Strengthening Routine Immunization through Subnational Partnerships

The Experience in Bauchi State, Nigeria

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Background

Immunization coverage rates in Nigeria are among the lowest and most inequitable in the world. The 2017 Multiple Indicator Cluster Survey (MICS[1]) estimated pentavalent vaccine coverage to be 33%, while administrative and World Health Organization (WHO)-United Nations Children's Fund (UNICEF) estimates of the third dose of diphtheria, pertussis, and tetanus vaccine (DPT3) range from 48 to 56% for 2011 and 2015. In northern states such as Bauchi, vaccination rates are among the lowest in Nigeria, with only 19% of children receiving the pentavalent by their first birthday (National Bureau of Statistics and UNICEF, 2017).

The routine immunization (RI) program in Nigeria has faced a number of challenges including a shortage of vaccines and supplies, poor-quality health information system data that have made it difficult to plan and deliver adequate services, and the lack of trained health workers in rural areas (Adeloye et al., 2017; Babalola, 2009; Babalola and Lawan, 2009; Dunkle et al., 2014; Fatiregun and Etukiren, 2014; Ophori et al., 2014). A key determinant of the poor performance and underlying constraints is a need for political commitment and accountability that results in weak financial support (Stokes-Prindle et al., 2012). While a number of development partners have provided financial and technical support to the state, activities have not been well coordinated, leading to inefficient deployment of resources.

Recognizing that reforms were needed to mobilize and coordinate resources to address the low immunization coverage rates, the Bauchi State government entered into a partnership with the Bill and Melinda Gates Foundation (BMGF), the Aliko Dangote Foundation (ADF), and the United States Agency for International Development (USAID) in 2014. A three-and-a-half-year quadripartite memorandum of understanding (MOU) for RI system strengthening summarizes the terms of the partnership. The purpose of the MOU was to establish sustainable financing for the Bauchi State immunization program and ultimately improve vaccination coverage rates through improved coordination and accountability mechanisms. The MOU aimed to achieve this goal by first assessing the costs of making the program fully functional at the state, local government area (LGA), and health facility (HF) levels and then establishing a separate basket fund enabling the government and foundations to contribute to the capital and operational costs of the program. To foster sustainability, MOU stakeholders agreed to a plan whereby the foundations provided the majority of the funding in the first year of implementation and decreased their funding over time while the state increased its contribution. USAID contributed to the agreement through its Maternal and Child Survival Program (MCSP), which provided

[1] An acronyms list and references for this case study are included at the end of this brief.

technical assistance and knowledge transfer support at the state, LGA, and HF levels to improve program performance.

The formation of health partnerships has become a dominant organizational model for addressing complex health issues internationally (Brugha, 2008; Cohen, 2006). While these partnerships typically operate at a global rather than individual country or state level, they have demonstrated a number of benefits when compared with organizations or countries operating independently. These benefits include avoiding duplication of investments and activities, sharing knowledge and resources to improve effectiveness, and creating momentum and attracting funding by building a common platform that gains legitimacy and support (Cahill et al., 2003; Caines et al., n.d.). Despite these benefits, a number of criticisms have also been made about global health partnerships, including that they impose external priorities through the introduction of vertical disease programs that distract countries from focusing on health system strengthening, limit stakeholders' voices in decision making, provide insufficient resources, and promote poor governance practices (Biesma et al., 2009; Buse and Harmer, 2007; Mwisongo and Nabyonga-Orem, 2016).

There is limited evidence on how partnerships can be used to improve health system performance at the subnational level. Therefore, the MOU in Bauchi provides an opportunity to document a subnational partnership aimed at addressing systemic challenges facing the RI program. The purpose of this case study is to describe the processes used to develop and implement a state-level partnership in Bauchi and to assess how well the partnership succeeded in achieving its desired outcomes.

Methods

To develop an in-depth understanding of the processes, achievements, challenges, and opportunities associated with the implementation of the MOU, the MCSP study team adopted a case study methodology. The team reviewed key documents: diagnostic assessments, the MOU legal document, relevant national and state policies and guidelines, annual harmonized and costed workplans, PowerPoint presentations from biannual MOU review meetings, and working group (WG) meeting reports. The team also conducted key informant interviews with government officials and collaborating partners (N=36) in February 2018. Interviews followed a semi-structured guide that covered the design, start-up, implementation, monitoring and evaluation (M&E), and transition stages of the MOU.

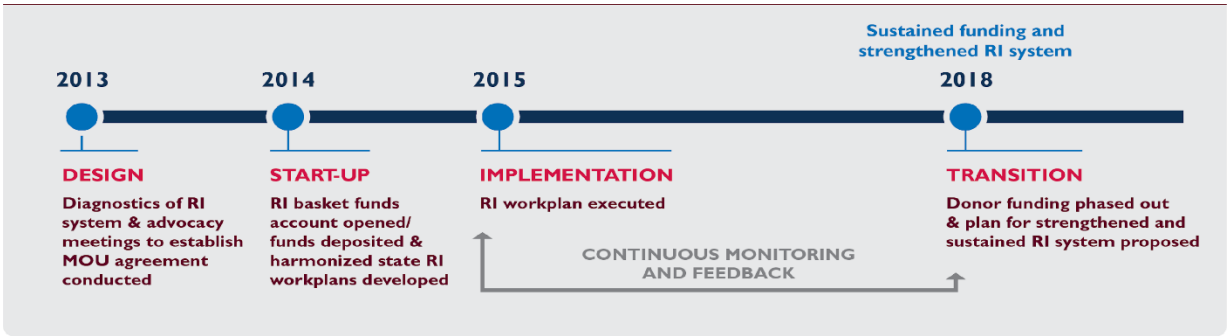
The team reviewed and compiled documents and interview notes into a foundational document within which the data were further organized, aggregated, and summarized. Data were then coded in accordance with a summary matrix that links the determinants of effective partnerships with results at different stages (Druce and Harmer, n.d.). See Appendix 1 for a summary matrix. The team adapted a series of questions that the World Bank considers appropriate when examining a partnership in its early stage of development to provide the basis for reporting the findings (Independent Evaluation Group, 2012):

- **Design**: Was the design of the MOU appropriate?
- **Start-up**: Were governance and management arrangements in place and functioning as planned?
- **Implementation**: Were resources mobilized? Were activities implemented as planned?
- **M&E**: Were effective M&E systems put in place?
- **Transition**: What efforts were made for transition at the conclusion of the partnership?

