Improving access to and appropriate use of medicines for newborn and child health for primary health care:

Pediatric Amoxicillin and Gentamicin

Child Health Task Force – May 10, 2022

Photo: GHSC-PSM

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Promoting the Quality of Medicines Plus (PQM+)

USAID MEDICINES, TECHNOLOGIES, AND PHARMACEUTICAL SERVICES (MTaPS) PROGRAM
Improved Access. Improved Services. Better Health Outcomes.

USAID GLOBAL HEATH SUPPLY CHAIN PROGRAM
Procurement and Supply Management

CHILD HEALTH TASK FORCE

unicef for every child

Agenda

I. Introductions

II. Background & challenge

III. Consultative series on improving uptake of pediatric amoxicillin and gentamicin

IV. Part One: Inaccurate quantification: evidence, root causes, and interventions

V. Part Two: Insufficient financing: evidence, root causes, and interventions

Introduction
Child Health Task Force

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Child Health Task Force (CHTF)
Newborn and Child Health Commodities subgroup

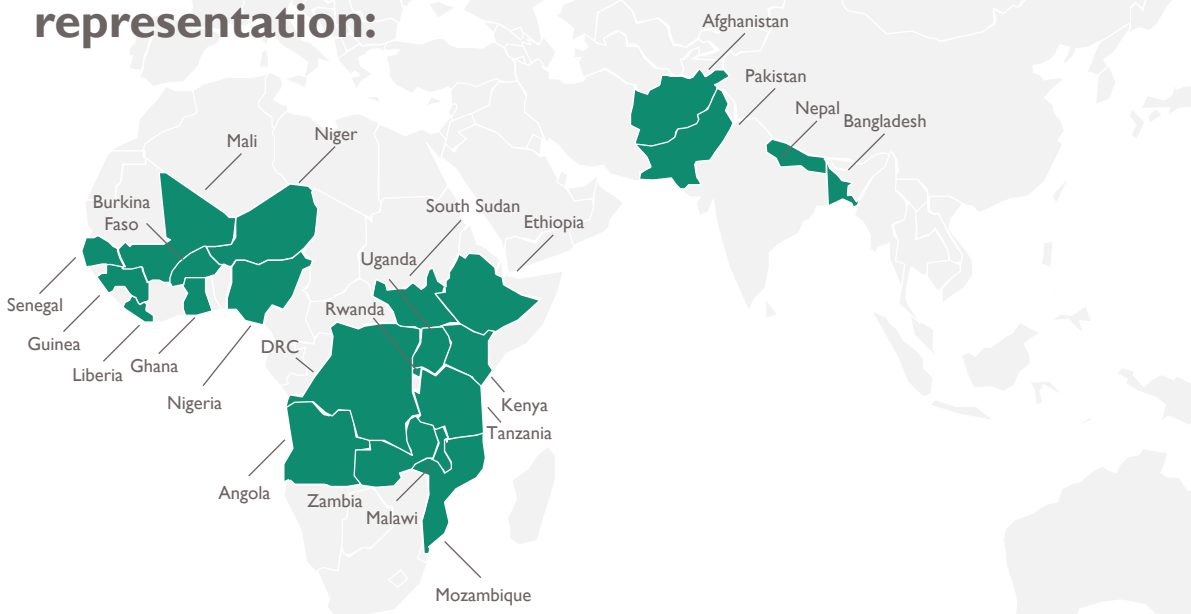
- A subgroup on newborn and child health commodities was created in 2019 within the Child Health Taskforce. Co-chaired by UNICEF and USAID.
- Goal: raise awareness and promote collective efforts to improve the way commodities for newborn and child health are prioritized, financed, and managed.
- This meeting is in line with some of the CHTF objectives:
  - To develop evidence-based strategies to improve access to and appropriate use of newborn and child health commodities
  - To share resources on recognized and emerging best practices and innovations, as well as practical experiences from implementation in country programs for management of child and newborn health commodities.

Introduction
Participants

Government and organizational representation:

- Relevant government entities including Ministries of Health, Central Medical Stores, Maternal & Reproductive Health units, and others
- Global health institutions, including World Health Organization, UNICEF, USAID, The Bill and Melinda Gates Foundation, and others
- Non-governmental organizations, national and international implementing partners
- Private sector
- Academic institutions

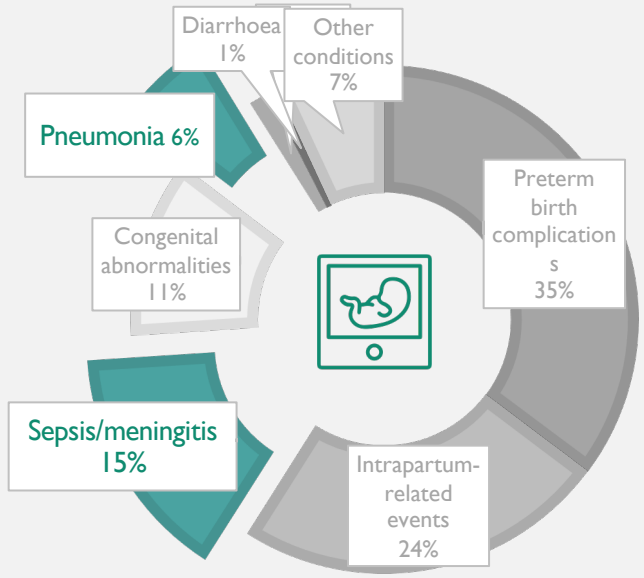
Country representation:



