

Restarting Mass Drug Administration for Neglected Tropical Disease Programs during the  
COVID-19 Pandemic

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**Abstract**

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The COVID-19 pandemic has disrupted health services, including neglected tropical disease (NTD) programs. Most mass drug administration (MDA) programs were postponed for 6-12 months due to the World Health Organization Guidance on COVID-19. NTD-endemic countries seek to rapidly resume activities in order to minimize setbacks to disease control and elimination. To understand the context of restarting MDA programs, an online survey and virtual focus group discussions were conducted with Ministry of Health NTD Program Managers and representatives from Non-Governmental Organizations working in sub-Saharan Africa. MDA programs have suffered major disruptions, particularly due to resource shortages, lack of personal protective equipment for COVID-19 safety precautions and community hesitancy to engage in MDA activities due to fears about coronavirus infection. Solutions for restarting MDA programs were identified, such as focusing on door-to-door treatment instead of fixed point distribution, and using spoons and premeasured envelopes to minimize health worker contact with drugs. Participants suggested that restarting MDA programs might also push NTD programs to innovate in ways that could accelerate NTD progress through integration with other health programs, incorporating mobile technology to collect implementation data and conducting meetings and trainings online.

## **Introduction**

Neglected tropical diseases (NTDs) are a group of chronic and disabling infections that are most prevalent in tropical and sub-tropical conditions, and which thrive in areas where access to adequate sanitation, clean water and healthcare is limited (WHO, 2010). NTDs affect over 1.5 billion people globally and Africa carries almost 40% of the burden (WHO, 2018). Chemoprophylactic drugs are administered through mass drug administration (MDA) programs for NTD control and elimination. MDA involves distributing safe and effective drugs to individuals living in NTD-endemic areas using campaign-style approaches, including school-based, fixed-point, and door-to-door delivery (USAID, Act to End NTDs, 2020). Most MDA campaigns engage a cadre of volunteer health workers called Community Drug Distributors (CDDs). In April 2020, the World Health Organization (WHO) Guidance on COVID-19 recommended halting MDA programs to reduce the risk of transmission of COVID-19 amongst CDDs and other health personnel, school teachers involved in school-based delivery, and community members participating in MDA (WHO, 2020). The WHO published Risk Assessment Tools in July 27, 2020 to aid Ministry of Health (MOH) NTD Program Managers (PMs), and Non-Governmental Organizations (NGOs) in restarting MDA program activities, including safety measures that should be implemented in order to mitigate the risk of COVID-19 transmission (WHO, 2020).

In January 2021, the WHO launched a new Road Map for NTDs focused on cross-sectoral, integrated interventions, smart investment, community engagement to sustain health systems and strengthen the programmatic response to NTDs (WHO, 2021). The Road Map outlines an ambitious plan for eliminating transmission or morbidity of the five NTDs for which MDA is the

standard of care, including onchocerciasis, lymphatic filariasis, schistosomiasis, soil-transmitted helminths, and trachoma. However, in light of recent progress in controlling and eliminating these NTDs (Uniting to Combat NTDs, 2017), there is considerable concern for a potential recrudescence of transmission due to disrupted implementation and epidemiologic evaluations (NTD Modelling Consortium, 2020). In an effort to understand the context of restarting MDA program activities during the COVID-19 pandemic, the Bill & Melinda Gates Foundation (BMGF) and WHO conducted; (1) an online survey with MOH NTD PMs and representatives from NGOs and, (2) virtual focus group discussions (FGDs) with MOH NTD PMs across sub-Saharan Africa. The goal of the study was to learn how COVID-19 has influenced MDA programs and identify innovative ideas for relaunching programs amidst the COVID-19 pandemic.

## **Methods**

This study used a convergent mixed-methods design consisting of online surveys and virtual FGDs. Participants included NGO representatives working on NTDs and MOH NTD PMs from sub-Saharan Africa. PMs are top level MOH officials responsible for coordinating and overseeing the implementation of NTD program activities.