Findings

The section below describes the processes undertaken in each stage of the MOU to address the determinants of effective partnerships outlined in the summary matrix in Appendix 1. Figure 1 shows a timeline of when each of these stages occurred in Bauchi.

Figure 1: Timeline of MOU development and implementation in Bauchi State, Nigeria



Design Appropriateness

This case study examines three determinants that support appropriate design of an effective partnership: advocacy to ensure strong stakeholder engagement, an assessment that clearly defines the challenges and needs, and a clear rationale and goal for the partnership. The following section describes the extent to which the MOU addressed these design determinants.

Advocacy and conceptualization

BMGF initiated discussions with the Bauchi State government about developing an MOU to strengthen the RI program in early 2014. BMGF's interest in the MOU stemmed from its overall goal of strengthening RI to support polio eradication. A similar partnership with ADF was initiated by BMGF in Kano State in 2013, and partners were interested in introducing the concept to additional states. From the Bauchi government's perspective, however, it was important to understand why the MOU would focus on RI rather than primary health care (PHC) more holistically. The incident manager (IM) of the Bauchi Emergency Operations Center (EOC) made the justification for starting with RI by encouraging stakeholders to recognize that the RI program was complex and that there would be benefits to starting on a smaller scale at the onset before advancing to PHC. Overall advocacy on the MOU was effective because the support came from the top, and lower levels were willing and able to respond quickly.

In May 2014, USAID joined the MOU through MCSP. After a series of in-depth discussions between MCSP, the State Primary Health Care Development Agency (SPHCDA), and partners, MCSP agreed to provide technical assistance related to monitoring and use of data, supportive supervision (SS), community partnerships, and capacity building and training and to contribute to other thematic areas. MCSP conducted further assessments to understand the gaps in these areas and contracted LGA consultants to provide multifaceted technical assistance at the LGA, HF, and community levels to complement MCSP's technical leadership support at the state level. The National Primary Health Care Development Agency (NPHCDA), the WHO, UNICEF, and traditional institutions led by the Emir of Dass contributed to discussions about the design of the MOU and signed the MOU legal document as witnesses.

Diagnostic assessment

Following initial engagement visits between BMGF, Bauchi State government officials, and the SPHCDA, a consultant analyzed the factors related to low immunization coverage. He worked with state immunization staff to better understand how the immunization program was performing. Together, they produced a comprehensive diagnostic assessment of the RI program that was shared with BMGF, ADF, and the state to shape the MOU and serve as a baseline analysis to show trends and progress ("Revitalizing Immunisation in Bauchi State, Nigeria," 2014). The diagnostic assessment was based on official survey data (including the 2013 Nigeria Demographic and Health Survey), administrative data, interviews with SPHCDA staff, and reports. The assessment identified five main challenges facing the RI program in Bauchi: poor functioning cold chain,

no predictable funding, inadequate supervision, inadequate immunization coverage, and poor understanding of the importance of immunizations.

Rationale and goal

For partners who contributed to the original design and conceptualization, the rationale for the MOU was that there was a need to introduce a new partnership approach that could galvanize government commitment and foster sustainable financing to drive improvements in immunization coverage rates. However, others who worked directly with the immunization program suggested that the diagnostic assessment provided the rationale for the MOU by identifying the system gaps. The goal of the MOU as stated in the MOU was to increase vaccination coverage for DPT3 to 80%[2] by the end of 2018.

Start-Up

This section describes the extent to which the MOU addressed three start-up determinants to support an effective partnership: suitable and effective incentive and institutional arrangements and legal structures, a harmonized workplan, and strong financing.

Suitable and effective incentive and institutional arrangements and legal structures

Until recently, the health governance structure in most states in Nigeria had divided the administration of health services between the Ministry of Local Government and the Ministry of Health, resulting in the fragmented management of child health and other PHC services. Many states, including Bauchi, adopted Nigeria's national policy of Primary Health Care Under One Roof (PHCUOR) in an effort to address these challenges. This policy, enacted in June 2014 and considered a precondition for the MOU, calls for states to consolidate planning and management around all PHC services and resources "under one roof," the SPHCDA. Respondents noted, however, that adjusting SPHCDA operations to the PHCUOR bill during MOU implementation was complex and time consuming.

The MOU legal documents were drafted in March 2014 and went through significant reviews prior to signature in June 2014. The agreement became effective July 1, 2014. The primary authors of the MOU documents were the SPHCDA and the Ministry of Justice with support from the Department of Planning, Research, and Statistics.

MOU organizational structure

Prior to the introduction of the MOU and PHCUOR, management of immunization practices was fragmented across state government departments and agencies,[3] making implementation of a comprehensive and strategic approach to improved RI programming challenging. The MOU integrated RI into the Task Force for Immunization (TFI), which was previously focused only on polio.[4] The TFI provides overall strategic guidance, overseeing implementation of the polio and RI program and resolving risks and issues. The TFI meets every two months and discusses emerging challenges and how and who will address problems. A separate key principals committee composed of MOU signatories, including the governor, Aliko Dangote, Bill Gates, and the USAID mission director also met biannually to discuss emerging issues affecting the operations or guiding