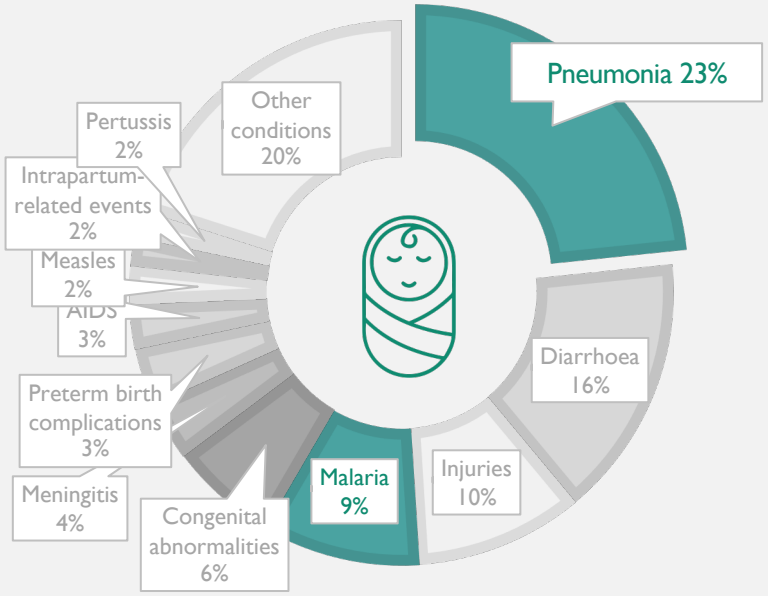
Global challenge
Children are still dying of preventable causes

- Almost half of under 5 deaths are in newborns due to infections, including sepsis/pneumonia, pre-term complications, and birth asphyxia
- Lower respiratory infections are the second leading cause of death among children under five years – 800,000 children a year
- Recent global changes in treatment of newborn and child health conditions still not widely adopted
    - Treatment with amoxicillin was recommended by WHO in 2014 for pneumonia and dispersible tablets were the preferred formulation
    - Oral amoxicillin with gentamicin injection recommended in 2015 for treatment of PSBI in newborns where referral is not feasible
    - In sick young infants with fast breathing as the only sign of illness:
        - under 7 days old refer and, if referral is not feasible, treat with oral amoxicillin
        - 7-59 days old treat with oral amoxicillin, referral not needed (IMCI 2019)
- 54 countries need accelerated action to meet the SDG target for under-five mortality
- **Access to and appropriate use of amoxicillin and gentamicin for newborn and child health through primary heath care remains a challenge.**

Causes of newborn mortality



Causes of child mortality



Addressing **key barriers** and **bottlenecks**

What is needed to further the advances already made and increase access to and appropriate use of pediatric amoxicillin and gentamicin?

Prioritized bottlenecks:

Quantification & Financing

Inaccurate quantification at all levels and/ or inadequate financing of pediatric amoxicillin and gentamicin formulations

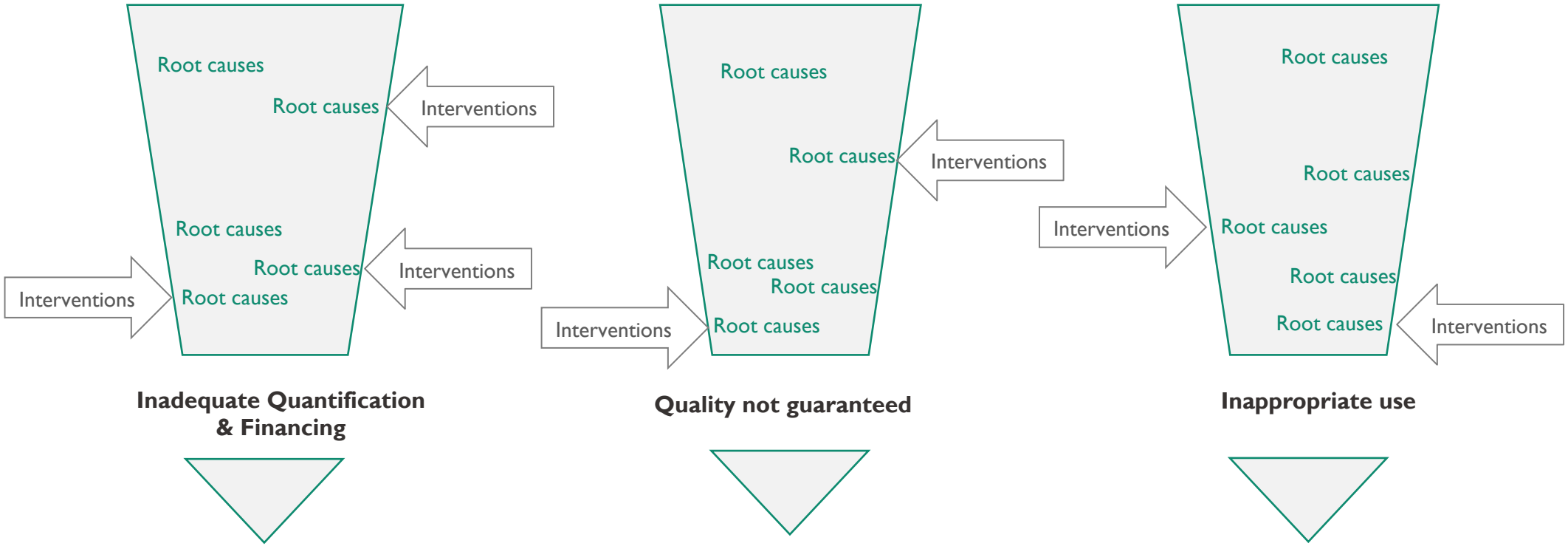
Quality

Quality of child health products not guaranteed

Appropriate Use

Inappropriate use of medicines for treatment of pneumonia and PSBI by providers and caregivers

Pathway impacting commodity access and appropriate use



Improving uptake of amoxicillin and gentamicin

Evidence and solution building process to review experience and evidence related to selected bottlenecks

Consultative process:

