Promoting equity through inclusive learning, planning and implementing: lessons from Nigeria's mass drug administration programme for neglected tropical diseases

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Background: An inclusive, localised approach to planning and implementing equitable mass drug administration was developed through participatory action research (PAR). This new approach aligns with principles of learning health systems (LHS). Tools were co-developed to support scaling up the new approach across two Nigerian states. Lessons are distilled here to enable learning for other programmes.

Methods: Observations and reports by researchers (2019–2021) from 23 meetings and workshops, 8 in-depth interviews and 8 focus group discussions (FGDs) were used.

Results: Nine key steps of best practice were identified to promote inclusive LHS for participatory planning and implementing: utilise participatory research methodologies to facilitate community engagement and tailor interventions; develop tools and governance structures to support learning, teamwork and sustainability; strengthen capacity for participation and collaboration with space for dialogue and shared learning; undertake participatory planning to develop action plans; advocate for implementation; monitor action plans; review and act on successes and challenges; apply community evaluation to understand challenges and enablers and disseminate policy and programme changes.

Conclusions: PAR in disease programmes can support health systems to embed cyclical and iterative learning to sustainably address localised equity challenges. However, it takes time, resources and political commitment.

Keywords: community-based programmes, decentralised planning, learning health systems, equity, mass drug administration, participatory action research.

Introduction

Learning health systems (LHS) can be described as health systems with the capacity to learn, innovate and adapt to changing situations while putting people and equity at the centre of their design.[1] The Alliance for Health Policy and Systems Research and the World Health Organization's (WHO) LHS flagship report conceptualises three dimensions for system consideration, including loops of learning, means of learning and learning across levels.[1] To build LHS requires that learning capacity is embedded systemically at individual, team, organisational and cross-organisational levels and that there are in-built mechanisms for decision making and implementation based on best available knowledge.[1] LHS therefore require research capacity and strong partnerships so that health systems can readily take up information and embed evidence into policy, learning networks that have sustained investment and political commitment and strong information and governance systems.[2] LHS must also recognise the importance of knowledge from all levels of the health system and enable spaces for learning through deliberation, action and information.[1] Participatory action research (PAR) is a research approach that supports democratic processes of decision making through a cyclical research process of problem identification and solution development (plan), implementing actions/new solutions (act), observation of the actions/new solutions (observe) and reflection leading to further inquiry and action for change (reflect).[3,4] Guiding principles of PAR in health system strengthening include engaging multiple stakeholders, enabling flexible action planning, addressing power differentials and developing structures for ongoing learning at multiple levels.[3] The principles of PAR are therefore strongly aligned with LHS, as captured in the LHS flagship report,[1] and if embedded into health systems, may facilitate and sustain health systems that continue to learn, adapting to changing contexts and complex challenges.

PAR was used in Nigeria to improve equity of mass drug administration (MDA) for preventive chemotherapy neglected tropical disease (NTD) programmes and inform NTD policy through engaging with community members and multisectoral stakeholders.[3,5,6] Multilevel health systems actors, communities and teachers identified lack of community engagement as a bottleneck to achieving equitable coverage of MDA within different and emerging contexts (border, migrant, rural and urban) of Nigeria.[7] Coverage for communities was unequally distributed, with key marginalised populations such as women, people with disabilities (PWDs) and migrant groups missing out on treatment.[8] This reflects the equity issues in the Nigerian health system and, specifically, equity challenges within Ogun and Kaduna States; while civil society groups exist for marginalised groups such as women, PWDs and migrant populations, they are seldom engaged in planning health programmes.

Over a 4-y period (2017–2021), through two PAR cycles, challenges to MDA (known as mass administration of medicines [MAM] in Nigeria) were identified and an inclusive, localised approach to planning and implementing was co-developed with NTD programme stakeholders. This intervention (described in Table 1) enhanced community engagement and participation of diverse stakeholders across the health system to identify and implement locally driven MDA strategies. The intervention was scaled up across two Nigerian states (Ogun and Kaduna) using multilevel health system working groups, capacity strengthening workshops and participatory tools. This entire process embedded the principles of PAR and LHS. Table 2 summarises the main differences between the existing MDA approach and the inclusive and localised approach developed through the research.

Lessons learned through this research are shared here for applicability to other disease programmes and contexts. By bringing together PAR and LHS approaches, this research has identified nine key steps to support best practice for inclusive planning and implementation in disease programmes. Using lessons from the NTD programme in Nigeria, these steps can support health systems to embed continuous cycles of learning and reflection in other disease programmes that require community engagement so they can sustainably and equitably reach their proposed populations. The authors have identified key lessons from the research—not just what worked well, but also limitations encountered. These are discussed further in the Discussion section.