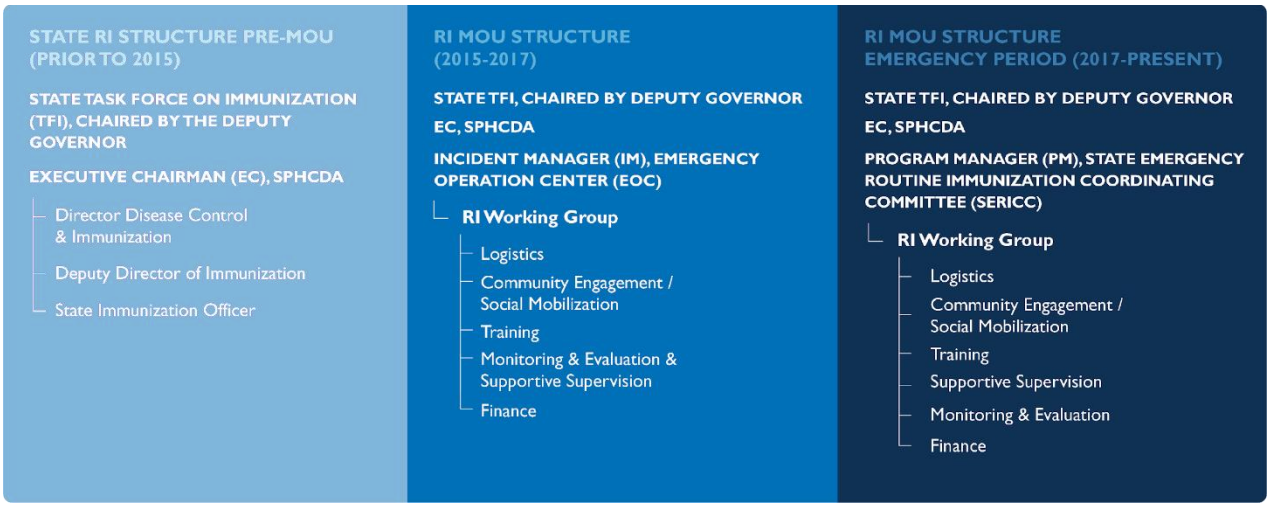
[2] Given the low level of immunization coverage at baseline, stakeholders perceived these targets as aspirational.

[3] The RI program was managed by the director of PHC who reported to the SPHCDA executive chairman (EC). The state immunization officer (SIO) and deputy director of immunization reported to the director of PHC. Polio was considered an emergency and was managed separately under the leadership of the IM who reported directly to the SPHCDA EC. Human resources from the immunization unit supported polio activities. The SPHCDA EC reported to the deputy governor, who chaired separate task forces for RI and polio.

[4] The TFI is chaired by the deputy governor and the Emir of Dass and includes 20 LGA chairmen; select district heads across the six emirates; the commissioners for health, LGA affairs and finance; the SPHCDA EC; SPCHDA directors; the IM; the SIO; and each partner.

principles of the MOU and advised the SPHCDA accordingly. The high-level partner engagement served as an essential element in achieving sustained government commitment. The MOU funding partner representatives in the states alerted the national/international level organizations for issues that required attention. The MOU funding partners approved significant costs,[5] reviewed and approved changes for activities, and approved milestone completions.

Figure 2: Changes in RI program organizational structure (pre-2014 to present)



To oversee the MOU, MOU stakeholders in 2015 also created an Operational WG, which brought together the RI, polio eradication initiative, and non-polio supplemental immunization activities WGs. The Operational WG provide updates on activities conducted and planned to the TFI. The EOC IM chaired the Operational WG, and the SIO and deputy director of immunization provided support. The Operational WG reported directly to the SPHCDA executive chairman (EC), who was responsible for overall management and leadership of PHC activities, including assigning staff to WGs. All partners working on RI participated in Operational WG meetings regardless of whether they were MOU funding partners.[6] LGAs implemented a similar governance structure.

The MOU established a number of sub-WGs to address specific areas that needed strengthening, including finance, community engagement/social mobilization, M&E/SS, logistics, and training. A state government employee led each sub-WG. The sub-WG structure enabled team members to resolve specific technical issues at a lower level during monthly reviews and elevate issues to the Operational WG when more advice was required, as the heads of the sub-WGs participated and gave updates at the Operational WG meetings.

In late 2017, because of the country's continuing poor immunization performance, the NPHCDA set up the National and State Emergency RI Coordinating Committees (NERICC/SERICC) to improve RI performance and efficiency. In January 2018, Bauchi also created LGA-level emergency RI coordinating committees. The Bauchi SERICC did not significantly alter the management structure of the MOU, but the SERICC program manager (PM) now chairs the operational WG and manages the MOU workplan. The change caused a temporary slow-down in operations while the state ensured coordination between the EOC IM and the SERICC PM. The PM now sends "no objection" letters[7] to partners and is responsible for implementing activities. The structure of the sub-WGs also slightly changed, as shown in Figure 2.

[5] Any expenditure above 250,000 naira required partner approval.

[6] In addition to the MOU-signatory partners, a number of non-MOU signatory partners contributed to the sub-WGs including EU-sign, eHealth Africa, Solina, UNICEF, WHO, CDC-NSTOP and Chigairi.

[7] The no objection letters are used to seek approval from the MOU signatories to spend MOU funds above 250,000 naira.

Harmonized workplan

Findings from the diagnostic assessment led to the development of a fully costed and harmonized RI workplan that outlined all activities assigned to the state and partners. Annual workplans were structured around six thematic areas: 1) governance and accountability; 2) access and utilization; 3) vaccine security, cold chain, and logistics; 4) SS and M&E; 5) community engagement and social mobilization; and 6) training. All partners (including non-MOU signatory partners) provided their workplans to the sub-WGs, which then independently developed yearly workplans and budgets. Sub-WGs submitted their workplans and budgets to the Finance Sub-WG and Operational WG for consolidation into the harmonized workplan. The IM submitted the harmonized workplan and budget to the SPHCDA EC, who introduced the workplan for approval from the TFI and MOU signatories.

Financing

The signed MOU covered a three-and-a-half-year period and required the state to establish a separate budgetary line item for RI. The agreement aimed to improve sustainability through a phased funding approach and committed ADF and BMGF to provide 70% of funds for RI programming in the first year, while the state provided 30%. In the second year, both the foundations and the state government provided 50% of the funding. In the third year, the foundations provided 30% of the necessary funds, and the state provided 70%. In the final year of the MOU, the state committed 100% of the necessary funds. The Implementation section below describes the financial management procedures.

Implementation

The structure of the RI WG and its sub-WGs drove analysis of MOU implementation. This section describes their work, addressing determinants of effective implementation, including financial accountability; strengthened capacity of human resources; enhanced communication between the health system, traditional institutions, and the community; improved resource management (i.e., vaccine procurement and delivery); and improved performance measurement.

