

Assessment of the Availability of Quality Newborn and Child Health Commodities in Liberia

Background

While Liberia has made significant improvement in newborn and child health (NBCH), in-country child mortality remains high. Liberia's neonatal, infant and under-five mortality rates are 25, 54, and 94 deaths per 1,000 live births, respectively¹. To address high mortality rates, the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project assists the Government of Liberia in its efforts to ensure continuous availability of quality-assured NBCH commodities.

To improve NBCH outcomes, skilled health care workers require quality-assured NBCH medicines and supplies at the point of care. In many low- and middle-income countries (LMICs)—including Liberia—the availability of amoxicillin dispersible tablets (DT), co-packaged oral rehydration salts and zinc (ORS+zinc), and appropriate newborn resuscitation equipment is limited despite their critical role in newborn and child health.

Objectives and methods

From January 27 – February 7, 2020, GHSC-PSM carried out a rapid study on availability and barriers to access of quality-assured NBCH commodities in Liberia. The study focused on three essential commodities, amoxicillin dispersible tablets (DT) for treatment of pneumonia, co-packaged oral rehydration salts (ORS) and zinc for management of diarrhea, and appropriate newborn resuscitation equipment for birth asphyxia.

Using desk review methods, national supply chain management and operations information was mapped, key stakeholders were identified, and commodity availability data were reviewed. GHSC-PSM also conducted 10 qualitative interviews to assess upstream and downstream factors that impact commodity availability. The interview guide was designed to collect information in four areas that typically drive stock availability:

- **Enabling environment:** policies, programming and financing
- **Forecasting, supply planning and procurement:** quantification approaches, data processes and sourcing processes
- **Inventory management:** warehousing and distribution
- **Logistics and use:** ordering and reporting, data management and facility management

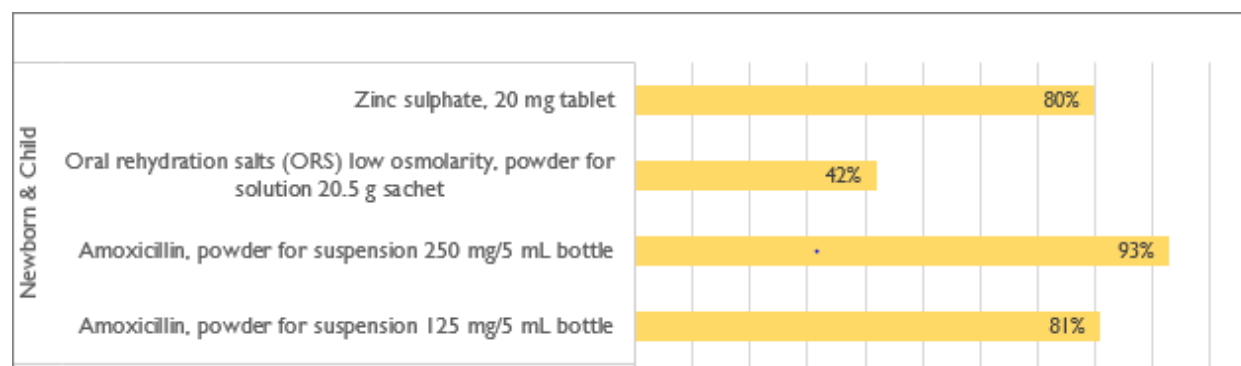
Following the rapid assessment, GHSC-PSM convened a meeting with government stakeholders and partners to share findings and ideas that address the identified challenges.

Key findings on barriers to access

Availability of amoxicillin DT, co-packaged ORS and zinc, and appropriate newborn resuscitation equipment

In Liberia, resource limitations and supply chain issues have contributed to widescale stockouts of essential medicines and medical supplies. In addition, Liberia has not fully adopted the commodity formulations recommended by the UN Commission on Life Saving Commodities (UNCoLSC) to treat childhood pneumonia (using amoxicillin DT) and manage childhood diarrhea (using ORS+zinc ideally in a co-pack). Because amoxicillin DT and ORS+zinc co-pack are not in the standard treatment guidelines and consistently managed in the national system, Liberia’s End-Use Verification (EUV) survey does not collect data on amoxicillin DT and ORS+zinc. GHSC-PSM does, however, monitor related commodities as a proxy. The December 2019 EUV data revealed high stock-out rates of the proxy NBCH commodities as noted in Figure 1. Notably, the stock-out rates below are from data collected at 99 sites across fifteen counties of Liberia, including 5 county hospitals, 73 clinics, 7 health centers, and 14 county storage depots.