Methods

Setting and context

Nigeria operates a federal government system with 36 states and the Federal Capital Territory. States are subdivided into local administrative units known as local government areas (LGAs). Across these three levels of the health system administration are NTD teams who, together with community providers (including frontline health facility staff and community drug distributors [CDDs]), implement NTD programmes such as MDA. The inclusive approach to planning and implementing localised MDA (the intervention) was piloted across two Nigerian states: Ogun, in the southwest, has 20 LGAs, and Kaduna, in the northwest, has 23 LGAs. These states were selected for the research to ensure wide variation reflecting the diversity of culture, language and ethnicity, as well as a range of contexts, such as urban, peri-urban and rural localities. Furthermore, the states have different levels of programmatic support for MDA, with Kaduna having long-term financial and technical support from a non-governmental organisation and Ogun having only sporadic support.

Data collection and sample size

This article presents data captured in observations and reports by researchers from different implementation meetings during the development of the Participatory Guide for Planning Mass Administration of Medicines (PGP) and scaling up of the NTD intervention. These include seven working group meetings, seven state planning and engagement meetings and nine capacity strengthening workshops (Table 3). All meetings were observed by the core research team, that includes social scientists from Sightsavers Nigeria as part of the COUNTDOWN Consortium. Some meetings were facilitated by either the core research team or the working group. The working group was constituted at the early phase of the research; they are co-researchers and comprised of NTD stakeholders from across the three levels of the health system. Co-researchers are fundamental in PAR and worked within

Table 1. A new approach to planning and implementing MDA—a description of the intervention process

Intervention stage	Description	Tools produced
Engaging communities and stakeholders to create action plans for MDA (2017–2018)	The PAR approach developed a new bottom-up approach to planning and implementing MDA that would ensure voices from the community and different stakeholders were captured and represented and that local-level implementers were able to ensure context-specific MDA.[6,9] This involved the engagement of co-researchers who were NTD stakeholders from different levels of the health system, federal, state and LGAs to co-develop localised action plans with the aim of increasing equity.[5]	Learning packs for school-based deworming and community-based distribution
Piloting and evaluating implementation of action plans (2018–2019)	The intervention was piloted and observed across four LGAs through community evaluation of MDA (focus group discussion, problem tree analysis and in-depth interviews) and process (action logs, meeting observations and reports, ethnographic observations) and this was used to inform the development of the PGP.	
Developing the PGP as a new approach (2018–2019)	The draft PGP was comprised of four modules and an annex. The PGP provided lessons from the research about stakeholders, structures and mechanisms to engage in MDA and explored differences between urban and rural contexts and different methods to deliver medicines to communities. It also provided information for building partnerships and collaborations with various stakeholders.	• Draft PGP • Action plan templates
Scale-up and evaluation across two states (2019–2021)	The draft PGP was scaled up across two states through the establishment of a new working group (established from multilevel health system actors including co-researchers) to lead the process in each state. The working group facilitated the development of the final PGP and other additional participatory tools. Capacity strengthening workshops took place to train NTD implementers on how to apply the tools within their own context.	• Final PGP • Short introductory video • MDA planning video • Costing tool for the PGP • SOPs

the research team to develop and direct the research ideas, collect and analyse data and disseminate findings. Structured observation grids were used by core researchers to structure the types of data collected and to facilitate the production of comprehensive reports, which were anonymised where appropriate. Occasionally meetings were also audio recorded to support transcription and detailed reports.

All participants at the meetings were affiliated with the NTD programme across federal, state, LGA and community levels during MDA 2019/2020 in Ogun and Kaduna States (PAR cycle 2). In total, 403 participants were observed across all meetings. Additionally, eight in-depth interviews and eight focus group discussions (FGDs) were conducted within Kaduna State following MDA in 2019/2020. No interviews with community members could be conducted in Ogun State during PAR cycle 2 due to the coronavirus disease 2019 (COVID-19) pandemic and the delays the state experienced with MDA due to medicines arriving late. However, extensive interviews were conducted with Ogun during PAR cycle 1 and issues identified fed into the development of the intervention.

Analysis

All observations, interviews and FGD data were combined and analysed using the five stages of the framework approach to qualitative analysis and using NVIVO 12 software (QSR International, Hawthorn East, VIC, Australia). The core research team led the analysis process with support from partners at the Liverpool School of Tropical Medicine, Liverpool, UK. Thematic grids were produced to capture any recommended changes to the intervention as well as strengths and challenges of the approach. A variety of data sources were used for triangulation.