Financial management

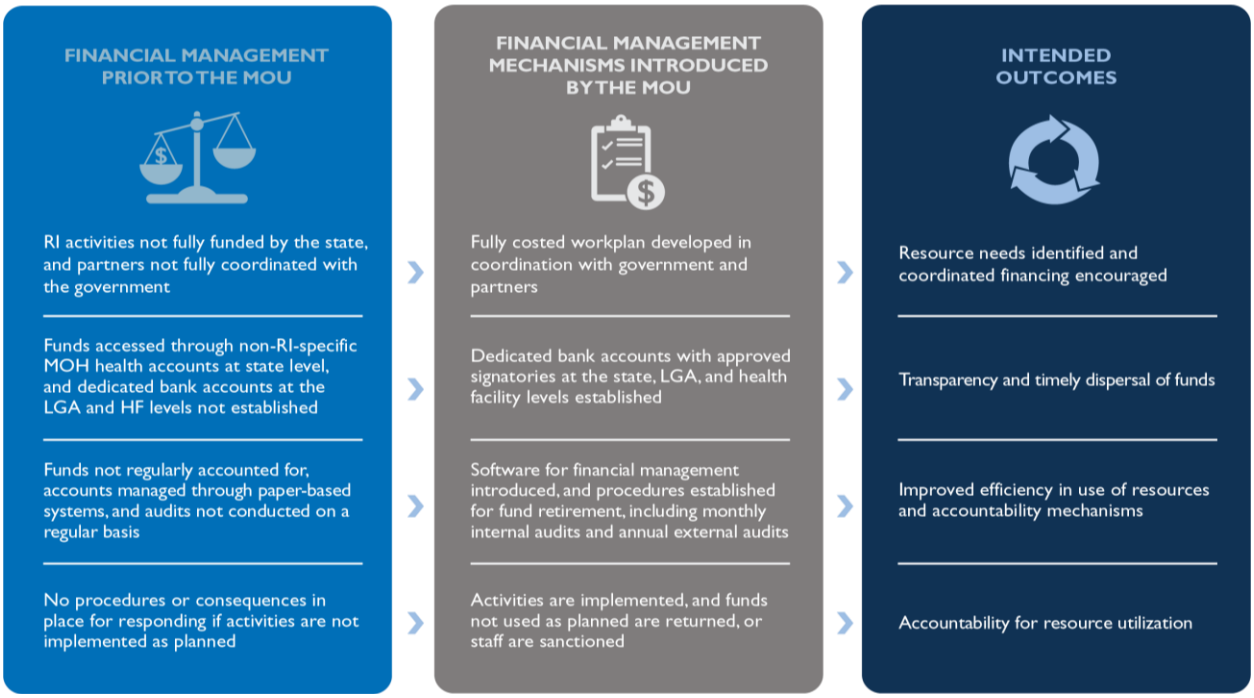
The state opened a separate basket fund account as described in the MOU legal document for the RI program. The basket fund made access to funds more efficient because it reduced the number of protocols that officials were required to complete to access funds. The EC, accountant, and director of administration and finance were the signatories to the account. The foundations made their contributions into the basket account after the state made its contribution. While the separate account also signaled government commitment to the RI program and prevented resources from being diverted from RI programmatic needs for other purposes, there were still some delays initially in the government release of funds. The Finance Sub-WG shared the list of costed workplan activities with MOU partners at the beginning of each quarter. After the list was approved, officers in charge of the activities for each thematic area requested funds; requests were approved by government officials before funds were disbursed by the auditor. These adjustments were made during the quarterly review meetings. The foundations requested that funds not roll over from year to year, so the state used the outstanding balance to invest in capital investments each year.

To ensure financial accountability, the MOU put in place a number of key measures summarized in Figure 3. MOU partners engaged with an external auditing firm that was recruited through a competitive bidding process. External audits were completed annually beginning in 2016. Added financial oversight procedures, including those already used by the polio program, were also introduced to the RI program by the state. These mechanisms included ensuring that funds were disbursed in accordance with the MOU agreement, verifying documents, and validating retirements. By late 2015, the state transitioned from manual to digital account software tools, and standard tools were in place to track funds and conduct regular reviews. For example, an open data kit was used to collect information through mobile phones on the number of SS visits conducted. Supervisors were required to leave paper-based documentation of their visits at the HFs, which then provided

proof of their activities and reported that the supervision visit occurred. Internal auditors also connected with community leaders and HF providers to validate that activities had occurred. The state is now more sensitive to false or non-reporting, and health providers and supervisors must return unused funds or are sanctioned if they are not able to account for the funding they received. The additional financial oversight also enabled the Finance Sub-WG to track funds utilized by activity and to make adjustments based on the ability of sub-WGs to absorb funds. For example, if the Community Engagement Sub-WG was unable to complete all of its activities and funds were remaining at the end of the quarter, the funds could be reallocated to the Logistics Sub-WG, which at times struggled to complete activities due to unexpected increases in fuel costs. This flexibility allowed the state to more effectively absorb the MOU funds.

In addition to the state MOU basket fund account, all LGAs and HFs providing RI services also opened bank accounts to receive direct funding. The state sent funds to the LGAs and HFs quarterly; at times there were delays in releasing funds, but usually the transfers were completed no more than 15 days beyond the deadline. Most challenges, such as delays and non-retirement of funds, occurred at the HF level, and the RI accountants conducted spot checks to verify spending. MCSP LGA consultants also routinely checked to make sure that LGAs were conducting outreach activities as planned by asking village leaders to confirm that service providers came. LGA consultants were involved in fund retirement and ensured documents were in order and submitted on time. These checks have improved accountability at lower levels.

Figure 3. Intended outcomes of MOU financial management mechanisms



Training

The Training Sub-WG focused on building capacity at the state, LGA, and HF levels to provide RI services and monitor, evaluate, and manage the RI system. Appropriate and timely training of staff was not only a mandate of the MOU but also a requirement in the PHCUOR bill. At the MOU's start, government staff struggled to understand the MOU, its mandate, and their responsibilities. The state organized a number of trainings for state personnel, including through a learning visit to Kano State, where a similar MOU was underway, so that staff could understand operational procedures. Once capacity for MOU management had been built, the sub-WG implemented a number of activities to achieve its objectives. The group provided

cascaded trainings at the state, LGA, and HF levels to build capacity on delivering RI services, cold chain management, monitoring, evaluation, and other related topics. The sub-WG also evaluated trainings to determine whether they had appropriate participation and whether those attending had gained the required skills. The group conducted a training needs assessment and developed a database to track health providers and managers who had been trained, identify gaps in training, and prioritize future training activities.

