

Supply Chain



Are Commodities Reaching Community Health Workers? A Review of the Evidence

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THE ISSUE

Community Health Workers have the power to save lives...

Of the nearly **6 million children who die** before the age of 5, nearly 30% die from malaria, pneumonia, and diarrhea.

CHWs can effectively deliver primary care interventions directly to communities. This includes dispensing medicines to treat these major diseases, and other health conditions.

If properly trained, equipped and scaled, **CHWs have the potential to reduce deaths** from pneumonia by 70% and malaria by 60%, through community case management. ORS estimated to prevent 70 to 90 per cent of deaths due to acute diarrhea.

...but only if they have the medicines and supplies they need

Even the best, well-intentioned community health worker needs to be able to **dispense medicines** in order to treat diseases, such as:

- ORS for diarrhea
- Amoxicillin for pneumonia
- Artemether-lumefantrine for malaria

CHW need continuous access to medicines. Without these supplies, their impact on child mortality disappears.

What do we actually know about stock-outs?

Objectives

A **systematic literature review** to determine the **extent of community-level stock-out of essential and program commodities** among Community Health Workers (CHWs) for Maternal and Child Health (MNCH) in Low- and Middle-Income Countries (LMICs), and to identify the underlying bottlenecks for such stock-outs.

Method...

4 electronic databases were searched for published and grey literature. 48 studies that contained information on the number or percentage of CHWs or Health Facilities (HFs) stocked-out, or reasons for stock-outs at these levels were included...

... More method

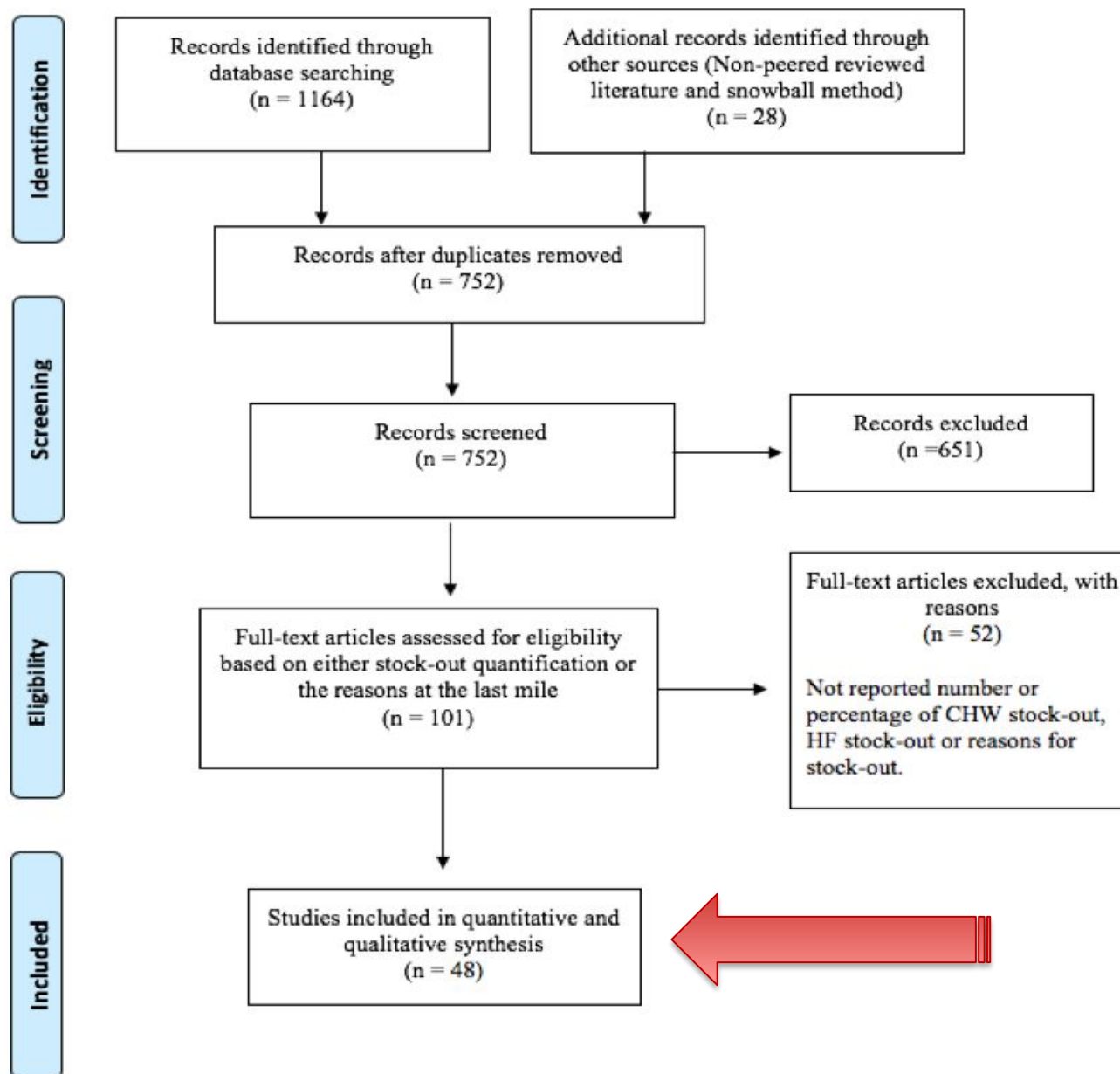
... in addition, interviews were conducted with domain experts to identify reasons for stock-outs.

+ 3 country deep-dives to assess impact of stockouts on treatment.