- Review of recent literature
- Call for evidence, experience and data.
- Surveys to priority countries
- Consultative meetings
  - Convene country stakeholders, donors, and implementing partners
  - Share evidence on prioritized bottlenecks in uptake of medicines for newborn and child health
  - Discuss root causes
  - Develop consensus on actionable, prioritized solutions
- Call-to-action paper
  - with defined roles for both countries and global partners

Schedule of consultative meetings:

Consultative Meeting #1: **Quantification & Financing**

– May 10th

Consultative Meeting #2: **Quality**

– May 17th

Consultative Meeting #3: **Appropriate Use**

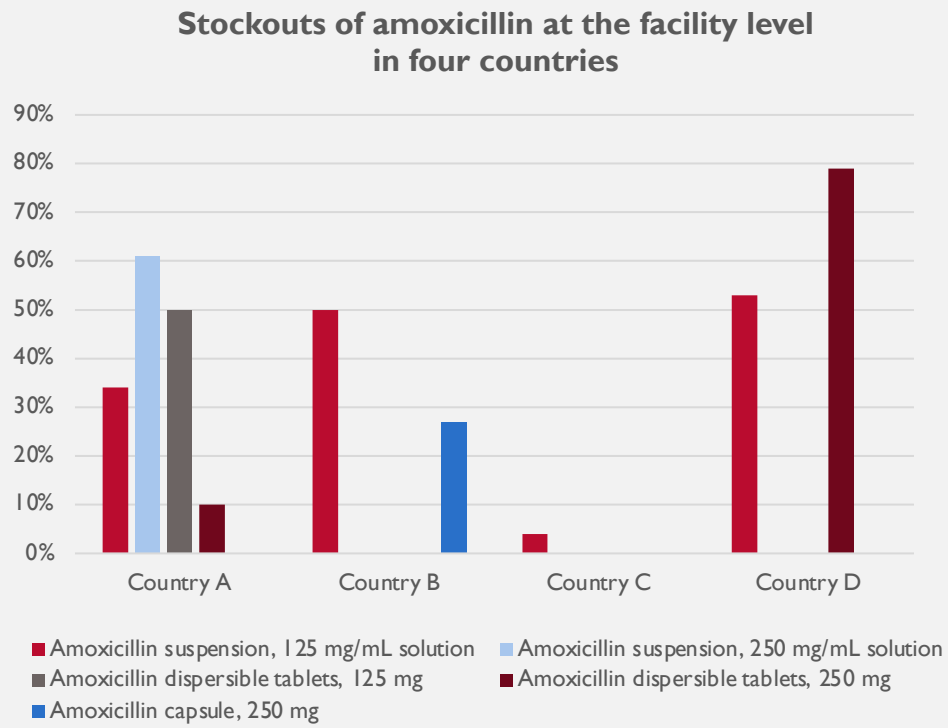
– May 24th

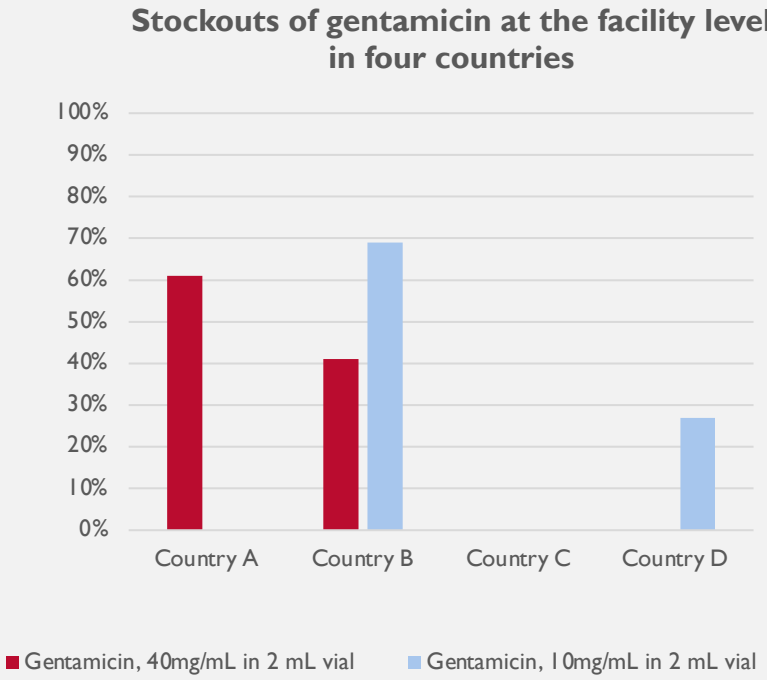
Part One:

Inaccurate quantification of pediatric amoxicillin and gentamicin

Context
Poor availability of amoxicillin and gentamicin

Stockouts of pediatric amoxicillin and gentamicin are common at **lower-level health facilities within** health systems*





EUV Take-aways:

Common causes of stock outs:

- Lack of transportation, specifically last mile distribution
- Lack of funding
- Lack of availability of product at central level

Recommended actions:

- Advocate for increased funding
- Address procurement processes and delays
- Ensure funding for last mile distribution

Data from GHSC-PSM End Use Verification Survey (EUV) data: Stocked out on day of visit, 2020

Context
Impact at the community level

Impacts on at the community level

Amoxicillin is a critical commodity for integrated community case management (iCCM), an important source of care among children younger than five years of age at community level (i.e. outside of healthcare facilities) where there is limited access to health facility-based case management services.

However, **all countries** included in the Global Fund Thematic Review Report on iCCM published in 2018 documented stockouts of amoxicillin.

Quantifications must include community levels including iCCM programs.

Root causes of supply chain challenges for non-malaria products:

- Non-integration of iCCM within the national supply chain
- iCCM consumption data not captured, not visible and unavailable.
- iCCM commodities are not fenced out from use by the linked health facility.