During MOU implementation, the sub-WG made a number of changes to improve training. For example, the SPHCDA adapted adult learning principles into the training by reducing class size; using knowledgeable trainees to facilitate the training; introducing real work situations; not overburdening participants; and using interactive approaches such as demonstrations, case scenarios, and role playing. MCSP supported the state to introduce and train staff using the *Basic Guide for RI Service Providers*. The *Basic Guide* is a reference document that supports training on a common set of operational principles.

Community engagement and social mobilization

The Community Engagement & Social Mobilization Sub-WG focused on increasing demand for RI and improving and strengthening facility-to-community linkages by coordinating community mobilization and engagement activities. The sub-WG included representatives from the Bauchi State Emirate Committee on Health (BASECOH), which represents the spiritual leaders of Nigerian Muslims. BASECOH serves an important role in community engagement in Bauchi, working with traditional institutions to coordinate health activities, facilitate dialogue, and disseminate key information.

The sub-WG and BASECOH worked together to develop a community engagement strategy with simple guidelines for implementation by the state and partners. The sub-WG oriented the BASECOH committee on the importance of RI and identified government focal persons at the state, LGA, and ward levels to liaise between government and traditional institutions. The sub-WG and BASECOH identified specific RI support roles for community resource groups (CRGs) that included traditional birth attendants, traditional barbers, imams, and other community leaders, and coordinated with ward development committees led by traditional rulers. Traditional leaders were tasked to support planning for RI facility-based and outreach sessions and to contribute to monitoring and SS processes. These traditional leaders, along with traditional barbers, were tasked to register children in their communities, link them to facilities for RI, and track their immunization progress through simplified registers and tools like the My Village My Home register and other community name-based registers. In addition, the sub-WG and BASECOH engaged traditional leaders to announce and promote RI initiatives like outreaches and dialogues and to deliver key messages on RI during religious ceremonies and other events. Town announcers were also trained and asked to deliver these event announcements and key messages. In addition to engaging with traditional leaders, the sub-WG and BASECOH trained service providers to use registers that enabled volunteers to follow up with children in the community. They also trained over 2,000 traditional barbers to refer children to facilities for RI. Finally, the sub-WG and BASECOH supported community mobilization activities in local dialects by working with traditional institutions and civil society organizations to conduct sessions to educate the public on RI and its benefits and to address negative perceptions about RI.

Logistics

The Logistics Sub-WG ensured potency of vaccines and their safe arrival at HFs at the right time and in the right quantities. To achieve these objectives, the group introduced a number of activities under the MOU. First, the sub-WG procured cold chain equipment (CCE) including solar direct drives and a walk-in cold room in newly constructed zonal cold stores in the first year of the MOU (when partner funding was at its highest). This ensured a more consistent supply of appropriately stored vaccines, leading to fewer stock-outs. Since partners were primarily responsible for the budget in the first year, the burden of purchasing expensive CCE was taken off the state. Second, the group introduced a push system for direct delivery of vaccines to HFs through a private distributor and explored options to train government staff on vaccine delivery. Third, to build capacity for cold chain management, the sub-WG developed a guide to show the protocol for cold chain maintenance

and trained ward technical officers in its use. Finally, to improve analysis and reporting on vaccine utilization to support decision-making, the group worked to move to an electronic records storage system and supported data personnel to develop new reporting forms to capture vaccine utilization data. The sub-WG also ensured that regular SS visits were used to train LGA cold chain officers (CCOs) in filling out forms and engaged directly with the CCOs to inform them on cold chain management updates.

Monitoring and evaluation/supportive supervision

The M&E Sub-WG worked to ensure that the state had an M&E framework to guide the implementation of the harmonized workplan and ensure transparency, provide the data necessary to monitor progress and improvements, and develop an SS plan for the state. The group implemented a number of activities to accomplish these objectives. First, the group established an M&E plan with indicators tied to activities in the harmonized workplan. Second, the group supported performance reviews through the Operational WG meetings, TFI meetings, and biannual partner meetings to review MOU indicator data and discuss progress. Data WGs at the LGA and HF levels also held monthly, quarterly, and biannual review meetings. Third, through the MOU, the group procured computers and internet access, which helped to alleviate issues with paper-based forms, including the tools not being printed or fully distributed. Fourth, the group developed an SS plan for the state that outlined the roles and responsibilities for supervisors and mandated the use of standard supervision tools. Finally, the WG established a formalized process for capturing data from the community and HF level and transmitting the data to the national level.

The sub-WG also conducted a number of activities to build M&E and data management capacity in staff at the state, LGA, and HF levels. The introduction of district health information system (DHIS2) during the MOU period coupled with trainings on how to use data and analysis for reporting helped to strengthen feedback on performance. Following initial group training efforts, the group focused on one-on-one trainings. Staff at the state level conducted individual sessions as needed with LGA staff, who conducted similar sessions with HF staff and reported on progress to the sub-WG. The group used data spot checking during review meetings and SS visits as opportunities to continually improve M&E capacity. The SS Sub-WG that formed following the introduction of the SERICC developed an SS and mentorship plan for the state that outlined the roles and responsibilities for supervisors and mandated the use of standard supervision tools. State SS visits to the LGAs were to be conducted on a monthly basis, and LGA SS visits to HFs were also conducted monthly. SS visits used a checklist and included feedback sessions to discuss progress, challenges, and potential solutions. Administrative data[8] showed that the percentage of HFs receiving at least one SS visit for RI within a quarter increased from 23% at the start of the MOU to 92% in 2018.

Transition

Following the 2017 mid-year review, the Bauchi government emphasized the need to extend the MOU. The rationale for this extension was based on the need to continue working toward 80% DPT3 coverage, the opportunity to support the Bauchi agenda in providing an integrated PHC health package through an expanded partnership with the European Union and UNICEF, and recognition of the achievements to date. The Bauchi government is now scaling up the RI MOU experience to more comprehensively address all PHC needs. From 2018 through 2019, the existing RI MOU will be extended, and USAID will continue to provide technical assistance through its in-country partners. The government will continue to fund 100% of RI program expenditures over this period. Beginning in 2019, a new five-year PHC MOU is scheduled to begin, and the government is committed to funding 20% of PHC costs in the first year, while BMGF and ADF will contribute the remainder of the total costs of the PHC program. The government will continue to increase its contributions by 20% each year, reaching 100% in year five. The European Union, through a grant to UNICEF, will support the state by providing equipment, child health commodities, capacity building, and integrated SS.