Figure 1. Percent stocked out on the day of visit for selected NBCH medicines, Liberia EUV surveys



Newborn resuscitation equipment is found in facilities across the country due to the procurement and equipment-use training provided by donors and health service delivery strengthening partners like the United Nations Population Fund (UNFPA) and Maternal and Childhealth Advocacy International (MCAI). The availability of this equipment is unknown as these programs are implemented *ad hoc*. UNFPA plans to conduct an audit in 2020 to assess facility needs for equipment and training.

Additional information on the assessment findings is detailed below.

Enabling environment

Policies. Liberia’s National Standard Therapeutic Guidelines and Essential Medicines List² specifies treatment and medicines for newborn and child illness; however, the currently listed treatments are not aligned with the most recent WHO Model List of Essential Medicines⁴. The Liberia guidelines do designate the DT formulation of amoxicillin for pneumonia treatment, but oral suspension formulation is most commonly procured.

The guidelines lack needed specificity for ORS and zinc to guide appropriate commodity selection. Notably, treatment of diarrhea in children under the age of five in the National Standard Therapeutic Guidelines and Essential Medicines List of Liberia calls for homemade ORS combined with zinc sulfate. The guidelines could be improved by including the dosage and packaging information as described in the WHO Model List of Essential Medicines: ORS powder for dilution and zinc sulfate solid oral dosage

form 20 mg. Liberian Ministry of Health (MOH) guidance that addresses birth asphyxia³ meets UNCoLSC recommendations by endorsing the use of newborn resuscitation equipment.

Funding and programs. In Liberia, national policy and practices may not place sufficient emphasis on the availability of essential NBCH commodities. For example, funding for NBCH commodities was frequently cited as a major barrier to ensuring the availability of the essential NBCH commodities. ORS, zinc, and amoxicillin—pediatric and adult formulations—are considered general essential medicines and are not included in government programs that receive elevated attention and resources. Historically, procurements of essential medicines, mostly supported by the Government of Liberia, have been underbudgeted. This underbudgeting is compounded by the fact that funds budgeted for essential medicines are rarely fully disbursed. Interviewees noted that newborn resuscitation equipment is not budgeted for or procured by the government.

Designated program medicines receive special earmarked funding by the government of Liberia, which helps ensure their availability. Discussions with the MOH and partners indicated that the addition of the essential NBCH commodities to an existing health program could impact funding and data collection on the commodities. Of the existing programs, Liberia's Reproductive Health Program appears to be the most relevant as some maternal health commodities are already a part of this program. Integrating the NBCH commodities would have the effect of including them on reporting forms and thus initiating the collection of consumption and stock availability data at health facilities.

A large proportion of NBCH services are provided by community health assistants (CHAs) through Liberia's Integrated Management of Newborn and Childhood Illness (IMNCI) program. This program and most associated commodities are funded and managed by partners including Last Mile Health, UNICEF, Partners in Health, International Rescue Committee and others. Some CHA program commodities (e.g. for malaria treatment) move through the national system, but amoxicillin DT, ORS and zinc are provided to CHAs by partner-managed parallel supply systems and bypass the national health supply chain.

Forecasting, supply planning and procurement

Quantifications for the NBCH commodities are limited. Amoxicillin DT has not been quantified for facilities served by the national supply chain. Other formulations were quantified using demographics data since Liberia's logistics management and information system (LMIS) data is reportedly limited and of inconsistent quality. ORS and zinc were individually quantified using demographics data. ORS+zinc co-pack for treatment of diarrhea has not been quantified.

Newborn resuscitation equipment has not been quantified formally by the government of Liberia in recent years, if ever. Partners providing this equipment procure based on their program targets and available funding.

Quantification for the CHA system is conducted nationally using the Liberia Demographic and Health Survey and was last conducted in 2018. Partners responsible for implementing the CHA program in the various counties use the funding they have raised from donors to develop supply plans and procure NBCH commodities.

