

Scaling up rectal artesunate in Zambia

MAM@Scale worked with Zambia's National Malaria Elimination Centre (NMEC) to introduce quality assured 100 mg artesunate rectal capsules, a cutting-edge pre-referral intervention given at community level to children under six years old. The drug helps to stabilise patients while they are transferred to a health facility for further treatment. A pilot project implemented in Serenje district in 2017-2018 reported a 96% reduction in severe malaria case fatality rates. Building on this success, MAM@Scale (2018-2020) supported the government to scale up the innovation in five districts. This evidence brief looks at scaling up progress so far and highlights some key lessons to guide wider national scale up of the innovation.



CHW with two RAS recipients, Serenje District

SUMMARY

- MAM@Scale is supporting Zambia's MOH to scale up a community-based severe malaria intervention. Beginning with a small pilot in 2017, the project is on track to reach a population of one million by the end of 2021.
- Community-based RAS administration is being scaled up through the national iCCM platform to ensure long-term sustainability.
- It will be important to apply the lessons learned from MAM@Scale's implementation experiences so far as the innovation is scaled-up further across Zambia.

Background

Over 7,500 malaria deaths occurred in Zambia in 2018¹ and children under six are the most susceptible due to their lack of immunity. MAM@Scale empowered Zambian families in five districts (Chitambo, Serenje, Chama, Manyinga and Vubwi) to reduce their mortality risk from severe malaria by introducing artesunate rectal capsules (known locally as rectal artesunate or 'RAS'), a cutting-edge pre-referral intervention given at community level to

children aged six months to six years old. The MAMaZ Against Malaria (MAM) pilot project (2017-2018) reported a reduction in severe malaria case fatality from 8% to 0.25% in intervention sites in Serenje district.² Building on this evidence base, MAM@Scale began implementation in December 2018 with funding from Grand Challenges Canada, Medicines for Malaria Venture and Transaid. Originally an 18-month intervention, additional funding from FIA Foundation, Grand Challenges Canada and a private donor extended the project by six months and

enabled the inclusion of a COVID-19 focus. MAM and MAM@Scale built on a longer-term investment in community health systems strengthening by two earlier projects.³

¹ World Health Organization, 2019, **World Malaria Report 2019**. Geneva: WHO.

² Green, C. Quigley, P. Kureya, T. *et al*, 2019, "Use of rectal artesunate for severe malaria at the community level, Zambia", **Bulletin of the World Health Organisation** 97, 810:817.

³ Mobilising Access to Maternal Health Services in Zambia (MAMaZ, 2014-2016), funded by UK Department for International Development and MORE MAMaZ (2016-2018), funded by Comic Relief.

Approach

Working in partnership with district health teams, MAM and MAM@Scale trained over 2,000 Community Health Volunteers (CHVs) to mobilise their communities, administer RAS and refer severe malaria cases to the health facility for further treatment. Training was also given on the identification and referral of other child health emergencies and, from April 2020, COVID-19. The project was grounded in a systematic community engagement approach which, in turn, included a major focus on gender empowerment and social inclusion. Community-managed safety nets (e.g. food banks, emergency savings schemes and emergency transport systems comprising bicycle ambulances) were established to tackle barriers and delays to use of health services. Front-line health providers were trained to improve severe malaria case management and encouraged to support and supervise CHVs and riders. Members of the district health team led the planning for, and were involved in the implementation of, project activities and were consistently supported to embed the initiative in their routine health systems. The idea was to build local capacity to sustain the intervention beyond the end of the project. A community monitoring system and baseline and midline quantitative surveys measured progress, outcomes and impact.

Serenje and Chitambo districts operated as demonstration districts and aimed to show how RAS administration at community level

could be scaled-up within a district. Over 800 CHVs in these districts, an average of five per community, were given a four-day training in RAS administration and community mobilisation and supported to cascade the community mobilisation part of the training down to other CHVs. In three other districts (Vubwi, Chama and Manyinga), RAS was integrated as a module (one day duration) into the integrated community case management (iCCM) training package. The idea was to sustain the severe malaria innovation by integrating it into a national, well-funded CHV training programme.