[8] The government and other organizations collect these types of data for registration, transactions, and record keeping, usually during the delivery of a service.

The state will use a similar WG management structure and a harmonized workplan for PHC activities to bring together and align all partners and avoid duplication of efforts. The TFI will be renamed to the State Task Force for Primary Health Care and will provide oversight for PHC activities, including approving the harmonized PHC workplan and holding monthly meetings to approve progress. PHC components will be integrated into RI community engagement activities, and quarterly integrated SS will be introduced. The same accounting structure used under the RI MOU will be applied to the PHC MOU. This structure will include a basket fund to ensure funds are allocated in a separate account for PHC and the direct transfer of funds to HF accounts for PHC activities. In addition to leveraging these existing structures, the state will develop a costed minimum package of services and conduct a bottleneck analysis.

Discussion and Recommendations

The Bauchi RI MOU introduced a new model for leveraging the strengths of global public health partnerships by focusing on a tailored subnational-level application. The state approach did not fully resolve some of the drawbacks of global health partnerships, such as externally driven focus (on RI), but it was well resourced, had strong governance structures, and offered an opportunity to achieve sustained government commitment to RI. This case study demonstrates that determinants of effective partnerships for global health initiatives can also apply to tailored country and subnational partnerships (Kelly et al., 2015; Ramaswamy et al., 2016). The section below assesses the MOU's effectiveness using the framework outlined in Appendix 1 and provides recommendations for potential improvements in Bauchi's RI programming and future MOUs.

Design: *Was the design of the MOU appropriate?*

Advocacy and conceptualization: Overall, developers of the MOU, through high-level advocacy, effectively engaged key stakeholders and achieved a final legal document to which each partner agreed and adhered. At times, stakeholders indicated that priorities from the foundations rather than an understanding of the in-state issues drove the initial process. However, the government and partners are now expanding the activity to strengthen PHC more broadly using lessons learned from the RI experience. Future efforts should establish a feedback loop that enables countries to have more leverage in voicing their concerns and should identify all relevant partners in the planning stage to ensure coordination with the government (Cohen, 2006).

Diagnostic assessment: While the initial MOU diagnostic assessment provided an overview of the system constraints and helped to determine where inputs were needed, it failed to provide a proper baseline assessment that would enable a more rigorous assessment of the MOU contributions to the RI program over time. In the future, the state and partners should consider implementing household and facility surveys that capture data on key indicators to measure change as a result of the MOU implementation.

Rationale and goal: Respondent interviews indicated that while the government focused on the goal of reaching 80% coverage, partners were focused on the need to generate sustainable financing for RI. Partners indicated a concern that the state never truly focused on the need for sustainable financing. Focus on financial sustainability was important because funding needed to continue even after coverage rates increased to maintain progress and continue improvements. Future MOUs should ensure that the goal of financial sustainability is uniformly understood between the government and partners and continuously discussed even at the lower levels of implementation.

Start-up: *Were governance and management arrangements in place and functioning as planned?*

Suitable and effective incentive and institutional arrangements and legal structures: At the start of the MOU, there were three separate teams (polio eradication, RI, and supplemental immunization activities) coordinating immunization activities. The same SPHCDA staff served across multiple teams, resulting in inefficiencies that limited their time and made it difficult to execute important functions such as supervision. The establishment of MOU governance structures improved coordination, resulting in more efficient use of SPHCDA staff time. The state-led program management also improved capacity while high-level engagement

from the MOU signatories encouraged ownership. It is important to note, however, that achieving this high-level stakeholder engagement may be difficult to replicate outside of this specific context. While the governance structure and the WG model in particular enabled teams to more effectively address issues, there were some concerns that the model did not provide enough flexibility to address different challenges across the LGAs. There may be a need to apply mentoring approaches to develop the management capacity of LGA staff, depending on their baseline levels, and measurement should focus on differentiated improvement rather than determining how each LGA performs against a standard target.

Harmonized workplan: Respondents indicated that the RI workplan was very effective in leveraging resources, coordinating RI stakeholders, and ensuring their ownership in planned activities. The workplanning process established a new management norm: prior to the MOU, activities could be prioritized if someone advocated for them to be completed even if they were not in the budget, but with the MOU, the state had to include an activity in the workplan and budget to ensure its implementation. Ensuring the state's technical capacity to develop the workplan will be a challenge for sustainability. Stakeholders suggested starting workplan development earlier to allow for multiple feedback loops that will enable staff to learn from the workplan development process. Similarly, during sub-WG meetings, where activities scheduled under the MOU are discussed with partners, the tendency is to focus on what is completed or not completed, and there is insufficient time to address challenges and how things can be improved. Setting aside time to have targeted technical discussions each month may provide more space to address these challenges.

Financing: Previous efforts to improve financing for immunization programs have focused on encouraging countries to develop financial sustainability plans (Milstien et al., 2008). These plans, which include activities to mobilize resources, improve program efficiency, and (to a limited extent) increase the reliability of funding, have been somewhat successful but often struggle due to significant funding gaps (Kamara et al., 2008). The phased financing of the MOU enabled partners to cover the expensive start-up capital costs of equipment replacement while the introduction of a costed annual workplan helped to plan for recurrent costs incurred for routine operations. While the state did meet its financial commitment to the MOU, it struggled to release the funds on time to the basket account due to the ongoing financial crisis in Nigeria. Sustainability will continue to be a challenge going forward and will necessitate high-level advocacy at the state level. However, for now the state is funding all operational costs for the RI program despite the economic struggles, indicating strong political commitment.

Implementation: *Were resources mobilized? Were activities implemented as planned?*

Financial management: Respondents indicated that the measures defined in the MOU (described above) were effective in ensuring sound financial management and ensuring accountability. The establishment of a separate budgetary line for RI at the state level signaled a strong government commitment. The creation of the state, LGA, and HF accounts; requirements in financial reporting; migration to electronic records management at the state level; and implementation of audit systems improved transparency, accountability, and efficiency at all levels. Stakeholders in particular felt the new accounts were a major MOU achievement because previously the state did not have money for outreach services and supervision, but with the MOU, facilities had accounts with money allocated for outreach, and LGAs had accounts with funds for supervision.