Bottleneck
Quantification of pediatric amoxicillin and gentamicin formulations

Defining quantification

Quantifications are essential for budgeting, resource allocation, resource mobilization, and planning for procurement and supply chain operations. Quantifications include:

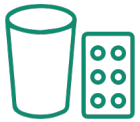
- Forecasting: the process of estimating quantities of products required to meet demand during a particular time frame.
- Supply planning: the process of estimating quantities, total costs for procurement and desired schedule of shipments receipts from suppliers

Quantifications should be conducted using **best practice** forecasting methodologies, based on demographic, morbidity (prevalence, incidence), and consumption.

However, challenges related to quantification are prevalent and have an impact on product availability.

Root causes of inaccurate quantification

Absence of data



Poor quality data

Incomplete data due to exclusions

Insufficient capacity, skills, and resources

Lack of transparency and coordination on supply plans

Select root causes and evidence of inaccurate quantifications

Comprehensive, credible, and timely data from *all levels* of the supply chain is critical to accurate quantifications.

Inaccurate and/or incomplete estimation of commodity needs

	Root causes
Absence of data	• Lack of consumption data, due to prolonged stockouts & unmet needs [7, 9, 10, 12] • In some health systems, stock out at health facility level = stock out at community level, [10, 18] • Community level is not always included in national LMIS systems [4, 18] • Lack of specific data points including age category, rate of treatment adherence, referral acceptance/refusal rate etc. [2]
Poor quality data	• LMIS forms or data recorded improperly by health workers [11, 14] • Lack of and poor-quality data at lower levels [3, 10] • Discrepancy in quality of data in paper and electronic LMIS
Incomplete data due to exclusions	• Demand data for broad spectrum antibiotics needs (beyond newborn and child health indications) not included in quantification [16] • Community level excluded or quantified separately [18] • Limited coordination between primary health facilities and community level on commodity needs and forecasts [18] • Consumables not included i.e. syringes for gentamicin [22]

Root causes and evidence of inaccurate quantifications cont'd…

Inaccurate and/or incomplete estimation of commodity needs

Insufficient capacity to manage data and conduct quantification can result in inaccurate forecasts.

	Root causes
Insufficient capacity, skills, and resources	• Insufficient capacity and skill on data organization, analysis, and quantifications.[2, 3, 7, 13] • Poor inventory management skills, in particular at lower levels[2,8, 20] • Data and/or tools available but not used due to lack of capacity[15] • Consolidating and analyzing logistics-related data is time intensive. • Need for additional training and practical exercises = time.[6] • Varying quantification methodologies, i.e., based on incidence of ARI for the entire population regardless of age.[1] • Forecast accuracy activity not conducted and/or consistent inaccurate forecasts as reported in forecast accuracy exercises.[12] • Quantification activity is cost prohibitive.[3]
Lack of transparency and coordination on supply plans	• Lack of supply plan(s)[9] • Lack of transparency and coordination on supply plan to ensure all needs are met.[12] • Incomplete and/or unavailable information in supply plan i.e. commodity formulation, geographic location for distribution.[18] • Lack of coordination at the national and district level on community level program needs.[18] • Delayed implementation of supply plan.[12]

Inadequate quantification

Are there any additional root causes of inaccurate quantifications of pediatric amoxicillin and gentamicin?

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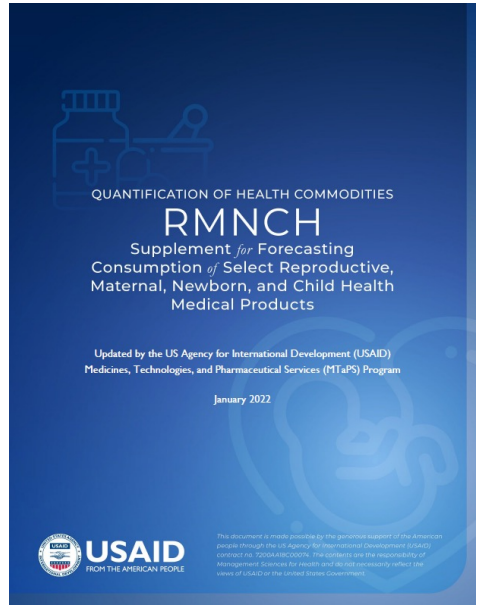
What is working well?

In many countries:

- ✓ Amoxicillin and gentamicin are included in the national STGs and in LMISs.
- ✓ A standard methodology or tool is used for quantification. For example, Quantimed for forecasting, PipeLine or The Quantification Analytics Tool (QAT) for supply planning. [24]
    - *In a 2015 WHO survey on medicines for women and children, a forecasting tool or method was used routinely in 14 out of 17 countries surveyed.* [20]
- ✓ Quantifications are often led by the Ministry of Health and include relevant government entities, technical programs, and other government agencies.
- ✓ Quantifications are inclusive and include implementing partners, clinicians, and other stakeholders.
- ✓ There is a clear understanding of challenges and knowledge on the root causes of the lack of availability of amoxicillin and gentamicin.