Results

To achieve equity in coverage for community-based disease programmes, contextual challenges and solutions must be considered. This required diverse knowledge from multiple actors during planning and implementing. Nine key steps of best practice have been identified from the data that may promote LHS for

Table 2. Comparison of MDA approaches (prior to PAR and after two cycles of PAR)

Existing community MDA in Nigeria (prior)	Inclusive approach to planning and implementing community MDA (developed during PAR)
Focus on state-level planning (top-down):	Focus on local-level/contextualised planning (bottom-up) with technical working groups at the state and LGA level developed to support the process throughout:
Resources allocated to LGAs to implement	LGAs encouraged to estimate budget need; advocacy team developed to support this
Distribution of medicines through house-to-house method	Barriers and enablers of MDA at the local level considered through community engagement. Based on these insights, planning and action plan developed including wider sensitisation and different medicine distribution methods such as the locally innovated health worker ivermectin administration (HWIA) strategy to reach marginalised/missed populations and fixed post-distribution to reach people not at home at time of campaign
Action plan developed with limited details	Local level action plans developed with specific details such as time, date, person responsible, resources needed
Inclusion of stakeholders	Inclusion of stakeholders
Stakeholder inclusion limited to government employees from the NTD control programme at the state and federal ministries of health	Wider stakeholder engagement involving community representatives of women, persons with disabilities and migrant communities (like the Fulani) community in planning meetings and role allocations such as advocacy and sensitisation, medicine distribution and logistics
Roles and responsibilities not formalised	Roles and responsibilities of stakeholders at local level discussed, agreed and documented
Training of implementers	Training of programme leaders and implementers
Limited time allocated and limited stakeholders included	2-day training with a diverse group of stakeholders. Roll-out of training programme tailored to local need and social structure
Teacher-led approach	Facilitator there to support participatory learning
Training content on medicine distribution and documentation	Agenda includes community engagement, communication methods, conflict management, qualitative research methods, medicine distribution, monitoring, practical session for record-keeping and documentation
Programme implementation	Programme implementation
Limited women CDDs recruited and trained	More women CDDs recruited and trained, CDDs from different communities (such as representatives of PWD and migrant communities) recruited and trained
House-to-house method	Medicine distribution method responsive to communities needs, e.g. the HWIA
Limited support with recordkeeping	Enhanced supervision of implementation and recordkeeping
Institutional memory	Institutional memory
Review meetings conducted at state level; learning not always embedded into next MDA	Review meetings conducted at state and local level, action logs used to timely record challenges and successes to be used in subsequent planning of MDA
Programme documentation and SOPs not widely available	Research skills developed and embedded in programme
	Tools developed from research and widely disseminated, documenting contextual learning from 2 y of MDA. Video and graphic guideline produced to support different learners
	Technical working groups embedded at state and LGA level to support sustainability

Table 3. Data collection and sample size across states

Dataset	Number of meetings across states
Working group observations and reports	7
State and LGA planning meeting reports	7
Capacity strengthening observations and reports	9
Community member interviews (Kaduna only)	8
Community member FGDs (Kaduna only)	8

equitable participatory planning and implementing. These steps broadly align with the PAR cycle of plan, act, observe and reflect, as shown in Figure 1. As with most PAR approaches, these steps are not linear. Rather, they rely on oscillations between periods of action and reflection that reflect the complex reality of health systems, however, they have been presented here for simplicity as steps.

Plan

Step 1: Utilise participatory research methodologies to identify challenges, facilitate community engagement and tailor interventions to community and context

Vertical disease programmes that rely on community participation in delivery require in-depth understandings of community structures and organisation to facilitate the generation of context-specific approaches. To do this, programme implementers need qualitative research and facilitation skills to effectively collect and analyse data to inform their programme.

Participatory methods for programme development

Using analysis of data collected in PAR cycle 1, co-researchers developed insights into context-specific barriers and enablers to programmatic challenges, with a specific focus on identification of barriers to the attainment of programme equity within their LGAs. These insights informed planning for the next MDA and were focussed on accessibility and acceptability of MDA, including, for example, why specific marginalised populations were often missed by MDA or declined medications. Participatory methods included transect walks and social mapping with community and religious leaders, which were conducted before MDA implementation to identify community structures and stakeholders to involve during MDA implementation and to facilitate community entry in a way that was respectful and engaged with community hierarchies. Problem tree analysis, indepth interviews and FGDs were conducted with community members shortly after MDA took place to review successes and challenges. The co-researchers supported data collection and/or analysis of the data, learning first-hand the importance of understanding perspectives from diverse stakeholders within communities.