Despite these achievements, respondents indicated several areas for improvement in future MOU scenarios. First, respondents indicated that continued high-level advocacy for timely release of funds by the governor and accountant will be required. Second, respondents mentioned that it is important for the state to open and validate bank accounts at all levels before beginning MOU implementation to ensure that funds can be transferred without delay. There were some challenges in opening the HF accounts, including delays in the submission of introductory letters from the state to the bank managers and a lack of valid HF identification among health workers that required an exemption letter from the state accountant. Third, sanction measures could be carried out more frequently and effectively to show real consequences for non-compliance. Fourth, there is a need to ensure timely internal and external audits to ensure accountability. Fifth, measures to address

exchange rate fluctuations and fuel shortages are needed to maintain the budget and timely release of funds. Finally, respondents felt that more capacity building was needed for finance and accounting staff, especially at the LGA and facility levels. For example, health workers could be trained on tools developed for receipt and retirement of funds as well as procedures for managing withdrawals so that they do not withdraw money for the whole quarter and run out before completing RI scheduled activities.

Training: Respondents indicated that capacity among staff increased and that measures such as the training needs assessment and training database were particularly effective. However, they noted some areas for potential improvement. First respondents noted that the training needs assessment should occur before workplan development so that workplan activities can be tailored to the identified needs. Second, respondents indicated that though partner support was essential in building capacity, for future MOUs, partners must ensure that they are collaborating with, mentoring, and building capacity in government staff rather than working in parallel to government operations. In particular, emphasis should be on capacity building of policy makers on policy-related issues at the state and LGA levels. Finally, respondents suggested that to address continued weak capacity, trainings should be conducted on the *Basic Guide for RI*, DHIS2, vaccine management, and demand creation.

In addition to challenges with staff capacity, a number of respondents commented that motivation of staff, particularly at lower levels of the government, was poor and needed to be addressed. Lack of motivation stems from insufficient salaries and incentives, insufficient numbers of health workers and frequent turnover, insufficient consideration for health workers in remote areas, and confusion about roles and responsibilities. To some extent RI staff can be motivated by ensuring that they receive salaries and incentives, and it is especially important for staff who work in remote areas to be properly compensated.

Community engagement and social mobilization: Respondents indicated that social mobilization efforts were effective: partners followed the strategy for community mobilization, communities and facilities coordinated more effectively, outreach sessions occurred in communities, and traditional leaders were involved in registering newborns and delivering messages. Following the introduction of community-based activities, administrative data showed that the number of children referred for immunization reached 14,222 in 2017 and increased to 18,134 in 2018.[9] However, respondents noted several potential areas for improvement in future MOUs. To improve facility-to-community linkages, respondents suggested that trainings should be conducted for facility staff and community leaders together to foster coordination, and settlement leaders should receive additional support especially in cases of illiteracy. Partners should also consider providing incentives for local leaders and community members to foster participation, as was done in polio programming. To address literacy challenges in training, trainings should use audiovisual materials in local dialects, and support should be available for those with limited reading capacity. Finally, additional structures should be created to engage male advocates for immunization rather than focusing exclusively on women.

Logistics: Respondents indicated that logistics management activities have resulted in significant improvements in cold chain management and vaccine delivery. The number of HFs with functioning CCE has increased, vaccines are more available in HFs, stock-outs have decreased, and staff have a stronger understanding of cold chain maintenance requirements. According to state administrative data, the percentage of health facilities with no stock-outs in the previous 30 days improved to 96% in 2018.[10] However, respondents noted continuing challenges and suggested potential solutions for future MOU implementation. Maintenance and management of CCE was an ongoing problem. Respondents noted that personnel capacity was weak, and the cold chain management system required staff trained in basic pharmacological concepts. Respondents indicated that additional regular trainings for CCOs as well as other state, LGA, and HF staff could help build that capacity.

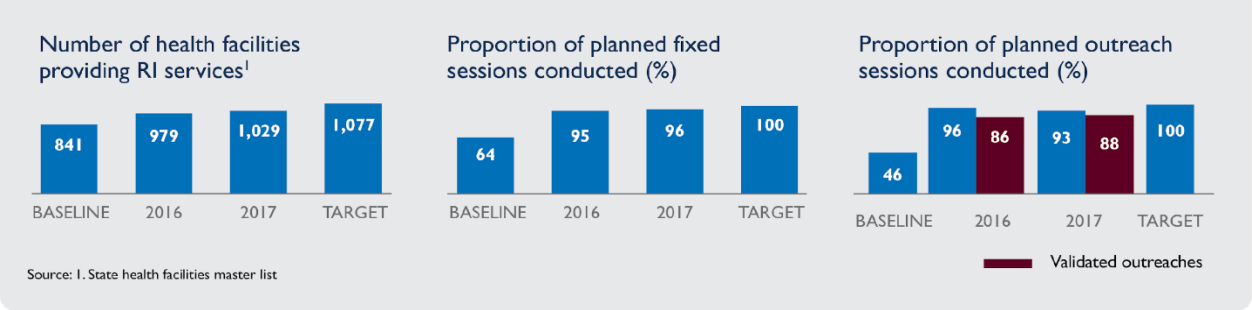
[9] Administrative data were not available at the beginning of the MOU due to poor reporting practices, and there continue to be limitations in the quality of the data due to reporting errors.

[10] The frequency of HF stock out data were not available due prior to the MOU.

M&E: *Were effective M&E systems put in place?*

Respondents indicated that M&E capacity and use of data improved significantly during the MOU. The MOU approach included multiple activities with a focus on financial accountability and sustainability and improved governance. Process indicators showed some improvements in the RI system. For example, data collected showed that microplans were in place, supervision was being conducted, immunization sessions were held with regularity and frequency, stock-outs of vaccines or other supplies were reduced, coordination meetings were taking place at all levels, fund transfers and fund retirements occurred regularly, and financial tracking systems were in place. At the beginning of the MOU, there were only 841 HFs providing RI services, but the number increased to 1,077 HFs providing RI services in 2018. The state also documented increases in fixed and outreach services delivered over the course the of MOU (as shown in Figure 4).