Quantitative data were collected via an online survey. The online survey was developed and conducted by the Expanded Special Project for Elimination of Neglected Tropical Diseases (ESPEN), based within the WHO Regional Office for Africa. All MOH PMs from 48 NTD-endemic countries in sub-Saharan Africa were emailed invitations to complete the survey. A total of 1974 Representatives from NGOs were also emailed invitations to complete the survey via the Neglected Tropical Disease NGO Network (NNN) listserv. The survey was distributed in August 2020 and responses were received on a rolling basis until September 18, 2020. The survey included

questions related to the status of each MDA program (restarted, plans to restart, or no plans to restart), challenges associated with restarting MDA, and proposed solutions for restarting MDA programs during the COVID-19 pandemic. The survey also asked respondents to identify innovations to MDA delivery that might accelerate progress towards disease control and elimination benchmarks upon reopening. The online survey was composed of 4 main questions and 11 sub-questions, with a mixture of closed and open-ended questions (Appendix 1). Descriptive analyses were used to present response counts and proportions, separately for PMs and NGO respondents. Open-ended survey questions were organized into common responses categories. Survey data were analysed in Stata version 13.1 (StataCorp LLC, College Station, TX). MOH NTD PMs were also invited to participate in FGDs corresponding to their language preference. Three FGDs were conducted, one each in English, French, and Portuguese. The FGDs were facilitated by staff from the BMGF during 60 minute Zoom calls. The interview guide was developed by the BMGF and WHO (Appendix 2). The FGDs were recorded with the permission of participants. All recordings were transcribed. French and Portuguese transcripts were translated into English by private translation companies. Transcripts were uploaded to ATLAS.ti version 9 (ATLAS.ti Scientific Software Development GmbH) and thematic analysis was conducted. After transcripts were read in full, a combined inductive and deductive approach was used with a pre-defined codebook. The codebook was used by a single coder to code each of the three transcripts, with a second coder consulted when necessary. Once the coding process was complete, memos were written to summarize main findings and key themes.

Triangulation was used for data integration across the quantitative and qualitative data, to determine if there was convergence or divergence across the mixed-methods findings (Denzin N,

1978). This process generated a deeper understanding of the strength of specific study findings, and was used to identify key recommendations for restarting MDA program activities.

## **Ethics Statement**

This study made use of data sets that were determined to not require the University of Washington Institutional Review Board (IRB) using the Human Subjects Research self-determination process. Informed consent was obtained from all individual participants involved in the study and data sets do not contain any identifiable information linked to individual participants.

## **Results**

Of all the MOH PMs from 48 NTD-endemic countries in sub-Saharan Africa and 1974 NGO representatives invited to participate in the online survey, 10 PMs from 10 countries and 37 NGO representatives from 25 NGOs responded (20% and 2% response rate, respectively). A total of 37 NTD PMs from 17 countries participated in the FGDs (35% country-level response rate).

Survey and FGD results coalesced around three main themes: 1) MDA program activities have experienced major disruptions, particularly due to resource shortages, lack of personal protective equipment (PPE) for COVID-19 safety precautions and community hesitancy to engage in MDA activities due to community coronavirus fears, 2) Participants identified solutions for restarting MDA programs such as focusing on door-to-door treatment instead of fixed point distribution, and using spoons and premeasured envelopes to minimize health worker contact with drugs. 3) Participants recommended that restarting MDA programs might also push NTD Programs to innovate in ways that might actually accelerate overall NTD progress by integrating NTD program activities with other health programs, incorporating mobile technology to collect implementation data, and using online platforms to conduct meetings and trainings for health workers.

### Plans to restart MDA activities

Despite MDA program activities being halted due to the WHO Guidance on COVID-19 (2020), over 40% of PMs and NGO participants reported plans for MDA activities to restart for all five endemic diseases in the next 6-12 months (Table 1). Furthermore, PMs in the FGDs felt that the WHO Risk Assessment Tools (2020) could be used to restart MDA program activities. One PM stated that,

*“Following the risk assessment, we were given permission at national level to organize treatment in these provinces.” PM #3*

Even with broad plans of using the WHO Risk Assessment Tools (2020) and restarting MDA program activities, PMs expressed concern that halted or reduced funding might affect MDA program relaunch . One PM stated that,

*“One thing that did hold things up slightly was funding. The sponsors had not sent funding yet to keep activities going. Of course, the WHO had issued guidelines to temporarily stop mass activities first of all, but the health districts where we carry out our activities had not had any cases of COVID-19 at the time and even now are at minimal risk. We have also planned the activities that we will look into and carry out once the funding is made available.” PM #3*

**Table 1:** PM and NGO participants survey results

Description	PMs (N=10) n (%)	NGOs (N=37) n (%)
<b>Preventative Chemotherapy (PC)-NTD programs represented by survey respondents</b>		
Lymphatic filariasis	8 (80)	28 (76)
Onchocerciasis	7 (70)	24 (65)
Schistosomiasis	10 (100)	24 (65)
Soil Transmitted Helminths	9 (90)	23 (62)
Trachoma	8 (80)	23 (62)

