Data-informed decision-making for life-saving commodities investments in Malawi: A qualitative case study

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Abstract

Background
During the last 15 years, Malawi has made remarkable progress in reducing child mortality. However, maternal and newborn mortality remains persistently high. To help address these entrenched challenges, the Reproductive, Maternal, Newborn and Child Health (RMNCH) Trust Fund provided short-term catalytic financing of $11.5 million (2013-2016) to support country plans to advance the RMNCH and commodity agenda.

Objectives
(1) To document how Malawi (ministries, partners, working groups) used evidence to inform decision-making and RMNCH investments, (2) To identify barriers to utilizing information and evidence in the planning and prioritization process at national and sub-national levels, and (3) To assess the utility of the RMNCH Landscape Synthesis, which uses existing information to review life-saving RMNCH commodities and services.

Methods
This was a qualitative case study utilizing a Rapid Appraisal (RA) approach, where semi-structured interviews were conducted with staff members from UN agencies, development partners and the Ministry of Health (MoH) at national and district level. The analysis enlists a framework approach for manual qualitative content analysis.

Results
Led by the MoH, the RMNCH Trust Fund grant proposal utilized an evidence-based and equity-focused process for prioritization of investments. Data-informed decision-making permeates similar commodity-focused working groups. However, common health information system (HIS) weaknesses, such as data quality and collection burden, persist and are more prevalent at district-level. The collation of evidence in the RMNCH Landscape Synthesis was a useful and sustainable tool to support planning.

Conclusions
The evidence-based, equity-focused decision-making process for the RMNCH Trust Fund proposal provides an effective model for inter-agency investment prioritization. Strengthening data-informed decision-making will require financial and political commitments to HIS and capacity building for data use, particularly at the district-level. New initiatives (e.g. Health Data Collaborative and QED Network to Improve Quality of Care) provide opportunities to further improve evidence-informed decision-making.

Introduction
Malawi has experienced steady progress in reducing under-five mortality from 234 (per 1,000 live births) to 63 from 1992 to 2015, respectively, an impressive 73% decline to reach the Millennium Development Goal (MDG). However, reductions in neonatal mortality have been more challenging – decreasing at a relatively slower pace of approximately 34% from 41 (per 1,000 live births) to 27 over the same 23 year period. These rates vary widely across districts and the urban/rural divide, which may depict inequitable access to appropriate and timely health services. In addition, maternal mortality is 439 (per 100,000 live births), which failed to reach the MDG target. While institutional delivery varies widely by socioeconomic status, on average, 91% of births are delivered in a health facility. However, in 2013, only one-third of the facilities had recent relevant in-service training and 45% had insufficient stocks of essential medicines for delivery, such as injectable antibiotics (e.g. penicillin, gentamicin, ampicillin, or ceftriaxone). Inequitable access to essential services and quality of care contributes to this discrepancy between high rates of treatment seeking and relatively low mortality reductions.

An equity-based and data-informed approach to health investment decisions provides a constructive framework for addressing these service delivery disparities. In the context of maternal and child health, an equitable environment provides an opportunity for each woman, newborn and child to survive, thrive and reach their full potential. United Nations Children’s Fund (UNICEF) defines inequity as when certain groups are “unfairly deprived of the basic rights and opportunities available to others”. Equity-based approaches focus investment on disadvantaged groups as well as the underlying factors creating the inequity. Investments in equity are both ethical and cost-effective. Unfortunately, health services fail to reach the most vulnerable populations and often perpetuate socioeconomic, ethnic or gender differences. In recent years, many UN agencies and partners have adopted an equity approach to public health and international development.