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Outside the demonstration districts, MAM@Scale worked in partnership with other organisations: the USAID Program for Advancement of Malaria Outcomes in Chama and the Churches Health Association of Zambia in Vubwi and Manyinga. In these districts, all training was delivered directly to CHVs. On average one CHV per community was trained in these districts.

Sites where CHVs were trained to administer RAS as part of the iCCM training package were categorised as low intensity sites. In comparison, most of the intervention sites in Chitambo and Serenje were categorised as high intensity. Characteristics of the low and high intensity sites are outlined in Box 1.

BOX 1: CHARACTERISTICS OF HIGH AND LOW INTENSITY INTERVENTION SITES

Low intensity sites

- One CHV trained in RAS administration
- CHV to population ratios were high (usually between 1: 500 to 1: 1,000)
- CHVs supervised by local health facility staff
- Lower level of coaching and mentoring support provided by MAM@Scale
- CHVs learnt about how to establish community safety nets, but limited support provided

High intensity sites

- Minimum of 5 CHVs trained in RAS
- Up to 12 additional CHVs per community trained to mobilise the community
- CHV to population ratios were lower (usually below 1: 250)
- CHVs supervised by local health facility staff
- MAM@Scale provided a higher level of on-going coaching and mentoring support
- Intervention communities actively supported to establish community systems
- Some sites operated emergency transport systems to reduce referral delays

Intervention sites in MAM@Scale intervention districts

	SERENJE	CHITAMBO	CHAMA	VUBWI	MANYINGA	TOTAL
Health Facilities	25	14	18	12	11	80
Intervention Sites	113	67	134	58	65	437
% high intensity sites	82%	97%	0%	0%	0%	36%
% low intensity sites	18%	3%	100%	100%	100%	64%



Health worker with young patient, Serenje District

Results

The MAM pilot project reached a population of 54,000. By scaling up in five districts, MAM@Scale reached a population of 320,000. A second phase of MAM@Scale begins in December 2020 and is expected to extend the population coverage up to one million by the end of 2021. During this second phase, MAM@Scale will work with government and development partners to build capacity so that the RAS innovation can be scaled up quickly in additional districts.

MAM@Scale reached 75% of the population of the two demonstration districts and covered all priority communities. A baseline survey (February 2019) and a midline survey (July 2020) identified that reported severe malaria case fatality rates among children aged six months to six years old fell by 71% over a one-year period. In addition, the proportion of simple malaria cases that became severe reduced from 2.2% to 1.1%, indicating that cases were being seen and treated earlier. Roll-out of RAS began much later in the three other districts and hence headline results for these districts will be reported in an endline survey scheduled for late 2021.

MAM@Scale placed considerable emphasis on training equal numbers of male and female CHVs to promote male involvement, facilitate greater gender equity and ensure that everyone in the community, including the least-supported women and children, were reached. In the demonstration districts 52% of CHVs were female. This fell to 20% in the other three districts where the project had less influence over CHV selection.

CHVs' malaria-related community mobilisation activities (community discussion groups and door-to-door visits) were recorded by the project's community monitoring system. CHVs in the low intensity districts were at least as active as those in the high intensity districts – in fact in two districts (Vubwi and Chama) they were more active (Fig 2). However, although the CHVs in the low intensity districts worked harder than the other volunteers, communities benefitted from fewer interactions because each volunteer had to cover a larger area. Community monitoring system data also showed that food banks and community savings schemes supported far fewer people in Vubwi, Chama and Manyinga (Fig 3).

RAS Population Coverage

	MAMAZ AGAINST MALARIA	MAM@SCALE PHASE 1	MAM@SCALE PHASE 2
Dates & duration	2017-2018 12 months	2018-2020 24 months	2020-2021 12 months
Provinces	1	4	6
Districts	1	5	10
Population coverage (cumulative)	54,000	320,000	up to 1 million
% increase in population coverage over time	→ 1567%		

Figure 1: Case Fatality Rates, Children 6 Months to 6 Years, Demonstration Districts