<b>Plans to re-start or have re-started MDAs<sup>1</sup></b>			
Lymphatic filariasis	Started	2 (25)	6 (24)
	Plan to re-start	6 (75)	20 (71)
	No plan to re-start	0 (0)	2 (7)
Onchocerciasis	Started	0 (0)	6 (25)
	Plan to re-start	7 (100)	17 (71)
	No plan to re-start	0 (0)	1 (4)
Schistosomiasis	Started	3 (30)	8 (33)
	Plan to re-start	7 (70)	16 (66)
	No plan to re-start	0 (0)	0 (0)
Soil Transmitted Helminths	Started	2 (22)	6 (26)
	Plan to re-start	7 (78)	17 (74)
	No plan to re-start	0 (0)	0 (0)
Trachoma	Started	2 (25)	7 (30)
	Plan to re-start	4 (50)	16 (42)
	No plan to re-start	1 (12)	0 (0)
<b>Experienced interruption of prevalence surveys</b>		7 (70)	35 (94)
<b>Plan to use mobile technology to collect data</b>		4 (40)	10 (27)
<sup>1</sup> The denominator for each calculation is the number of respondents in each endemic area. Responses are not exclusive; some respondents mentioned more than one NTD.			

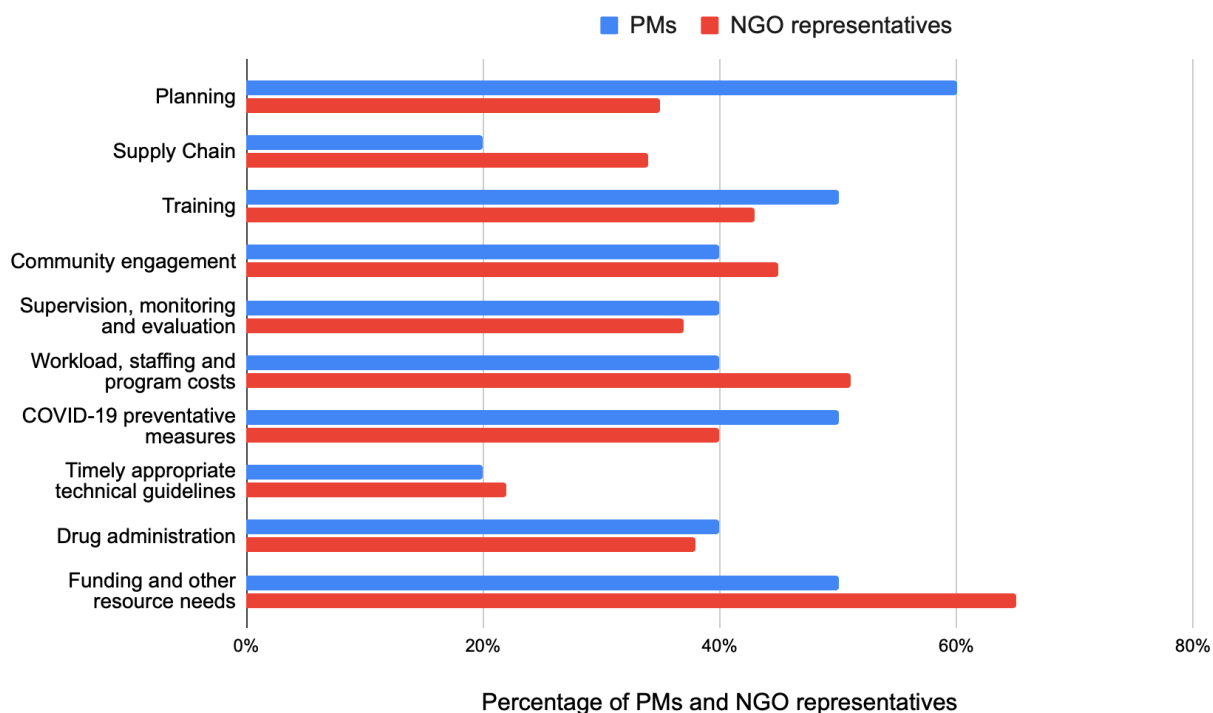
### **Disruptions to MDA program delivery**

Survey participants reported challenges in conducting in-person MDA training activities with CDDs, with nearly half of PMs and NGO participants reporting training disruptions during the pandemic (50% and 45%, respectively) (Figure 1). PMs (50%) and NGO participants (65%) reported challenges in funding and other resource needs such as personnel support to conduct MDA activities (Figure 1). Specifically, survey participants commonly indicated that financial and human resources were being diverted from NTD programs to the COVID-19 response further affecting staffing and program costs (50% and 45%, respectively) (Figure 1).