Data-informed decision-making is “the consideration of data during program monitoring, review, planning, and improvement; advocacy; and policy development and review.” Data-informed
Data-informed decision-making in Malawi

The Malawi Ministry of Health published guidelines on using evidence in health policy making1. Data-informed decision-making is the process of using evidence to inform health policy and planning, helping to prioritize evidence-based planning and implementation of health interventions. This approach can facilitate informed and equitable-focused health system improvements. With disaggregated data by target population, decision-makers can incorporate an equity-minded approach into the planning and prioritization process, which can help identify and address barriers to implementing recommendations, coupled with the 13 commodities, to reach vulnerable populations. These commodities (e.g. standard treatment guidelines), shaping local markets, and prioritizing the utility and sustainability of the commodity at national and sub-national levels, and assessed the capacity to generalize the findings to a wider population. Prioritizing equitable access to RMNCH services and life-saving commodities.

Globally, the RMNCH Trust Fund began operations in 2013 to complement the UN Commission on Life-Saving Commodities for Women’s and Children’s Health (UNCoLSC)2, which emphasized 13 under-utilized, low-cost and high-impact commodities (Figure 1) across the RMNCH spectrum that could substantively improve preventable deaths if implemented at scale. The UNCoLSC outlined 10 recommendations (Figure 1) for addressing key health system bottlenecks, such as improving regulatory efficiency, cost-effective and less structured, but often have limited capacity to generalize the findings to a wider population. RA can be utilized as a baseline evaluation tool prior to the end of a project or activity.

Participants and Sampling

Prior to the interview scheduling, a list of potential participants and individuals for interview were purposively selected based on participation in RMNCH or commodity-related working groups as well as district-level management staff. The composition of the interviews was deliberately broad to ensure wide-ranging perspectives from various types of organizations and stakeholders as well as multiple levels of the health system.

Findings

To regard to data-derived decision-making, four main thematic findings were recognized, including:

1. RMNCH Trust Fund investment process was government-led and data-informed
2. Data-informed decision-making permeates other technical working groups.
3. Common data challenges hamper progress and more pronounced at sub-national levels.
4. RMNCH Landscape Synthesis added value and should be sustained.

1.RMNCH Trust Fund investment process was government-led and data-informed.

To make investment decisions for the two RMNCH Trust Fund grants, the Ministry of Health established the RMNCH Committee, which was led by the Ministry of Health and included UN agencies, development partners, civil society and implementing organizations. The investment decision-making process had two fundamental steps: selection of 12 districts for investment and selection of activities within those 12 districts (Figure 2).

Step 1: To select the 12 districts out of 36 for investment, the Committee prioritized the potential impact – selecting the priority areas with the highest number of maternal and child deaths, such as maternal, newborn and child mortality, were used to compare districts as well as service and commodity availability and partner presence to facilitate implementation, among others. The interviews were collated from various existing data sources (Table 2).

Step 2: To select activities within the 12 districts, the Committee conducted a thematic analysis using quantitative and qualitative data from beneficiaries and community interviews. The Committee prioritized complimentary and analytical approaches.
Once collated across all districts, the Ministry of Health selected districts for investment based on the potential impact and the districts with the highest rates of mortality along with a relatively large population size. The process embodies an equity-based approach to health systems investment. The second step for the investment plan was selecting activities within those districts. Once selected, each district presented a district gap analysis and activities for investment to the Committee. In addition to quantitative measures of impact, districts incorporated qualitative information from facility and community interviews to ensure the voices of the community were an integral part of decision-making. Based on the available data, the Committee targeted specific catalytic and complementary activities in each district to approve for funding. To ensure subsequent performance, the Committee met on a regular basis – typically monthly – to review performance and implementation rate. In addition, the Committee maintained continuous dialogue with districts to ensure favorable execution and patching for meaningful action. The Committee determined a deliberate process led by the Ministry of Health to engage an array of partners and incorporate extensive sub-national input in order to develop a data-informed and equity-based approach to RMNCH investment decisions.

