates for training tontine leaders, imams and husbands, lack of motivation, poor physical mobility and poor eyesight limit this cadre’s ability to achieve high coverage. Piloting will be used to test whether the video training and testimonial addresses some of these challenges by providing standardised content in an appealing format and through job aids, which had previously been requested by the CHVs.

#### Refresher training sessions for caregivers

Refresher training sessions were proposed by facility-based providers and caregivers to increase uptake. However, findings indicated that social accountability, rather than a lack of awareness or care around screening, was the main concern of caregivers. Various local, trusted and scalable mechanisms have been explored to address this issue.

#### Potential reluctance to conduct Family MUAC in food insecure areas

Among food insecure households in Nara, RUTF was valued as a high-quality food, and

some perceived MUAC screening as a qualifier to access it. In such cases, when children were not entered into treatment or provided with RUTF following MUAC screening, caregivers became less motivated to use the tape. Where families experience food insecurity, it is natural for RUTF to be valued as an important source of calories for all family members. Without addressing challenges of food insecurity, the Family MUAC approach may falter should it not provide families with access to RUTF. For families with children who do receive treatment, RUTF doses may be shared across family members. By coupling interventions to improve food security with Family MUAC in food insecure areas, MUAC tapes and RUTF can more clearly be differentiated as treatment-related products, rather than associating them with access to food.

#### Compromised buy-in and use of Family MUAC due to RUTF stockouts

Creating demand for wasting treatment in situations where RUTF is unavailable due to stockouts may compromise buy-in to the Family MUAC approach and make caregivers reluctant to screen.

#### Use of evidence-based solutions

There was strong consensus during the early formative consultations that the main causes of the low uptake of Family MUAC were caregivers’ lack of effort and limited understanding of wasting, as well as a lack of refresher training sessions. However, this was not validated by the research. Similarly, it was initially hypothesised that caregivers would find testimonials from authority figures (like doctors and IRC staff) the most compelling, whereas testimonials by local women were preferred instead. While the testimonial