Due to resource shortages, PMs and NGO participants also reported challenges in procuring PPE and adhering to COVID-19 safety measures such as physical distancing (50% and 40%, respectively). MDA activities often require mass gatherings, or at the very least contact between CDDs and households during fixed-point delivery or community-based distribution. PMs in the FGDs expressed challenges maintaining physical distancing among large community gatherings if drugs are to be delivered at one central place. Furthermore, most PMs (60%) reported challenges in planning MDA activities due to the WHO Guidance on COVID-19 (2020) postponing MDA activities. PMs in the FGDs described that any efforts to restart MDA activities during the pandemic require additional resources to adhere to COVID-19 safety measures:

*“Financial support might be required to provide masks, hand-washing facilities and alcohol based hand sanitizer.” PM #3*

**Figure 1:** MDA program activity disruptions experienced by PMs and NGO representatives during the COVID-19 pandemic



*“Even if we have to launch MDAs now, there needs to be a basic level of safety and the logistics of this generate extra costs compared to what was previously planned.”* **PM #5**

PMs also noted that CDDs might require additional incentives, given potential personal hazards of conducting MDA during the COVID-19 pandemic.

*“Another challenge I could anticipate, seeing as our community health workers go door to door to dispense the drugs, would be whether they are going to need a greater incentive given the risks they are taking.”*

**PM #6**

Another main challenge commonly reported by PMs and NGO participants in survey responses is community engagement and sensitization activities (40% and 45%, respectively) (Figure 1). PMs elaborated upon this concern in FGDs, where they described that community fears about COVID-19 transmission during MDA activities. One PM stated,

*“In the midst of COVID, many communities are afraid that health workers are the ones carrying disease into their communities.”* **PM #7**

In addition to the disruptions to drug delivery, planned epidemiologic and coverage surveys were also noted by PMs and NGO participants to be delayed (70% and 94%, respectively) (Table 1).

One PM mentioned that,

*“when we were getting ready to organize our coverage surveys, our meeting to evaluate activities in 2019...We had to cancel the surveys and the meetings.”* **PM #3**

Furthermore, PMs in the FGDs reported that halted prevalence surveys affected their ability to determine the populations at risk of NTD infections and this resulted in both an excess of unused and near-expiry drugs. One PM elaborated that,

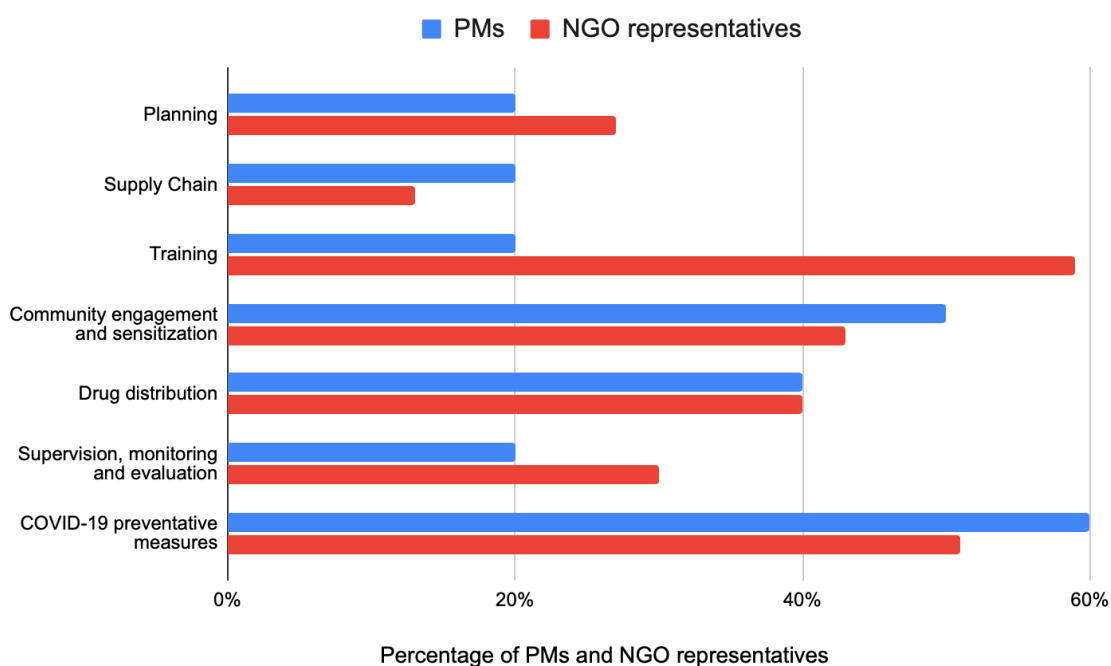
*“Because of COVID they can’t do granular mapping for more precise treatment, and drugs are about to expire.”* **PM #**