Quantification of Health Commodities: RMNCH Supplement Forecasting Consumption of Select Reproductive, Maternal, Newborn and Child Health Medical Products, Updated 2022

Evidence highlight:
Inaccurate quantifications

GHSC-PSM survey on MNCH commodity data availability and data quality

GHSC-PSM conducted a survey in 15 countries to map which MNCH commodity data are available across electronic and paper-based systems for health, logistics, and warehouse management and the ease of use of existing data analytics functions. From the survey, the project found that the most common cited data challenges include **delayed reporting, poor quality data, and lack of human resources.** Additionally:

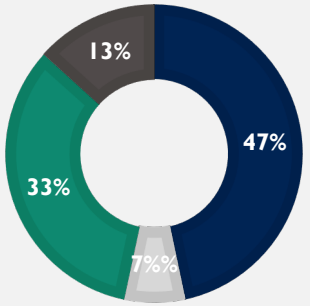
Many countries use both paper-based and electronic systems, which can challenge efforts to manage, coordinate, and analyze data on commodity availability

Most countries have amoxicillin and gentamicin commodities in their primary logistics systems

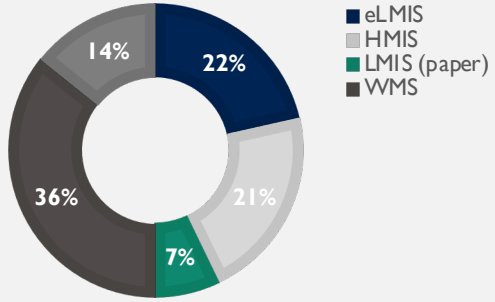
Country	Amoxicillin DT	Gentamicin
Country A	✗	✓
Country B	✓	✗
Country C	✓	✓
Country D	✗	✓
Country E	✗	✓
Country F	✓	✓
Country G	✓	✓
Country H	✓	✓
Country I	✓	✓
Country J	✗	✓
Country K	✓	✓
Country L	✓	✓
Country M	✓	✓
Country N	✓	✓
Country O	✓	✓

In many countries, there is a lack of trust in the data. Trust was slightly higher in countries with electronic systems versus paper-based systems

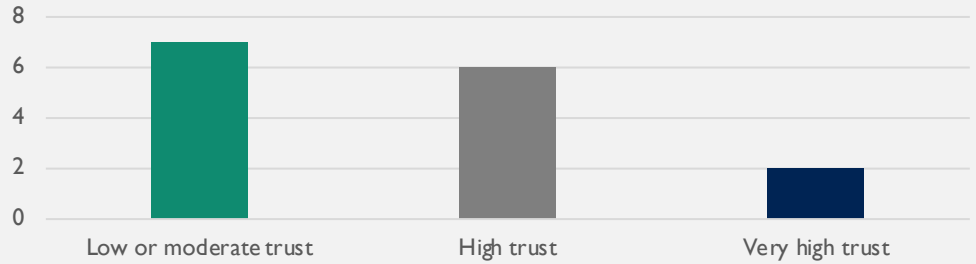
PRIMARY DATA SYSTEMS



SECONDARY DATA SYSTEMS



User trust on LMIS data quality



Select interventions and impacts: Quantification

Inaccurate and/or incomplete estimation of needs

Intervention	Description & impact	Location & source
Inclusion of pediatric amoxicillin formulations in quantification and supply plan	Support to integrate pediatric amoxicillin in quantification and ensured coordination on fulfilling the supply plan. Once product arrived in country, health facilities received communication of product availability. [23]	Mali, GHSC-PSM
Technical support on quantification process	Technical assistance on the quantification process was provided to multiple countries in sub-Saharan Africa. In one country, the improved quantification led to 3x increase in volume of amoxicillin DT quantified (25M to 69M tablets). [14]	Multiple, R4D
Coordination on quantification	Greater engagement at national and subnational level to coordinate on quantification. [18] Conducting joint quantifications reduced potential resource gaps.	UNICEF via iCCM TT (with data from Malawi, Uganda and Zambia)
Forecasting tools for RMNCH commodities	Accessible tools for forecasting and supply planning that utilize at least two of three data methods (consumption-based, morbidity, health services).	Multiple, MTaPs, GHSC-PSM & Partners
Improving national LMIS	Scale up of eLMIS to additional levels of the health supply chain. Training of various supply chain managers to improve data quality and use. Capacity building assistance on related eLMIS functions	Multiple, GHSC-PSM

Interventions & impacts highlight:
Quantification

Improving MNCH commodities data & capacity building on data related functions

	Intervention	Impact
 **Ethiopia**	Integration of amoxicillin DT in the LMIS. Created product awareness through advocacy workshops and supportive supervisions.	Improved inventory management, product ordering, and resupply decisions for amoxicillin DT led to **reduced stockout rates from 19% to 7%.**
 **Nigeria**	Developed standard operating procedures for the National Health Logistics Management Information Systems (NHLMIS) and trained master logistics trainers and state-level personnel on managing MNCH commodities within NHLMIS.	Increase in average MNCH NHLMIS **reporting rates from 78% to 98%**.
 **Zambia**	Ensured MNCH commodities were captured in Zambia's national LMIS and provided training to improve data collection and analysis	Reliable stock data was used to successfully advocate for a donor funded procurement to **resolve a critical stock out of amoxicillin and gentamicin**.

Inadequate quantification

What are additional interventions and solutions to improve quantification of pediatric amoxicillin and gentamicin ?

What are the most critical interventions?

Breakout group discussions

Session break

~ 5 minutes

Part two:

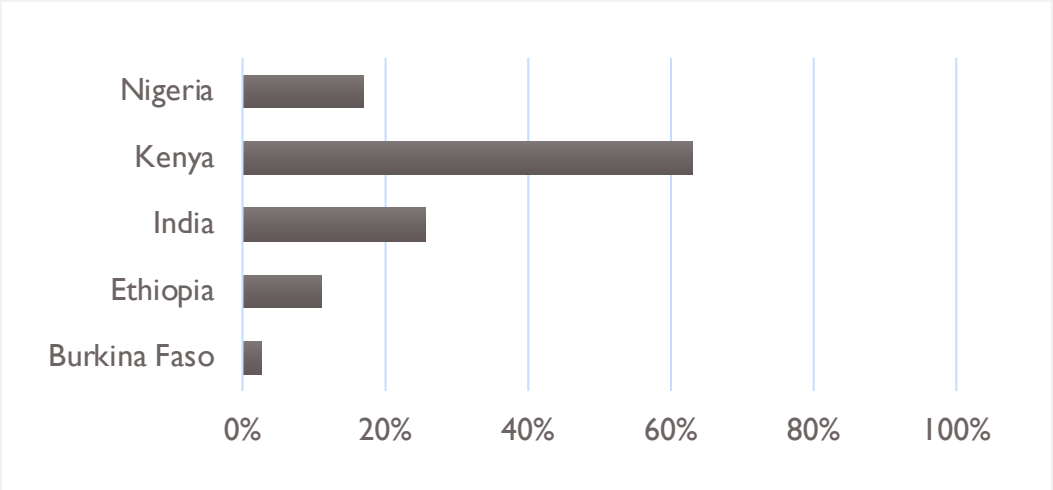
Insufficient financing of pediatric amoxicillin and gentamicin

Context:
Insufficient financing

Despite successful quantifications, budgets and available funding are often unable to cover forecasted quantities of pediatric amoxicillin. [7, 10]

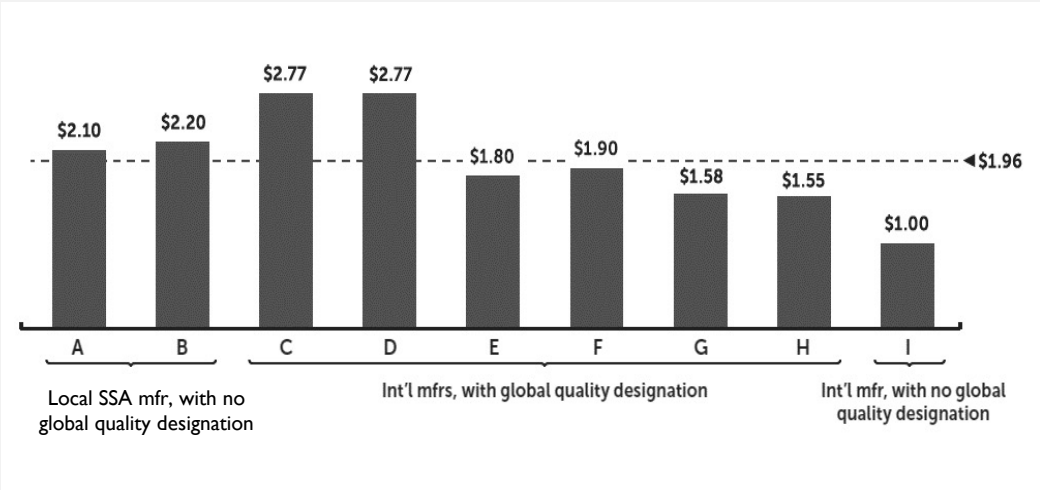
Pediatric amoxicillin and gentamicin are relatively **low-cost antibiotics**.[21]

% of providers and DHMT members who agreed that funds are available at the subnational level to procure amox DT



Select data from PATH Asset Tracker Subnational Survey

Global average retail prices for eight amoxicillin DT 250mg manufacturers, 2019 ($USD, 10x10 pack)



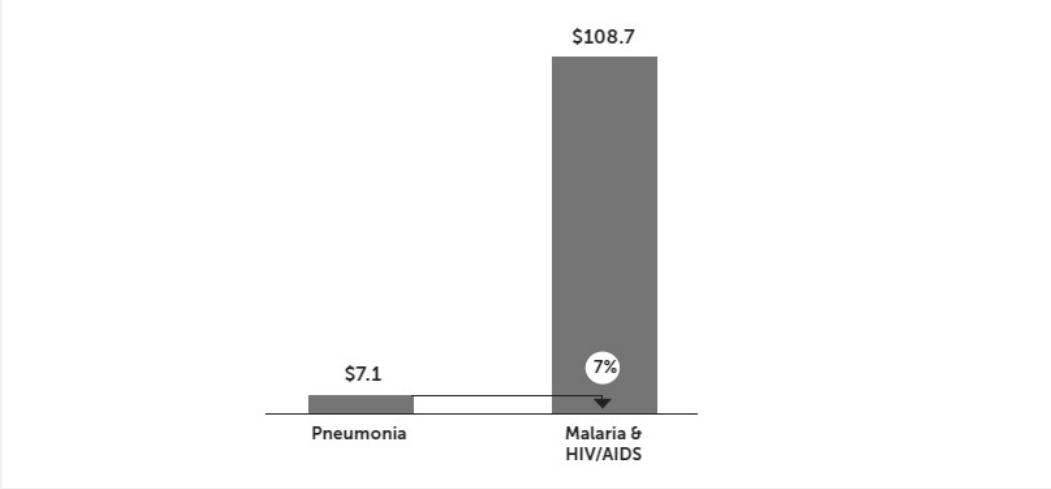
Amoxicillin Dispersible Tablets: Market Brief And Recommendations For Continued Scale-Up, Results for Development

Context:
Insufficient financing

Historically, when compared to other therapeutic areas, donors have not prioritized efforts to tackle pneumonia, despite it being the leading single cause of U5 death. The majority of the funding is allocated for vaccines.