These insights from data collection and analysis were included throughout the drafting of the PGP to tackle NTDs[9] and the learning packs for community and school-based programmes.[10,11]

Community engagement to support programme uptake

Researchers and working group members reported that as well as identifying context-specific challenges and solutions, community engagement can increase awareness and acceptability of the programme and also mitigate rumours that had previously caused challenges. NTD implementers trained in community engagement methods recognised the value of utilising this approach.
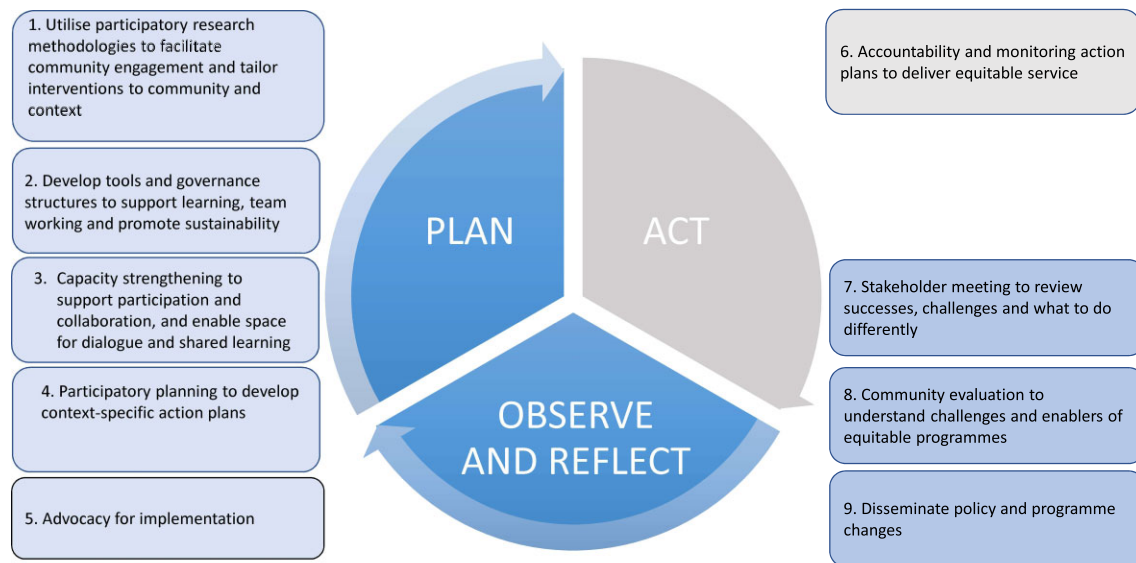

Figure 1. Nine steps to promote LHSs for equitable participatory planning and implementing within disease programmes

Table 4. Capacity strengthening workshops

Model	Activity	Start date	Days, n	Participants, n
Train-the-trainer model	Train the trainer	26 August 2019	2	10
	Zone 1	5 September 2019	2	22
	Zone 2	5 September 2019	2	30
	Zone 3	5 September 2019	2	18
Co-facilitation model	Zone 1	28 August 2019	2	38
	Zone 2	14 October 2019	2	25
	Zone 3	26 September 2019	2	32
Supplementary training	Directors of primary healthcare (medical officers of health)	19 September 2019	1	16
	Refresher train the trainer	16 March 2020	1.5	12

During practical sessions at capacity strengthening training, LGA teams engaged in role plays on participatory methods. Participants showed eagerness to learn, for instance, during the transect walk they asked questions at various points and made contributions on the type of questions to ask while conducting transect walk. Participants also took initiative during the community (social mapping) to sketch and identify current and potential structures for different MAM activities. (Capacity Strengthening report, zone 1, co-facilitation model)

Step 2: Develop tools and governance structures (such as working groups) to support learning and teamwork and promote sustainability

Working groups were developed in each state to drive the process, promoting ownership, accountability, uptake and sustainability across the programme. A variety of tools were co-created and repeatedly reviewed with co-researchers, who formed a working group consisting of 30 members (Box 1).

Box 1. Membership of working groups

State directors of public health
LGA directors of primary healthcare (medical officers of health)
State coordinators and selected staff of the NTD programme in each state
LGA coordinators of the NTD programme
Sensitisation and mobilisation officers at the LGAs
Representative of the Federal Ministry of Health
COUNTDOWN researchers working in each state

A terms of reference highlighted their roles, which included advocating for the new approach, finalising and disseminating tools and supporting the training of other NTD implementers on how to apply the tools during and after the research. Having clear roles was thought to promote teamwork.