## Solutions for restarting MDA programs

PMs and NGO participants frequently reported focusing on drug distribution strategies that they are able to incorporate COVID-19 safety precautions into (40% for both, respectively) (Figure 2). Of all the drug delivery platforms; door to door, school-based, community-based and fixed point, PMs therefore suggested prioritizing door to door drug delivery as a way to control and maintain physical distance and mitigate risk of COVID-19 transmission compared to other drug delivery platforms. PMs in the FGDs expressed concerns with the ability to maintain physical distancing when MDA activities are conducted via large community gatherings in one central place. Further, PMs proposed prioritizing the use spoons as well as premeasured envelopes containing drugs to minimize CDD contact with the drugs. One PM in the FGDs also suggested,

*“You can put the dose pole on the wall, and have the person go stand next to it. The CDD can look at the measurement, while still maintaining distancing.” PM #9*

**Figure 2:** MDA program activities that require adjustment to relaunch MDA during COVID-19



Most NGO participants (59%) reported MDA training activities need to be adjusted while most PMs (60%) reported that drug distribution needs to be altered to incorporate WHO-recommended COVID-19 preventative measures (Figure 2). One PM further stated that,

*“We shall try and change the strategy or model the campaign to avoid crowds of people in the classrooms. We shall try and cut the number of community health agents and no doubt the days of the campaign will be altered.” PM#11*

In light of community member fears about COVID-19 transmission, PMs and NGO participants suggested adapting community sensitization messages that respond to the specific concerns (50% and 43%, respectively)(Figure 2). During the FGDs, one PM proposed that community sensitization methods could be modified to allow for physical distancing, such as using public address systems mounted on vehicles to deliver pre-MDA sensitization messages.

### **Innovative approaches for delivering MDA**

Survey participants suggested a number of innovative ideas for relaunching MDA programs that could accelerate NTD programs towards reaching control or elimination objectives. For example, PMs (40%) and NGO participants (27%) reported plans to use mobile technology to collect data (Table 1). Typically, MDA programs use paper-based data collection and door-to-door visits to collect household-level data which is time intensive to aggregate and has many possibilities for data errors. Therefore, PMs suggested in the FGDs the use of mobile data collection to minimize the risk of COVID-19 transmission but also as an opportunity to collect data rapidly and improve upon NTD monitoring & evaluation. PMs further reported plans to use online platforms for training health workers and conducting meetings in order to reduce travel during the pandemic.

However, this change to training and meeting protocols can also help make in-person trainings more accessible to campaign staff. One PM commented that,

*“We must begin to think about what we have to do to make our work easier. We have thought about online training. We can also think about digital data collection via mobile phone...I think that we can also have multiple online meetings and there is nothing stopping us teaching the people involved in implementing activities how to use these new tools. I think that the easier it is, the more things we could organize smoothly while minimizing the risk involved in carrying out our activities.” PM#3*

Furthermore, survey participants commonly proposed integrating NTD program activities with other health programs to help pool financial and human resources together during the COVID-19 pandemic. Integration involves coordinating activities among different disease programs (Brady MA et al, 2006). PMs in the FGDs recommended integration of activities across NTD programs, such as between schistosomiasis, lymphatic filariasis and onchocerciasis programs to minimize CDD interaction with communities and decrease the risk of COVID-19 transmission. As stated by one of the PMs in the FGDs,

*“Integrating is one approach to minimize contact, time in the community, as well as to integrating activities while resources are stretched thin.” PM #7*

Other PMs recommended integration of NTD activities with non- NTD programs such as malaria programs.