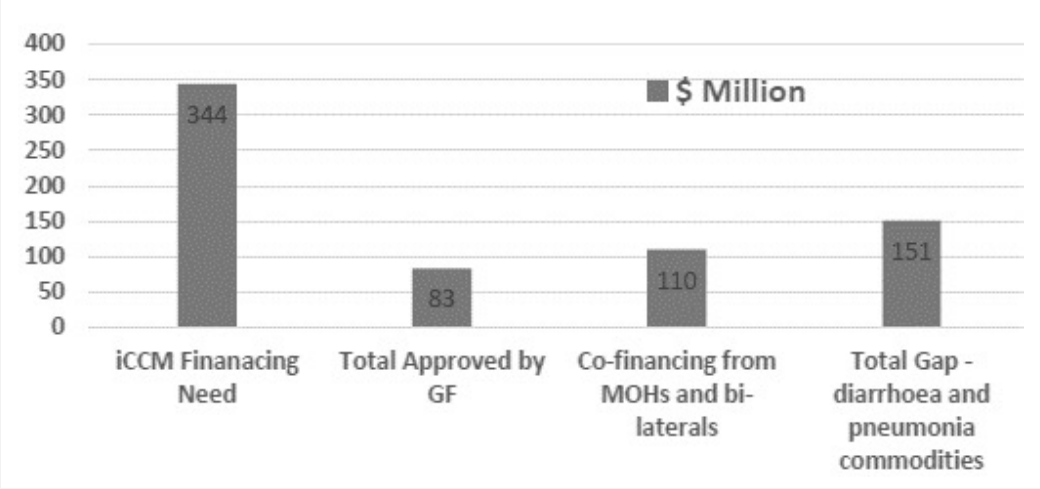
Specifically for iCCM, lack of or delays in financing for pneumonia commodities are widely documented and negatively affected access and equity of iCCM services.

Global donor funding per health area, 2007-2018 ($ USD)



Amoxicillin Dispersible Tablets: Market Brief And Recommendations For Continued Scale-Up, Results for Development

Gap in iCCM co-financing of non-malaria commodity of 10 countries*



Amoxicillin Dispersible Tablets: Market Brief And Recommendations For Continued Scale-Up, Results for Development

* Nigeria, DRC, Zambia, Uganda, Ethiopia, Ghana, S. Sudan, Burkina Faso, Malawi and Cote D'Ivoire

Bottleneck:
Insufficient financing of pediatric amoxicillin and gentamicin formulations

Defining financing

Financing the commodity supply plan is the final product of the quantification process. Financing needs to be timely, coordinated and **transparent.**

In many LMICs, essential health commodities are mostly funded by the governments through centralized public procurements or through a decentralized system by subnational government structures, such as district health offices and public health facilities.

Health budget advocacy is often required to ensure accountability of public resources for a nation's health goals.[19]

Funding is frequently insufficient for child health commodities, resulting in supply issues at multiple levels of health supply chains.

Root causes of insufficient financing

Inadequate financial processes

Lack of transparency and coordination

Insufficient prioritization

Root causes and evidence of insufficient funding

Lack of coordination and transparency is a key barrier to ensuring funding for pediatric amoxicillin and gentamicin.

	Root causes
Inadequate financial processes	• Lack of defined roles, appropriate oversight, and process for budget execution • Inefficient and costly procurement processes that negatively impact available budget for commodities • Inaccurate and/or underestimated forecasts incorrectly inform funding needs • Budget lines estimated on previous years allocation and not actual need
Lack of transparency & coordination	• Lack of coordination and monitoring of allocated budget for MNCH commodities[17, 18] • Lack of transparency and information on total available budget, funding for specific levels, for how long and for what commodities • Poor alignment with donor funding opportunities and domestic budgets the create gaps in programming and flow of funds • Lack of transparency on which entities (government, partners, etc.), where procuring, which commodities, quantities, duration of support, etc.[18]

Root causes and evidence of insufficient funding

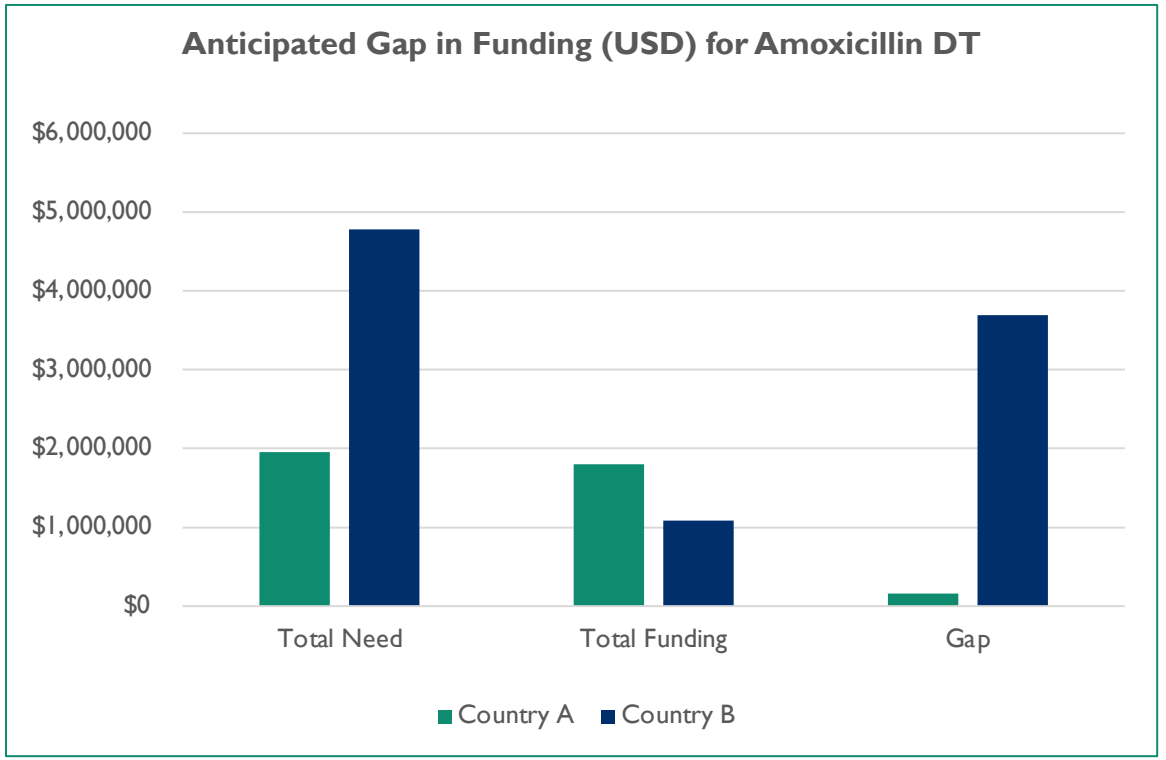
Amoxicillin and gentamicin, among other newborn and child health products are often not prioritized which has an impact on securing financing.