Lastly, teamwork was encouraged and used which made every team member to be committed to the activities towards a successful MAM. The fact that roles were specified for each team member made it easier to coordinate said [a working group member]. (Ogun Working Group 2 report)

The working group reviewed the initial draft of the PGP and differences between states, contexts and population groups were discussed. Changes identified by the working groups included the addition of new stakeholders for planning and implementing MDA, changes to action templates, example actions from different contexts and their outcomes, the importance of an advocacy team to mobilise resources and rewording of some sections to reflect the reality on the ground.

Step 3: Capacity strengthening to support participation and collaboration and enable space for dialogue and shared learning

Capacity strengthening workshops were held to support the development of skills such as community engagement methods and action planning techniques and to provide a space for reflection on challenges and facilitators of MDA. Agendas and training activities were co-developed for uniformity across the states, however, states took different approaches to rolling out the training (Table 4). Both state models of capacity strengthening roll-out adopted the existing political demarcation of states into three senatorial zones. LGAs were clustered in each zone and training took place at a central location within each zone. In total, approximately 175 NTD implementers attended capacity strengthening workshops across the two states. Refresher training also took place in one state, as MDA was delayed in some LGAs due to medicines arriving late in Nigeria. Additional training also took place with medical officers of health (directors of primary healthcare) separate from the zonal groups, as they were considered key stakeholders at the LGA level for planning, advocacy and resource mobilisation.

Members of the working group who had been co-researchers from inception of the study were the strongest advocates for the new approach and facilitated the capacity strengthening workshops, highlighting to trainees how they recognised their own

development during the research and the importance of enhanced community engagement.

> Co-researchers shared their experiences on how the research helped in building their capacity and how they do things differently than before. They mentioned that with their involvement they now have better understanding on how to engage with communities in terms of community awareness, sensitization and identifying community structures for mass administration of medicines… (Capacity Strengthening report, zone 3, co-facilitation model)

Soft skills training

The capacity strengthening workshops included participatory activities around communication skills, developing relationships with stakeholders and communities and personal attributes that could help build trust, foster relationships and effectively manage conflict. Participants highlighted the importance of cascading this training.

In one zone, capacity strengthening workshops provided a space for stakeholders to reflect on their roles and responsibilities. Some tensions were observed here around role overlap and power dynamics. This was addressed by a facilitator and consensus was reached. Likewise, for some stakeholders from the same LGA, it was the first time they had sat together to discuss the programme.

> The understanding of the need to involve relevant stakeholders seemed not to go well with some of the [participants] who perhaps feel they may lose grip of the programme… The [working group member] maintained that the incorporation of relevant stakeholders was not meant to usurp the [participants'] position and authority but to engage viable supports for the MAM activities… (Capacity Strengthening report, zone 1, train-the-trainer model)

> In each group, the health educator, monitoring and evaluation officer and LNTD were seated. This made the three of them sit together for the first time to discuss the issue relating to MAM. They were able to identify potential of each other's contribution to the development of MAM programme. (Capacity Strengthening report, zone 1, train-the-trainer model)

Training in community engagement strategies

Workshops covered community engagement methods and how to develop action plans at the LGA level using the PGP. Trainees participated in practising methods such as transect walks and social mapping to understand community structures and identify stakeholders to reach different population demographics, such as PWDs or migrant communities.

Some participants recognised that two-days of training was insufficient to embed the new approach into the programme and the working group were ready to support NTD implementers within their states to develop better understanding. Mechanisms and communication channels such as WhatsApp were set up to facilitate this.

Step 4: Participatory planning to develop localised action plans

Action planning templates to guide this process supported holistic thinking across all aspects of the programme implementation, such as training, advocacy, delivery of medicines, monitoring, supervision and reporting. In one zone, the trainees had little time to practise action planning, which resulted in action plans not being developed in accordance with the PGP prior to MDA.

The PGP recommends that local-level planning meetings at the LGA level should be conducted prior to planning at the state-level meetings. This is a change from current practice, where state implementers previously decided what actions would be implemented for all LGAs, with input from a small number of LGA-level implementers. However, this change was not observed in Kaduna State. Furthermore, local-level planning meetings were observed to be rushed and some participants did not have copies of the PGP to support the process. In Ogun State, local-level planning took place for the first time, and this led to LGA-specific action plans that considered contextual challenges. However, evaluation of action plans across the LGAs revealed that further capacity strengthening is needed for effective action planning, specifically around documenting when and how actions would be conducted and by whom. While some LGAs produced action plans during the capacity strengthening workshops, these were not often used. The LGA action plans were not detailed and clear roles of persons responsible for activities were not assigned.

A variety of stakeholders attended the planning meetings, which was a change from previous years. New stakeholders included social mobilisation officers (SMOs), representative of PWDs, and many others from community/civil society organisations. It was noted that SMOs and ward persons from an LGA were able to draw a context-specific sensitisation plan due to their engagement in the planning meetings. Following the involvement of a representative of PWDs for the first time, a CDD was selected from the PWDs, who administered medicines to them. Similarly, representatives were selected from the Fulani community.