2. Data-informed decision-making permeates other technical working groups

A common thread across RMNCH-related technical working groups is data-informed decision-making. In Malawi, most essential medicines are procured and distributed through the Central Medical Store Trust (CMST). However, multiple partners share a parallel supply chain systems. The Drug and Medical Supplies Technical Working Group (DMS TWG) provides a forum for the government and partners to coordinate drug management decisions as well as related infrastructure, workforce and training activities. The DMS TWG wants “decisions to be evidence-based” and utilizes an array of MIS and HMIS data sources (see Table 2) as well as the “Pipeline” report, which collates data from multiple supply systems for a comprehensive perspective of the problem availability at national level. When a prospective commodity gap is identified in out-months – typically using the Pipeline report – the Ministry of Health, as acting the DMS TWG Chair, coordinates partner engagement to fill the communication gap. Partners determine how procurement and resource allocation can be augmented to meet upcoming needs. For partners, final decisions are made outside the DMS TWG forum after conformation with the partners’ internal teams – the decision is “left to partners to see what their budget can carry” – while official MoH decisions typically require endorsement from Senior Management. When resources remain insufficient, gaps are identified across data systems and decision-making processes. The high data collection burden is not matched with effective data use, which ultimately under-utilizes the health information system. Respondents articulated that “we need to continue escalating the use of data” and some lamented that the demand within technical working groups for processed and packaged data analysis across MIS and HMIS is minimal. For example, filter rates and distribution performance metrics are available within the LMIS, but are not processed, analyzed and presented to the DMS TWG. At sub-national level, DHIS2 and other “must have” commodities at district level, but it has limited capacity to provide feedback to health facilities (outside of intermittent supervision visits or poorly attended district review meetings), which in turn weaken data use capability. The DSM TWG recognizes there is a perception that district facility and community stakeholders “do not have sufficient access to data to make decisions”. The DHO struggles to maximize use of available quantitative information for the DHIS2, active Health Information Call, DHOs conduct qualitative interviews and focus groups with communities; however, due to funding constraints the process often happens only once per year in one community. Limited use of the RMNCH Landscape Synthesis in health information systems and the potential of subsequent decision-making.

• Communication: From the national to the community level, effectively presenting and communicating findings from the health information systems was a perceived challenge by respondents. At the national level, access to user-friendly data packages was a common complaint. Moreover, there is a perception that “communication is too high-level” where advocacy and communication packages do not respond to district or community needs. Within the DHO, reports were typically an area for improvement. While training on data management was common, skill building around writing, presentation and communication of results was limited.

4. RMNCH Landscape Synthesis added value and should be sustained

The RMNCH Landscape Synthesis was considered a valuable resource to the data use and planning processes. Respondents appreciated the type of information collated and the presentation format. The breadth of information on RMNCH services and commodities facilitated the engagement of multiple Ministry of Health stakeholders (e.g. regulatory, supply chain, quality control) and partners to help illustrate their interconnected objectives. The approach of using available quantitative data complemented with expert interviews was perceived as an efficient use and showcase of existing health information systems. The perceived limitations of RMNCH Landscape Synthesis included the possibility of adding commodities, indicators or improving the presentation format, but most concerns focused on the sub-national data. While the RMNCH Landscape Synthesis was a useful tool for national level decision-making, disregarded district-level data was absent and thus utility at the sub-national level was not realized. The RMNCH Landscape Synthesis to district-, facility- and community-level information was a common suggested improvement.

Given the utility of the RMNCH Landscape Synthesis, respondents overwhelmingly supported sustaining the RMNCH Landscape Synthesis. Most respondents proposed integrating the RMNCH Landscape Synthesis into similar Ministry of Health data management initiatives – possibly in the Department of Planning and Policy Development. However, “sustainability for next 5-10 years will depend on partnership arrangements”, thus partner support would likely be needed to ensure capacity was available for the immediate transition and the longer-term.
for equity-based investments and data-informed decision-making. This study illustrates the MoH putting these principles into practice by establishing HISPs but with an eye toward extending to other funding sources and technical working groups. This parallels attempts across other developing countries towards equity-based investment approaches.

While socio-political influences have the potential to impact decision-making in Malawi34, these findings showcase a data-driven investment process for equitable health systems strengthening. However, strides to ameliorate the persistent challenges found in this study surrounding HIS and decision-making are paramount for effective and sustainable planning and implementation.