*“There is a malaria spray project where we are assessing the possibility of integrating with this project, given that the spraying will also be done door-to-door in this area, in these border municipalities. This province has many integration initiatives already, through these projects, the malaria project and also the extended vaccination programme in Angola... It was a coincidence that these spraying and vaccination*

*activities were planned at the same time. The provincial Department of Health is favouring integration.”*

**PM #8**

Similarly, PMs suggested leveraging NTD programs for co-delivery of COVID-19 prevention and control. Given that MDA platforms have established transportation and human resource chains to rural areas that can be used for COVID-19 education, case detection, and contact tracing. Additionally, COVID-19 initiatives can be used as platforms for other primary care services such as promoting NTD messaging. One PM in the FGDs stated,

*“In these Covid related initiatives, we included NTD messages to show people that NTD interventions are still here to support them during the pandemic.”* **PM #12**

## **Discussion**

In this study, PMs and NGO participants were commonly optimistic about the prospects of restarting MDA program activities. Participants identified solutions to incorporate COVID-19 safety precautions and adapt delivery strategies despite major disruptions in MDA program activities during the pandemic. These solutions identified may help address major disruptions such as community fears to engage in MDA activities and resource shortages that reduce the ability to incorporate COVID-19 preventative measures. Furthermore, participants identified opportunities to use the WHO Risk Assessment Tools (2020) and other innovative approaches such as mobile technology and program integration to help restart MDA activities. Based on these findings, the study identified three specific recommendations to help restart MDA program activities during the COVID-19 pandemic and perhaps even accelerate program progress.

**Recommendation 1:** Integrate MDA program delivery activities with other health programs. Countries are experiencing an economic crisis due to the COVID-19 pandemic, with already constrained national resources, countries will need to consider cross-cutting, multi-sectorial approaches and enhance domestic resourcing as set out in WHO Roadmap 2021-2030 to restart and sustain MDA activities (Ehrenberg et al., 2020) (Organisation for Economic Co-operation and Development, 2020) (WHO, 2021). Participants in this study noted that the COVID-19 pandemic has renewed urgency in pursuing integration as a mechanism for minimizing CDD interactions with communities and reducing costs in overburdened health systems. Most NTD-endemic countries in sub-Saharan Africa already use or have previously considered different degrees of platform integration (Means et al., 2016). Existing literature have reported that, integrated MDA delivery approaches could result in a higher proportion of community members treated in a single campaign than with multiple separate campaigns, improve cost-effectiveness, logistic convenience and optimize programme efficiency (Keenan JD et al., 2013) (WHO, 2006) (WHO, 2013) (Coulibaly YI et al., 2013) (Harding-Esch EM et al., 2020). Therefore, existing literature support the perspective of study participants to integrate activities across NTD programs in order to minimize contact and costs during the pandemic.

PMs also advised integration with programs outside of NTDs, including routine immunizations for other diseases, malaria prevention and treatment programs, and COVID-19 control and vaccination programs. Integration with non-NTD programs further provides opportunities to both relaunch MDA and leverage existing infrastructure to optimise the use of human resources. Evidence suggests that integration can increase coverage in co-endemic areas (Cheikh Sokhna et al., 2004) (Gyapong et al., 2010) (Blackburn et al., 2006). Existing literature indicates that CDDs can be and are already involved in other health and development activities (e.g. distribution of

vitamin A, malaria treatment, polio immunisation, guinea worm eradication, nutrition, and water protection) (WHO, 2003) (Katarbarwa et al, 2005) (Clasen et al., 2014) (Mekete et al., 2019). Furthermore, as COVID-19 vaccines are introduced and administered in different countries, CDDs can play a role to support vaccine uptake via integrated programming, incentives and support systems that could be aligned across NTDs and other health programs (Ehrenberg et al 2020) (Means et al., 2016). Thus, existing literature support the perspective of PMs in FGDs who proposed leveraging NTD programs for co-delivery of COVID-19 prevention and control. Although participants in this study did not raise challenges with integrating NTD and other health programs, existing literature shows that such integration can be difficult. Recognized challenges include coordinating health programs across diverse funding sources, varied reporting timelines, and disparate requirements for skilled personnel (e.g., CDDs versus nurses trained in vaccine administration) (Harding-Esch et al., 2021) (Gyapong et al., 2010). However, there is precedent to suggest that these challenges can be addressed through effective financing to strengthen health systems and government leadership and coordination (WHO, 2007)(Shoman et al., 2017) (Siekmans et al., 2017) (Quaglio et al., 2016). The MOH PMs in this study could be key resources in providing knowledge and leadership needed to overcome these challenges.