Local planning was perceived to be particularly useful for reviewing LGA landscapes, with new communities identified for programme coverage. Actions were suggested during meetings, such as providing CDDs with identification cards, which was reported to increase motivation among CDDs during MDA.

> She pointed out that CDDs in the LGA were excited to have these tags on them because this gave them a sense of belonging and some level of responsibility that they were working for the government. She appreciated all other partners who approved the recommendations for implementation. (Refresher Training report, Ogun)

Step 5: Advocacy for implementation

Working group members identified the need for advocacy to support MDA implementation and developed an advocacy team to engage with community stakeholders to support mobilisation and delivery of medication to geographically hard-to-reach locations. Involving stakeholders such as the head of the local government administration, community development committees and

National Union of Road Transport Workers mobilised resources such as motorbikes, tables and chairs. The need for an advocacy team to mobilise resources was therefore captured in the PGP, with examples of who to engage and what kinds of resources may be donated to the programme. A costing tool was also developed as part of the PGP to further support advocacy for donors and funders to identify the activity and the associated cost.

> ...because of the improvement in advocacy and sensitisation, there was increased interest and participation by stakeholders, they ensured that their community people are not left out. Formerly advocacy was not as effective because the state pays the visit to the first class chiefs and the LGA chairman, but advocacy visits are now made by the LNTD team, state, state health education department are now involved and more chiefdom are now visited to boost awareness for wider coverage. (Working Group review template, Kaduna rural LGA)

Act

Step 6: Accountability and monitoring action plans to deliver equitable service

Ensuring stakeholders were accountable to deliver actions and that monitoring took place throughout the implementation period was highlighted as a key learning point.

> ...the key thing is that the person(s) responsible for specific action(s) must be stated in the action plan, in this case, the LNTD who is saddled with the responsibility of coordinating the activities and carry along relevant stakeholders. (Working Group report, Kaduna)

In reality, programme implementers had to be flexible as situations changed (e.g. medicines were delayed in arriving in Nigeria or other health programmes took priority). Therefore MDA was implemented later than intended, and for some LGAs, MDA was cut short because of the COVID-19 pandemic. To map what was planned compared with what was implemented, action logs were kept by co-researchers and guidance was included in module 4 of the PGP.

Based on recommendations from the PGP, daily monitoring took place in some LGAs in Ogun to support NTD implementers. However, due to increased cost, less frequent monitoring of 2 or 3 days was later suggested. The PGP was then amended so that other methods of monitoring, which were less costly (such as remote supervision via WhatsApp and phone calls), were captured.

Observe and reflect

Step 7: Stakeholder meeting to review successes, challenges and what to do differently

Evaluating key successes and challenges of implementation was important so that learning can strengthen future implementation. Stakeholder meetings during planning and reviewing of the PAR cycles and informal conversations during implementation enabled a space for learning to happen.

> ...the second person said 'paradigm shift' in this context refers to the process of taking learning from the last MAM to ensure that the next MAM is successful. (Capacity strengthening workshop, training, zone 1, train-the-trainer model, Ogun)

A review template was developed that outlines what worked well, what did not work well and areas that need improvement. A participant in a working group meeting reported what worked well, including engagement of more stakeholders in local planning meetings like the directors of primary healthcare and representatives of PWDs. The use of the PGP was perceived to have impacted the 2019/2020 MDA positively, as more traditional leaders and religious leaders were involved during sensitisation, which led to increased acceptability of medicines.

Step 8: Community evaluation to understand challenges and enablers of equitable programmes

Feedback from communities in Kaduna post-MDA in the scale-up phase of the intervention (PAR cycle 2) was used to support review meetings and stimulate discussion. For example, an FGD with younger men reported that almost all eligible community members were able to access medicines and they attributed this to increased sensitisation prior to MDA.

> ...before we didn't know about the medicines but now they follow us to our houses and tell us about the medicines, its use and importance... They now meet us on the street to give us the medicines freely. (Community evaluation, FGDs with marginalised groups)

Step 9: Disseminate policy and programme changes

The term 'paradigm shift' was first used by working group members early in the research, who recognised the importance and value of this bottom-up approach to planning and advocated scaling up the new approach to other LGAs.