	Root causes
Insufficient prioritization	• Insufficient attention = insufficient funding. Unlike priority "program" commodities such as FP or malaria that are priority for donor and national programs, amoxicillin and gentamicin are included with other essential medicines[7] • Limited awareness of the dispersing and supply chain benefits of amoxicillin DT[7,9] • Lack of budget line; lack of specific budget lines for child health commodities at health facility and community level[18] • Difficult to prioritize specific newborn and child health commodities among other essential medicines[4] • Limited or no funding for distribution and last mile distribution[9,18]

Evidence highlight:
Insufficient financing

UNICEF: Select data on amoxicillin DT from the Community Health Planning and Costing Tool

- Total funding need was calculated for a five-year period (2021-2026).
- In county A, the total need is slightly higher than the total funding.
- In country B, the total need for amoxicillin is approximately 4 times greater than the total funding.
- Challenge to ascertain the amount of funds that are specifically earmarked for amoxicillin DT.
- In some countries, it is challenging to ascertain the product quantified i.e. tablets or capsules. In other contexts, it is difficult to determine what, if any, amount of funding is earmarked for amoxicillin DT



Data depicts amoxicillin DT need for iCCM services in children under 5, the figure does not represent the total need in-country or for other indications apart from suspected pneumonia treatment at the community level.

Insufficient financing

Are there any additional root causes of insufficient financing of pediatric amoxicillin and gentamicin?

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Select interventions and impacts:
Financing

Intervention	Description & impact	Country & Source
Technical assistance on resource mobilization coordination	Technical assistance provided to create dashboard which MOH will use to identify funding commitments across gov't and donors. Dashboard also calculates remaining funding gap to support MOH in further evidence-based resource mobilization.	Uganda, R4D[14]
Co-financing agreement / commitment between donors and government	In Liberia, the MOH pledged to finance essential medicines as part of an agreement with USAID that included a donation of amoxicillin DT.	Liberia, GHSC-PSM[7]
	In Senegal, UNICEF restarted the SPRINT activity with a limited procurement of amoxicillin DT and a commitment from the MOH to continue procurements moving forward.	Senegal, UNICEF [22]
	Facilitation of co-financing agreements in Ethiopia and Tanzania.	Ethiopia, Tanzania, R4D
Utilizing GFF investment funds	Government of Uganda dedicated $17m in IDA loans to fund procurement of RMNCAH commodities including amoxicillin DT and gentamicin.	Uganda, UNICEF
Increased advocacy for sustainable financing	Increased advocacy at the national level for sustainable financing of selected/priority newborn and child health commodities.18	UNICEF (with iCCM data from Malawi, Uganda, Zambia)[18]
Including amoxicillin DT in revolving drug funds	Inclusion of priority commodities in national or state drug revolving funds.	Nigeria, Ethiopia

Interventions & impact highlight: Financing

Co-financing agreement to increase domestic resources for amoxicillin DT

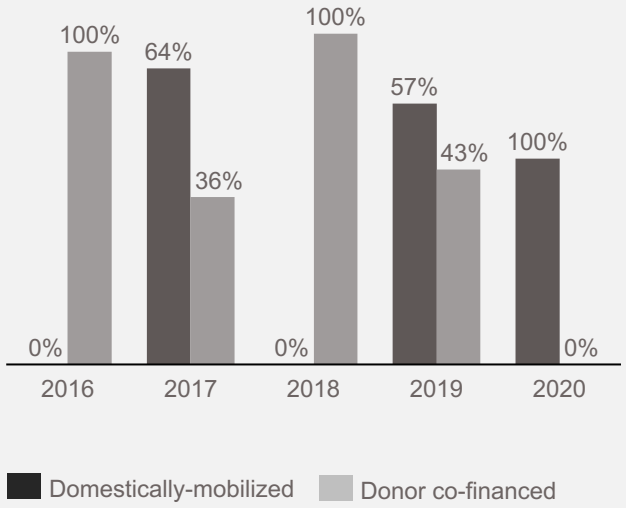
Intervention

Over the past 5 years in Ethiopia, alongside market-shaping support and evidence-based advocacy, **~$1.5M in donor co-financing has catalyzed ~$1.1M in domestically-mobilized resources for amox DT**. The co-financing agreement was designed to gradually increase government funding as donor funding decreases.

Each year, the government and donor coordinated to ensure the **full funding need for amoxicillin DT was fulfilled. Flexibility** in the co-financing agreement **allowed the government to readjust targets** and avoid wastage in response to amoxicillin DT utilization challenges.

Impact

Amoxicillin DT 250mg funding, 2016-2020 (USD, thousands)[3]



In 2018, gov't delayed funding due to identified utilization challenges

Insufficient financing

What are additional interventions and solutions to improve financing for pediatric amoxicillin and gentamicin?

What are the most critical interventions?

Breakout group discussions

Meeting summary & conclusion

Thank you & next steps

Next Steps

- Dissemination of meeting recording and materials
- Additional consultative meetings
- Report out of consultative meeting series in CHTF Commodities sub-group meeting: June ‘22
- Development of call-to-action paper: June ’22

Up-coming consultative meetings

- Quality: May 17
- Appropriate Use: May 24