**Recommendation 2:** Leverage mobile technology during the pandemic. Mobile technology has been used in a wide range of health programs for data collection, reporting and delivering health information to health workers and the public (Stanton et al., 2016) (Nhavoto & Grönlund, 2014). To improve efficiency of data collection, countries could leverage existing and piloted cost-effective and feasible mobile technology platforms such as mHealth initiatives that overlap with MDA and other NTD program activities. An example of this has been the use of ESPEN Collect mapping tool designed for data collection for NTD disease-specific coverage surveys (WHO,

2018)(Oswald et al., 2020) (Solomon & Kurylo, 2014) (Ali et al., 2020) (Shieshia et al., 2014). Study participants recommended the use of mobile technology for data collection as a high priority to mitigate risk of COVID-19 transmission. Mobile technologies could minimize physical contact while allowing for rapid data collection and efficient NTD monitoring & evaluation. Although existing evidence shows weak internet bandwidth in rural areas can be a challenge when using mobile technology (Stanton et al., 2016), the 2015 Ebola outbreak in Sierra Leone demonstrated that data collection during a disease outbreak is possible using mobile phone surveys without internet connectivity. (Etang & Himelein, 2020). Therefore, existing literature supports the value of mobile technology as a tool for data collection, monitoring and evaluation during a pandemic.

**Recommendation 3:** Adapt community sensitization plans during the pandemic. Study participants emphasized the importance of creating tailored community sensitization plans that respond to the specific priorities and concerns of community members about COVID-19 transmission. Existing literature shows that tailored MDA messaging during the pandemic could address community member concerns about COVID-19 transmission (Molyneux et al., 2021). During the COVID-19 pandemic, community sensitization plans have been adapted in African NTD-endemic countries by working with village chiefs and providing information on COVID-19 using public service announcements to minimize contact during mass treatment for NTDs (Act to End NTDs | West, 2020). Once again, lessons from the 2015 Ebola outbreak in West Africa are also instructive: Liberia made use of Readiness Assessments to help restart MDA campaigns after a disease outbreak to help build trust in health services and personnel (Bogus et al., 2016). Therefore, existing literature support the study participants' perspective that sensitization

messages could be modified to address community fears about the COVID-19 transmission during MDA campaigns.

This study has several limitations. The data were collected about 8 months after the WHO declared a pandemic; the situation of specific MDA programs in NTD-endemic countries in sub-Saharan Africa may have changed. Furthermore, with a small sample size, the results may not be generalizable to all PMs from African NTD-endemic countries or all NGO representatives working on NTD program activities in the region. However, the study has the advantage of drawing perspectives from participants representing a diverse group of African countries with different geographies, economic situations, population sizes and health systems. Furthermore, this paper is the first formal research analysis that we are aware of that was conducted during the COVID-19 pandemic on the challenges and opportunities on restarting MDA programs from the perspective of MOH NTD PMs and NGO representative working in the field of NTDs in the African region. This paper provides a timely contribution to existing commentaries that could guide countries on the resumption of MDA and other NTD program activities disrupted by the pandemic. (Molyneux et al., 2021) (Chaumont et al., 2020)(Brooker et al., 2021).

## **Conclusion**

This study identified challenges to implementing MDA during the COVID-19 pandemic, and solicited ideas and innovations for how to safely restart MDA. As NTD-endemic countries in resource constrained settings restart MDA activities, the significant investments needed to relaunch paused programs should also be used to catalyse innovations to MDA delivery, helping

programs both to overcome the significant hurdles presented by the COVID-19 pandemic as well as accelerate NTD program achievements moving future.

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# Appendix 1

**Online questionnaire for National Program Managers and Non-Governmental Organization Stakeholders to understand the challenges and opportunities of MDA programs in the context of COVID-19**

<b>A: Brief description of country Preventative Chemotherapy (PC) -NTD program and impact of COVID-19 on MDAs</b>					
Question 1: For each PC-NTD, please answer the following;					
	Lymphatic filariasis	Onchocerciasis	Schistosomiasis	Soil Transmitted Helminths (STH)	Trachoma
1.1: Endemic diseases (Yes/No)					
1.2: Delivery platform (1-school-based, 2-community-based, 3-fixed post, 4-mixed)					
Follow disease columns from top and enter 1-3					
1.3: Based on the experience of missed or delayed rounds in the past, how concerned are you about the impact of current MDA delays on the progress towards control and elimination goals? <b>1 - No concern, 2 – Some concern, 3 – Large concern</b>					
Follow disease columns from top and enter 1-3					
1.4: Do you have plans to re-start or have re-started MDAs for the different diseases? <b>1-started, 2-plan to re-start, 3-no plan to re-start</b>					
Follow disease columns from top and enter 1-3					

**B: Understanding challenges associated with re-starting MDA and other interventions, and proposed solutions**

Question 2: How has COVID-19 disrupted NTD program activities in your country?