> I see it [PGP] as quite useful that we can even use beyond NTD programme...other programmes in the communities can benefit from this as before we tend to plan for the people without their input and keep wondering why it is not accepted... (inaugural working group report)

> ...the key things is to get the stakeholders to know that there is paradigm shift from the way we do things...and to have a buy into the new paradigm shift so that when the time comes, we will use this as our guide to involve and engage others. (inaugural working group report)

A third PAR cycle was being implemented by the NTD programme after the research programme had completed. It has also been repeatedly highlighted by the working group that

learning from this research could be used and captured within the next master plan for NTDs. While the research has not yet been incorporated into the master plan, tools and outputs were disseminated among the working group and through national high-level meetings.

Discussion

Applying the LHS conceptual frameworks

This discussion maps our research findings to the principles and recommendations outlined in the Alliance for Health Policy and Systems Research and WHO's LHS flagship report and other published literature, alongside our own learning for disease programme and health systems to consider.

Loops of learning

Using repeated PAR cycles within disease programmes can foster the embedment of ongoing learning loops within health systems and recognises the importance of diverse forms of knowledge and community connections from other sectors and institutions such as education; water, sanitation and hygiene; the leisure sector and advocacy organisations for marginalised populations.[12] Including stakeholders from across the system can result in new ways of implementing health programmes, as found in latrine installation in Ghana[12] and health managers capacity strengthening as in Uganda.[13] For these learning cycles to become embedded in disease programmes, a 'paradigm shift' (from top-down approaches to bottom-up) is needed that recognises the importance of identifying local challenges and solutions in an ongoing and iterative process.[3,12] It requires disease programmes (and health systems) to develop trusting relationships and address power imbalances across all levels of the health system and within communities to enable open and transparent discussion and accountability for making changes based on learning.[3,14]

The inclusive, localised approach to planning and implementing MDA applied in this research encouraged local-level planning before state-level planning for NTD programmes, challenging existing top-down approaches to planning, and facilitated local voices to be central in planning and decision making (step 4). As reported in other projects aimed at strengthening health systems, this provided a pragmatic approach to better understand the pathways to access and better health, taking into account context and history, identifying sets of multiple enabling and obstructive drivers at each level of the health system and identifying the required actions without losing sight of the 'whole-system' functioning and the contexts that shape implementation.[15]

Supporting NTD implementers from across the health system to become co-researchers and strengthening their capacity (in both soft and hard skills) enabled new ways of learning and engaging with the communities that shaped the NTD programme (steps 1–3). This challenged established ways of implementing MDA and led to new innovations such as advocacy groups (step 5), new forms of supervision to support accountability and reporting, wider sensitisation strategies and new context-specific mechanisms to deliver medicines (step 6). These illustrate the value of strengthening the capacity of programme actors that has benefits beyond the individual level, to the institutional level,

by improving capabilities, knowledge, culture, relationships and resources that support individuals to perform in co-production efforts. Furthermore, early reports in the first cycle of PAR indicated behaviours within programme staff and policymakers that would support the sustainability of the intervention.[3]

Means of learning

The flagship reports conceptualise three means of learning, including deliberation, action and information.[1] The inclusive and localised approach to planning and implementing programmes enabled formal and informal dialogue and deliberation among diverse stakeholders, many of whom were engaged in the NTD programme for the first time. Formal mechanisms included planning meetings, capacity strengthening workshops, meetings and community evaluations that align with policy dialogue approaches for evidence-informed policymaking.[17] Informal spaces for deliberation included the use of communication networks such as WhatsApp or internet-based virtual platforms. The latter were especially important during the COVID-19 pandemic, as formal mechanisms became disrupted. To support this, agendas and templates were included in the PGP to guide discussion to identify what worked well, what did not work well and what can be done differently next time. Enabling everyone to have an equal opportunity to contribute to the dialogue requires that hierarchies and power dynamics are broken down;[3,14] participatory health research methods, as outlined in the standard operating procedures (SOPs), are an effective means to address this.[18]

Learning through information is highlighted as another means of learning. The programme learned from information provided by community members regarding their perspective of the programme, as well as insights into some of the reason community members may be missed in MDA, a key strategy for co-producing research in low- and middle-income countries.[16] Participatory evaluation methods provided rich data to develop context-specific actions as well as insights into who to engage in advocacy and sensitisation strategies.

Lastly, learning through action, practice and iterative tasks has been highlighted in the literature to be key to individual and organisational learning[1,16] and is central to PAR.[3] Facilitators at capacity strengthening workshops supported NTD implementers to practise skills such as action planning, community engagement methods and report writing in a safe space before conducting them in real-world settings (step 3). While action planning techniques were practiced within capacity strengthening workshops prior to local planning meetings, our research indicates that often this practice time is not prioritised in the complex and fast-paced reality of disease programmes. Understanding the importance of opportunity to practice and adequately providing trainees with allocated time, refreshments and appropriate space is important. The LHS flagship report calls for investment in 'health system innovation labs and learning sites to maximize learning from real-world experiences of practitioners and programme managers.'[1] Providing workshops where programme skills can be practiced aligns well with this.