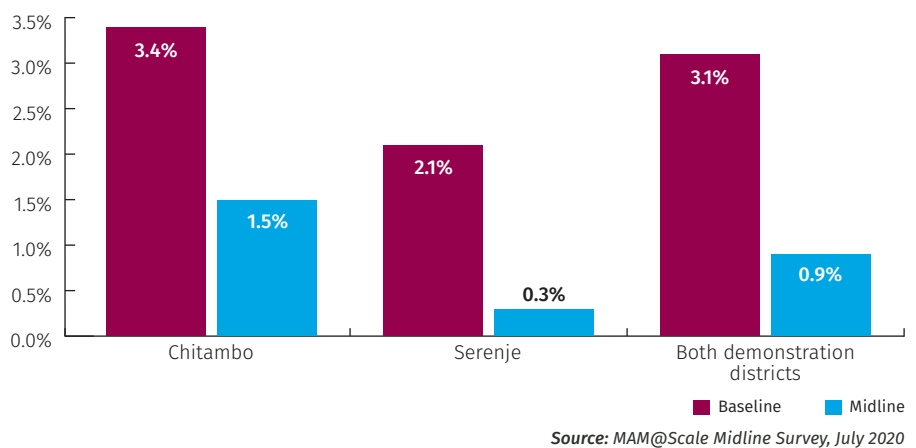


Figure 2: CHV Activity Levels, All Districts

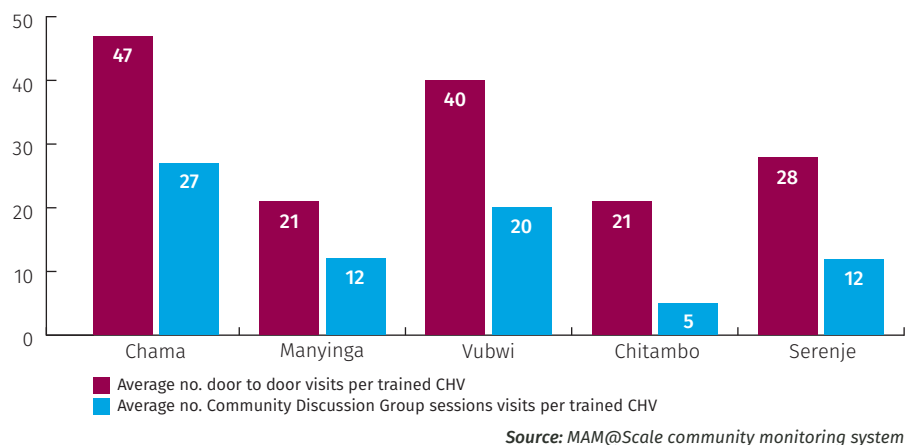
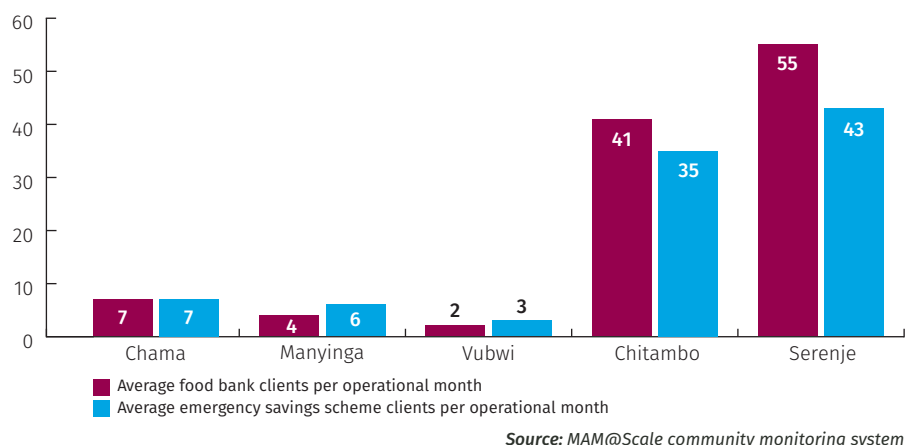


Figure 3: Average Food Bank and Saving Scheme Clients Per Operational Month, All Districts



Lessons for National Scale Up

As the innovation is further scaled up by Zambia's MOH, it is worth reflecting on some of the lessons learned from MAM@Scale's scaling-up processes to date:

Scaling up costs: In an average district with a population size of 150,000, the cost of scaling up RAS training through the iCCM training platform is modest considering the likely benefits in terms of positive health outcomes. In early 2020 MAM@Scale supported the MOH to prepare costings for inclusion of the RAS innovation so that these could be included in Zambia's Global Fund application for 2021-2023.