**Linking Data Use and Quality**

Malawi is constrained by the interlocking forces of data-quality and data use. The results of this study are consistent with experiences in other countries where perception of data quality is intertwined with insufficient data use34,41. For example, Nicol and colleagues34 illustrated how a lack of trust in the quality of HIV-related data in South Africa was a barrier to information use from national program managers down to facility managers. Data use and data quality constitute a mutually reinforcing cycle34,39,43. The perception of low data quality reduces use conversely, low use reduces the incentives to maintain data quality. In Malawi, reasons abound for these circumstances including unresolved low analytic capacity, insufficient supervision, and lack of a clear champion or “big sponsor” among stakeholders to continually drive progress in DHIS2,41,42. Collectively, stakeholder interactions are facilitating upward momentum within this cycle — accelerating data use to improve quality or vice versa. Even when data quality is perceived as poor for a specific data source, using the data in an effective approach can improve data use and data quality and use, Harrison and Nutley advocate, recommending, among other activities to institutionalize data quality assurance, build capacity around data analysis and interpretation, and harmonize reporting procedures across districts.

These substantive barriers and corresponding tasks will require a collaborative health information system (HIS) strengthening. To this end, Malawi recently initiated a country-led collaborative approach to HIS planning and investment around a proverbial “one country” monitoring and evaluation platform to enhance monitoring and evaluation taskforce was created to guide a process of coordinated investments in HIS, rationalization of indicators and, and reduced HIS fragmentation, among other activities43. Furthermore, Malawi is an example of a long-term effort to establish a national interoperable HIS44,45. Along with the New Health Sector Strategic Plan (HSSP)4, Malawi is setting a foundation to make coordinated and substantive improvements to HIS in the coming years.

**Extending utility to sub-national levels: district, facility and community**

While some improvements are needed, this study illustrates that national-level planners and managers successfully use the HIS to make decisions, but with limited capacity for extending to other funding sources and technical working groups. This parallels attempts across other developing countries towards equity-based investment approaches. This study surrounding HIS and decision-making are paramount for effective and sustainable planning and implementation.

**Quality of Care for Maternal, Newborn and Child Health**

The approach focuses on strengthening quality improvement (QI) culture and establishing QI teams of existing personnel at district and facility levels. As outlined by Green and de Kock47, QI teams undertake short cycles of improvement where they will identify urgent problems (e.g. low utilization of health services), hypothesize about why this may be occurring (e.g. availability and readiness at frontline), measure and study the results, and sustain successful changes to operation. This approach has the potential to fundamentally change how sub-national personnel use health data. Linking data use and quality is one of the most frequently mentioned and most intractable challenges is capacity building for information-use across all levels of the healthcare delivery system37,43,45,48. In this study, respondents anticipated the need for capacity building in the data-use domain in order to strengthen the RMNH Landscape Synthesis. This is consistent with the additional support for other recent data-use initiatives, such as the Resource Mapping27 and RMNCH Scorecard35. Capacity is typically provided by partners on an ongoing basis, but to ensure more sustainable operations, any partner arrangements should require clear deliverables on governmental capacity building and handover.

**National-level capacity building and sustainability of the Landscape Synthesis**

Strengthening data-informed decision-making will require financial and political commitments to HIS and capacity building for data use, particularly at sub-national levels. New initiatives (e.g. M&E Taskforce / Health Data Collaborative and UNICEF to improve Quality of Care for Maternal, Newborn and Child Health) provide opportunities to further improve data-informed decision-making.

**Conclusion**

The data-informed, equity-focused decision-making process for the RMNH Trust Fund proposal provides an effective model for inter-agency investment prioritization. Strengthening data-informed decision-making will require financial and political commitments to HIS and capacity building for data use, particularly at sub-national levels. New initiatives (e.g. M&E Taskforce / Health Data Collaborative and UNICEF to improve Quality of Care for Maternal, Newborn and Child Health) provide opportunities to further improve data-informed decision-making.

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