Learning across levels

LHS must enable learning across all levels (individual, team, organisation and cross-organisation)[1] and is supported through

the nine steps identified. Working groups of co-researchers from the federal government, state government and LGA levels highlighted development in their capacity for community engagement methods and used their individual learning to cascade learning across teams. As recognised by others, sustainable change within programmes and scale-up of new ideas requires human resource capacity and capabilities including leadership and collaboration.[19] The working group and authors propose that this approach could be used by other disease programmes, which may further encourage cross-programme and interdisciplinary learning.

Building the learning capacity of health systems takes time, investment of resources and political commitment

The core principles of participation and localised actions were advocated by working group members; however, cascading this learning and embedding participatory planning and action learning within the health system takes time, political commitment and resources.[12] Through embedding PAR cycles within the NTD programme, the research has shown that this effectively engaged multilevel systems stakeholders, enabling political commitment to support the programme to increase equitable coverage. This political commitment has been demonstrated through high-level stakeholders' determination to include learnings from this research in the next Nigerian master plan (step 9). While this research has also shown that engaging diverse stakeholders in the planning and implementing of programmes has mobilised resources from a variety of local sources, including community leaders and philanthropic organisations via the establishment of advocacy groups (step 5), ongoing cycles of learning and action require sustained investment. The WHO's road map for NTDs 2021–2030[20] calls for greater country ownership of programmes and integration within the health system. This requires sustained financial investment, which can be challenging. For example, reflections from colleagues in Liberia have indicated that while donor and non-governmental development organisation support has been pivotal for progress with NTDs, erratic funding flows have also presented challenges for the integration of services as well as country ownership.[21] To support NTD programme managers to advocate for funding, the COUNTDOWN Consortium has developed a costing tool that outlines the costs of participatory actions (as contained in the PGP), such as training and planning meetings, that can be considered in programme budgeting.[22] The tool outlines the cost of activities highlighted in the PGP so that partners may support a more context-specific, bottom-up inclusive approach to MDA.

The authors recognise that to truly embed the nine steps for planning and implementation into health programmes there must be significant time, sustained commitment and repeated PAR learning cycles. Long-standing issues of trust, power dynamics and developing and sustaining collaborative relationships need to be considered for programmes and scale-up of interventions to be successful.[23,24] Participatory methods can be learned and applied by programme implementers to support addressing these deep-rooted challenges.

Training of soft skills, such as facilitation, communication and conflict management, for the whole workforce should be considered, otherwise this will inevitably be a barrier to teamwork, planning and engaging communities.[16] The template agendas for training within the SOPs,[18] which can be adapted to context, alongside suggested participatory exercises for learning can support programme leads to cascade and scale-up this training, however, programmes need to recognise that scaling up training and ensuring master facilitators are equipped with skills takes investment.

Limitations

The strength of this research was in generating health systems champions who are committed to improving equity in MDA programmes. The localised and inclusive approach to planning MDA had a number of successes in improving equity, as demonstrated through our qualitative research. However, in this research we had planned to conduct repeat coverage surveys to demonstrate programmatic impacts, but due to delays in medicines arriving in Nigeria and the COVID-19 pandemic, which halted community programmes, these coverage surveys could not take place (see Dean et al.[8] for the initial survey). Additional interviews and FGDs in Ogun State could also not take place during PAR cycle 2. However, triangulation of extensive qualitative research methods highlighted that programme inequities were addressed through the inclusion of diverse stakeholders in planning and implementing, which enabled the identification of contextualised actions to reach marginalised populations. Participatory learning implemented across the MDA programme strengthened community engagement, with reports of increased awareness and acceptance of the medicines. However, further training and time is needed to strengthen documenting action plans. A further PAR cycle and additional coverage surveys would have further strengthened this research.

Conclusions

Our research has demonstrated that while LHS may take time, resources and political commitment, using PAR and participatory methods in disease programmes can support health systems to embed cyclical and iterative learning that will sustainably address localised equity challenges. Recognising the importance and value of different forms of knowledge (including intersectoral) across health system and communities is essential for all community-based programmes. Moving towards equitable disease programmes requires a paradigm shift from top-down planning to bottom-up planning and implementation, which considers contextual realities and encourages diverse knowledge from multiple actors to identify solutions for implementation. This can be facilitated through the creation of embedded working groups that involve health actors from across health systems (and beyond) who routinely come together (formally and informally) to reflect on and co-develop solutions to systems challenges and to promote equity.

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