Figure 4: Progress against core service delivery indicators



Respondents noted challenges in implementation to be better addressed in the future. First, government workers were not always motivated to provide good-quality data and continue to need additional capacity building on interpretation and use of data. More efforts are likely required to de-emphasize targets to reduce false reporting and to train all staff on M&E so that they understand how to describe, observe, and reflect on trends. Further capacity building efforts, including on use of technologies, could also improve staff motivation and ensure more effective electronic data management. Second, while the MOU had predefined indicators for measuring performance, partners had additional indicators that did not align with the state's; respondents felt that a single partner-endorsed M&E plan would be more useful for effective and systematic M&E. Finally, respondents indicated that simpler, less time-consuming SS tools may be more effective and motivating for supervisors. While the aspirational coverage target of 80% has not been reached, coverage data has improved from 14.9% in 2015 to 41.5% in 2018 (SMART surveys).

Biannual review meetings and sub-WG meetings provided an opportunity for monitoring data to be effectively shared and used for decision making with partners. However, there were a number of limitations to the M&E system introduced to monitor the MOU. The data sources used to track changes in outcome indicators over the course of the MOU investment period did not apply consistent methodologies or produce reliable estimates, and there was not consensus on the data source to measure progress toward key targets. The state is interested in conducting and performing the analysis for regular data quality assurance and lot quality assurance sampling for performance monitoring. A more rigorous approach to measure performance of key outcomes using household and facility surveys would enable better accountability of resources (Lim et al., 2008). It is difficult to attribute change to any single activity, given the broad range of activities introduced under the MOU and the lack of a theory of change to conceptualize how those activities led to achievement of goals. Future efforts to evaluate similar partnership approaches should consider introducing a theory-of-change approach and include study methodologies such as contribution analysis that enable program managers to better understand which activities provided the greatest impact. Future efforts should also focus on testing innovative activities to drive continued learning in program design. Finally, the RI MOU had the potential to positively affect the health system overall (Loevinsohn et al., 2002). However, because it focused on one component of PHC, it may have also negatively affected other parts of the health system by detracting resources. Future efforts should monitor

and evaluate the MOU's effects on the health system and protect against unintended negative effects (Bennett and Fairbanks, 2003).

Transition: *What efforts were made for transition at the conclusion of the partnership?*

Following the MOU, respondents felt that structures established by the MOU (e.g., the WGs) are likely to continue and expand to PHC because stakeholders are accustomed to them and see their usefulness in streamlining processes and increasing efficiencies. Respondents also felt that the state will continue RI funding and is committed to funding PHC but indicated that advocacy for the funding, particularly with the transition to PHC, will continue to be essential. In terms of addressing resource needs for PHC (financial, human, and infrastructure), respondents noted that the cost of transitioning to the PHC is significant and that there will need to be an analysis of the health sector to determine financial needs.

Conclusion

The Bauchi RI MOU developed a coordinated approach that mobilized resources, provided clear governance structures, and leveraged the competitive strengths of key stakeholders to improve program performance. As such, the MOU provides a useful framework for tailored partnerships at the subnational level to increase coordination, improve financing, and strengthen public health programs in the future.

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Appendix 1: MOU Conceptual Themes for Analysis[11]

No.	Theme	Key Questions
1 Design	**Rationale/evidence-based** partnership	Was there a rationale or evidence base for the partnership with a clear goal and definition of success?
2	**Consultative** process with **appropriate partners**/stakeholders	Were appropriate stakeholders engaged? Are senior partners actively engaged?
3	Realistic **assessment** of tools & strategies available & resource gaps	Was a feasibility or diagnostic assessment conducted?
4 Start-up	Suitable and effective **incentive** and institutional arrangements and **legal structures/agreement** on shared **government** structures	Was there a strategic plan/workplan? Were there clear roles and responsibilities?
5	**Committed** and **strong** senior **management** team	Are senior partners actively engaged?
6	**Clear decision making/coordination**	Are there mechanisms in place for decision making and coordination?
7	**Sufficient resources**, funds, staff, materials and time	Are sufficient resources allocated to activities?
8 Implementation	The 7Cs – Clarity of leadership, understanding, purpose, role, commitment, management, measurement	Did implementation follow management best practices (i.e., 7Cs)?
9	"Trust, but **verify**"	Were there systems in place to verify disbursement and utilization of funds?
10	**Communication** within partnership AND all stakeholders	Were communication mechanisms in place for all stakeholders?
11	Invest in **training** of staff	Were there investments to build capacity?
12 Transition	Plan for **evolution** of partnership	Were considerations made for the future of the partnership?
13 M&E	Establish **clear metrics** to track and measure success	Were there indicators to track and measure success?
14	**Performance feedback**	Were there regular opportunities to provide performance feedback?
15 Context	**Flexible approach** to problem solving	Were stakeholders flexible in responding to problems?
16	A **political and social climate conducive** to partnership	Was the political, economic and social climate supportive of the partnership?

[11] Adapted from Druce and Harmer, n.d.

Acronyms List

ADF	Aliko Dangote Foundation
BASECOH	Bauchi State Emirate Committee on Health
BMGF	Bill and Melinda Gates Foundation
CCE	cold chain equipment
CCO	cold chain officer
CRG	community resource group
DHIS2	District Health Information System 2
DPT3	diphtheria, pertussis, and tetanus vaccine
EC	executive chairman
EOC	Emergency Operation Center
HF	health facility
IM	incident manager
LGA	local government area
M&E	monitoring and evaluation
MCSP	Maternal and Child Survival Program
MICS	Multiple Indicator Cluster Survey
MOU	memorandum of understanding
NERICC	National Emergency Routine Immunization Coordinating Committee
NPHCDA	National Primary Health Care Development Agency
PHC	primary health care
PHCUOR	Primary Health Care Under One Roof
PM	program manager
RI	routine immunization
SERICC	State Emergency Routine Immunization Coordinating Committee
SPHCDA	State Primary Health Care Development Agency
SS	supportive supervision
TFI	Task Force for Immunization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WG	working group
WHO	World Health Organization

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