**1-No impact, 2-Minimal impact, 3-Large impact**

Where you score 3, please explain how COVID-19 has disrupted activity

Activity	Score (1-3)	Explanation
2.1: Planning (national and local planning)		
2.2: Supply chain (drug transportation and availability at local levels for distribution)		
2.3: Training (content, timing, availability of trainers and participants)		
2.4: Community engagement and sensitization (CDD engagement and safety, messaging, and use of mass and social media etc)		
2.5: Drug administration (delivery strategy, dose determination, dosing and recording)		
2.6: Supervision, monitoring and evaluation		
2.7: Workload, staffing requirements and program costs		
2.8: Practical ability to incorporate and adhere to COVID-10 measures (PPEs, social distancing, handwashing, reassignment of program staff to COVID-19)		
2.9: Timely and appropriate technical guidelines and integrated SOPs (involving		

COVID-19 and MDAs, practical application)		
2.10: Funding and other resource needs		
2.11: Has COVID-19 made you change activities which will be beneficial for achieving program goals? Yes/No		
2.14: For the main challenges above, what solutions/changes do you propose for addressing the most impactful challenges associated with restarting MDA?		
<b>Challenge (2.x)</b>	<b>Proposed solution(s)</b>	
1.		
2.		
3.		
4.		

<b>C: Impact of COVID-19 on plans for epidemiological surveys and potential challenges.</b>	
<b>3.1.</b> Have plans for epidemiological surveys been disrupted by COVID-19? (Y/N)	
<b>3.2.</b> In what ways have the plans been updated?	
<b>3.3.</b> What changes will you make to how you undertake impact surveys, especially to minimize risk of SARS-Cov2 transmission?	
<b>3.4.</b> What specific changes will you make to collect and process samples safely?	

3.5. Will you combine different disease-specific surveys? If so, how?	
3.6. Will you use mobile technology (e.g. smart phones or tablets) to collect data? If so, for which diseases? Has this changed from before?	

**D: Potential impact of innovation**

Question 4: For which program activities will new and innovative ideas be most impactful in the delivery of MDA and other NTD intervention in a context of COVID-19?

Indicate the importance of introducing change on a scale of 1-3

**1-Not important, 2-Important, 3-Very important**

Where you score 3, please explain reason

Activity	Score (1-3)	Explanation
4.1: Planning (national and local)		
4.2: Supply chain (drug availability from national to community level for distribution)		
4.3: Training		
4.4: Community engagement and sensitization		
4.5: Drug distribution		
4.6 Supervision, monitoring and evaluation		
4.7: COVID-10 measures (PPEs, social distancing, handwashing etc.)		

**F: Opportunities for improvement**

**Question 5: Aside from increased funding for delivery, what improvements would you like to see for improving the planning, implementation and evaluation of NTD programs in the context of COVID-19?**

<b>Opportunity 1</b>	
<b>Opportunity 2</b>	
<b>Opportunity 3</b>	
<b>Opportunity 4</b>	

## Appendix 2

### **Focus Group Discussion Interview Guide:**

COVID-19 has changed the context in which NTD programs are implemented and brought new challenges. Today we are interested to hear about your experience and the challenges you have faced. As you look to resume NTD activities, there are important ways NTD programs may need to evolve in a new context with COVID-19. For example, the way MDAs and surveys are conducted will need to be adapted to accommodate the shift to door-to-door activities. There may be opportunities to combine delivery of NTD interventions with other NTD interventions and with other health programs.

The progress of some programs may have been adversely affected by the pausing of interventions, and alternative intervention strategies may be required to kick-start and accelerate progress towards 2030 goals. Lastly, innovative approaches and tools will be required to address some of these challenges – some of these innovations may be digital, some may be imaginative innovative ways of conducting activities.

To help identify innovative solutions, the Bill & Melinda Gates Foundation in partnership with other NTD funders are planning a series of meetings during the month of September when the NTD community comes together to present, discuss and develop such innovations. Further details of the series and funding will be made available later this month but, in brief, we envisage to award in 2020 a series of medium-sized grants of \$200-300,000 and for exceptional ideas to provide larger amounts of funding.

The funding is intended to support new approaches and tools. The funding is not to cover the acknowledged increased costs due to PPE or extra staff; these costs should be covered from your implementation funding.

We are grateful for the insights some of you have already provided through the ESPEN online survey, today we wish to build on the survey and delve deeper into the challenges your programs face and the kind of solutions you would wish to see address them.