Cost of Scaling Up RAS

ACTIVITY: RAS training

COST: GBP 9278 / \$US 12,400

ASSUMPTIONS:

- 2 day training in RAS administration and community mobilisation
- Training delivered as module of iCCM training

ACTIVITY: ETS system

COST: GBP 26,880 / \$US 36,000

ASSUMPTIONS:

- Assumes 20 ETS vehicles and 60 riders / custodians per district
- Costs include: scoping exercise to determine priority sites; ETS vehicles; protective and safety items for riders; rider training; spare parts

Note: The costs above assume an average district population size of 150,000 and, within this, a target population of 70% (i.e. urban or peri-urban settlements excluded).

Capacity building for rapid national scale-up:

MAM@Scale will support scale up of the RAS innovation to ten districts by the end of 2021, covering a population of up to a million. However, in order to scale up RAS availability to the entire rural population of just under 10 million, government with the support of other development partners will need to ensure the delivery of a high quality RAS and community mobilisation training through the iCCM training platform. As the only development

partner in Zambia with expertise in community RAS administration, and with over a decade's worth of experience in the design and delivery of emergency transport systems for maternal, newborn and child health-related emergencies, MAM@Scale has an important role to play in building capacity for this wider national scale-up.

Duration of CHV training: To date, a one-day RAS training has been integrated into the iCCM training. This does not allow adequate time to train CHVs in effective community engagement, in how to establish and support community safety nets such as food banks and emergency savings schemes, and how to identify and reach the least-supported women and children who tend to carry the highest burden of mortality in any community. To ensure that iCCM CHVs are appropriately trained in community mobilisation as well as RAS administration – skills that will improve their child health activities more generally – a minimum two-day training is advised.

CHV to population ratios: CHVs in Vubwi, Manyinga and Chama worked at least as hard, and in two districts, harder than CHVs in the demonstration districts, but their population coverage was lower because they were fewer in number. If CHVs are over-worked, this is likely to affect retention rates. Lowering CHV to population ratios to one CHV: 250 community members will not only help to reduce CHVs' work burdens but will also help ensure that more severe malaria cases can be reached and will generate much greater community agency.

Gender balance of CHVs: If disabling gender-related and social norms are to shift in favour of timely health-care seeking, communities require male and female role models. As the RAS innovation is scaled up across the country, it will be important to ensure that equal numbers of male and female CHVs are selected for iCCM training. This will enable the MOH to achieve the desired level of engagement with communities and, ultimately help deliver national malaria and child mortality reduction targets.

Some districts have large numbers of safe motherhood action group (SMAG) volunteers and selecting CHVs from this cadre will enable districts to achieve a better balance of male and female volunteers. It will also help to promote a holistic, continuum of care approach that is more relevant to local populations than vertical disease-specific interventions.

Ongoing support and supervision of CHVs: CHVs work more effectively and retention rates are higher if they receive adequate support and supervision from local health facility staff. As the RAS innovation is scaled up across the country, it will be important to ensure that district health teams have the resources to provide this vital support. A small budget for fuel is often all that is required to ensure that health providers can visit the communities in their catchment area on a regular basis. Regular meetings for CHVs can enhance their access to new information and peer support.

Emergency referral transport: 81 MAM@Scale intervention sites were directly supported to operate emergency transport systems. By October 2020 these systems had supported 2,887 child health emergencies in the MAM@Scale intervention sites, and each bicycle ambulance had carried an average of 36 sick children to the health facility. These community-managed systems have an average shelf-life of 4-5 years and hence offer excellent value for money. ETS plays an important role in helping to break down some of the barriers and delays that prevent timely access to emergency health services. Investing in sustainable, community-managed emergency transport systems will help the MOH achieve its malaria reduction and other child health targets. However, ETS is more than an asset to be procured. Communities need to be mobilised to support, utilise, maintain and sustain the system, and district health teams require skills and capacity to supervise and monitor riders and the funds to support larger-scale maintenance investments (e.g. welding) which may be required on occasions.



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Funded by Grand Challenges Canada and the Government of Canada, Medicines for Malaria Venture, FIA Foundation and Transaid.