Inventory management

No specific warehouse and distribution challenges could be identified for the essential NBCH

commodities as they are not currently available to facilities through the national supply chain. However, several general warehousing and distribution challenges were identified:

- **Limitations to warehouse space.** Significant space in the central medical stores (CMS) warehouse is occupied by expired or overstocked items including metronidazole powder and personal protective equipment left over from the Ebola outbreak. The CMS is awaiting guidance from the MOH's Supply Chain Management Unit on how to handle these items.
- **Challenges maintaining warehouse management data.** The CMS has not historically maintained reliable data records on what is in stock and issued to the facilities. CMS has recently started to transition from excel spreadsheets to a software system to improve data reliability for CMS stocks. While transition poses its own challenges, data quality and availability improvements are anticipated in the long term.
- **Insufficient vehicle fleet for distribution, especially from the counties to facilities.** Road networks and conditions are poor in Liberia. The Global Fund has been contributing resources to assist with in-county distribution, but funding is limited and unpredictable. Large sections of the country are cut off from typical routes for six months of the year due to weather. Limited vehicle fleet and central-level stock combined with insufficient planning and facility storage limitations make stocking facilities for this cut-off season a challenge.
- **CHA system challenges.** Partners procure and manage their own commodities and distribute to the county level. Partners cited that storage and distribution from county level down was particularly challenging due to road conditions and facility storage limitations. Secure storage space becomes more limited the closer you get to the last mile. Additionally, when the supply of essential medicines is limited in facilities, stocks from the CHA system are often used, which reduces supply available to CHAs when they are administering care in the community.

Logistics and Use

Liberia currently operates a pull-based supply chain system where facilities order commodities based on consumption and need. Facilities are required to submit their order forms with a consumption report, generated from LMIS data. Interviewees at the MOH estimate current LMIS reporting rates are between 40 and 60 percent. Low reporting rates lead to insufficient health commodity order requests.

As mentioned, commodities provided to CHAs through partner-funded programs bypass the national supply chain and are not consistently included in LMIS reports prepared by facilities. These commodities are captured differently than those in government health programs (e.g. for malaria or reproductive health) and reporting differs based on which partner manages the local CHAs. This inconsistency in how product data is managed makes the quality and completeness of LMIS data unreliable and complicates how the MOH and partners track where supply is available.

Data on newborn resuscitation equipment is not captured in the LMIS and therefore not reported on, ordered, or distributed through the national supply chain. Interviewees, including from the MOH, suggested that including newborn resuscitation equipment in the Reproductive Health Program would add them to reporting forms and increase visibility on commodity availability.

Conclusions and next steps

Since 2016, the Government of Liberia has been strengthening and, in many instances, rebuilding Liberia's national supply chain following the Ebola crisis. Current national supply chain capacity is limited and cannot always ensure a reliable supply of NBCH commodities. Liberia's MOH uses LMIS data to determine demand and must coordinate across many funding bodies, including donors and its own Ministry of Finance, to secure funding for NBCH commodity procurement. Different NBCH commodities receive varying levels of attention, priority, and funding and may not be in supply when and where they are needed.

Below are potential solutions that were discussed with Liberian government stakeholders and partners following the rapid study. These potential solutions are meant to guide decision-makers as they consider options to improve NBCH commodity availability in Liberia.

Considerations to improve NBCH commodity availability

Limited funding, insufficient and poor-quality data, and inadequate prioritization are common factors that affect NBCH commodity availability. These challenges seem exacerbated in Liberia where procurement resources are extremely low and reporting rates and data quality are reportedly unreliable. Without dependable resources and data, the country is unable to determine health commodity needs and supply of the commodities does not meet the need. One potential solution—supported by many of the interviewees—is to integrate amoxicillin DT, newborn resuscitation equipment, and ORS+zinc into the Reproductive Health Program to ensure that they receive adequate attention, funding and support. This suggestion was received positively by the MOH Family Health Division who felt that the additional funding that these essential NBCH commodities could receive would have the greatest impact on their availability in Liberia.

LMIS data availability and quality are central to operating a pull-based supply chain system. Improvements to Liberia's data collection systems and processes will likely be medium-to-long-term efforts. However, given persistent stockouts and the immediate need to increase availability of NBCH commodities, the MOH may consider other temporary options. As a stopgap measure, it may be appropriate to “kit” a set of essential NBCH commodities and send them to facilities on an ongoing basis; provided a plan is in place to phase out the kit system as LMIS reporting improves and stockouts diminish. Kitting could ensure a baseline level of commodity availability and may help stimulate reporting and demand. This temporary solution is not aligned with supply chain best practices, but could help ensure that patients (i.e. mothers and children) are able to receive care and treatment when and where they need it.

Short-term results

GHSC-PSM in Liberia used the rapid study findings to successfully advocate for selection and quantification of amoxicillin DT and ORS+zinc. These activities were completed in March 2020. GHSC-PSM will continue MOH discussions to integrate the essential NBCH commodities into the Reproductive Health Program. The project may continue to work with partners and the government to explore kitting options and risk mitigation measures, particularly at health facilities and in communities. A more serious consideration of kitting would require broader analysis to determine feasibility, which commodities should be included, and how much of the selected commodities should be included.

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