Limitations

- **Few studies...** data on the stock-out quantity and the underlying causes were poorly documented, and data were inadequate in many cases.
- **Inconsistent reporting metrics**

PRISMA FLOW DIAGRAM



Definition about stockouts

“The complete absence of a required drug at a storage point or delivery point for at least one day”.

Examples of included studies

Studies	Country	Geographical representation	Reported stock-out period
Lufesi M. et al, 2007	Malawi	Lilongwe District	Days/year
Doherty T. et al., 2014	Ethiopia	239 woredas in 26 zones in 5 regions	Months/year
Gils T. et al., 2018	DRC	Kinshasa	Day of visit, days of SO
Smith S. et al., 2013	Madagascar	30 districts out of 114	Occurrences/year
Doherty T. et al., 2014	Ghana	3 Northern Regions and the Central Region	More than 1 week in past 3 months
Munos M. et al., 2016	Burkina Faso	North and Central North Rapid Scale Up districts	7 days or more
WHO, 2018	Niger	4 districts in 2 regions (Dosso and Tahoua)	At least 7 days in the past month
Miller N.P. et al., 2014	Ethiopia	Jimma and West Hararghe Zones of Oromia Region.	Day of Visit

What did we learn about stockouts ?



CHWs often turn away mothers and their ill children because of frequent and prolonged stockouts of supplies



Findings from countries in sub-Saharan Africa:
48% of CHWs were stocked out across different health commodities



This lack of supplies impacts the lives of children and undermines the trust of the community in the health system and in the CHWs.

Backup – key statistical results

Statistics	CHWs	HF
AVERAGE (in Percentage)	48.09	54.76
Range (in Percentage)	4.00 - 91.70	5.00 - 100.00
STDEV	25.02	27.46
Median (in Percentage)	41	48
Variance	626.05	753.83
Sample size [*]	31 studies	23 studies
95% Confidence Interval	[39.28 - 56.90]	[43.54 - 65.98]

* Out of the total included, 26 studies had data on CHWs stock-out, 4 studies had both on CHWs and HF stock-outs and 19 studies has data on HF stock-out rates. Some studies had multi-country information; therefore the number of data points and studies do not match.

Country case studies

Malawi

Uganda

Mozambique



Methodology

COUNTRIES WERE SELECTED FOR INCLUSION BASED ON:

Opportunistic Sampling: Countries where the task team and steering committee of this project had information that existing data systems collected data on CHW stock availability.

Community Health Roadmap Participation: Countries that highlight in the Roadmap that their national priority is to strengthen national health information systems for community level.

POTENTIAL BIAS & LIMITATIONS

Because countries with well-developed information systems were targeted, the sample is biased and might over-represent contexts with more-developed and better-managed SC systems.

KEY QUESTIONS FOR CASE STUDIES

- How is data on CHW stock management recorded & reported?
- What indicators are available to monitor product availability at the community level?
- What SC levels have visibility into CHW stock data?
- What gaps exist in data needed for appropriate supply chain management?
- Does the CHW data link with existing government reporting systems (i.e., HMIS, LMIS)?



CHW DATA COLLECTION FORM: HMIS 097 (Relevant Sections)³

Stock Data

Drug Availability Status

Name of Village	Drug Stock Out Status(Tick if out of stock for the specified period)		
	First Line Anti Malarial	Amoxycillin	ORS
Village A	✓		

FORM CAPTURES

- Tick indicates whether/not a stockout occurred during QTR in village
- Tick records whether treatment given to each patient
- Number of children treated can be tallied

Treatment Data

Patient Name	TREATMENT (given by VHT)			
	Diarrhoea	Fast Breathing	Fever	Fever+Danger Sign
	ORS	ZINC	AMOXICILLIN	ACT RECTAL ATESUNATE
Patient A	✓	✓		

FORM DOES NOT CAPTURE⁴

- Stock on hand
- Number of stock out days
- Quantities of product dispensed
- Treatment not given due to SO
- SO disaggregated by VHT (Data is reported by village)

²Source: MOH Uganda. Integrated community case management of childhood malaria, pneumonia, and diarrhea: implementation) guidelines. 2010.

³Source: Health Management Information System, Health Unit and Community Procedure Manual (October, 2014)

⁴Source: Uganda MOH and USAID/Uganda Health Supply Chain Program. 2016. SC Systems for Community Health Programs in Uganda: Situation Analysis.

Stockout Definition & Indicators UGANDA

Definition of a Stockout

**Product stocked out for >7 days in a month
(21 days a quarter)**

Products Stockout Data reported on*:



1st line malarial



ORS



Amoxicillin



**Form revised in 2019 to capture RDTs, Misoprostol, Depo-Provera & Oral pills*

Potential Data Issues

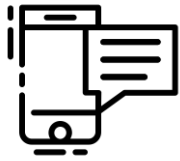
VHTs lack supply chain recording tools to use on ongoing basis

Recall Bias: Without tracking tools, VHTs could have difficulty remembering number of days stocked out in previous quarter -- in order to report whether or not a stockout (lasting >7 days/mo.) occurred

Stock Indicators Available in Reports

Numerator: # of VHTs in defined area who had no stock-out of recommended medicine in a given period.

Denominator: Total # of VHTs in defined area in the same period or Total # of VHTs that submitted a report.



HSAs send stock on hand and quantity received via SMS to cStock



cStock calculates quantities & notifies HC staff, who communicate if stock is available for resupply



Reports on web-based dashboard for managers for availability, resupply, system challenges and monitoring overall district performance

CHW DATA COLLECTION FORM: SMS



“ORS 20/2”

CAPTURES

- Total SOH (day of report) (e.g. “20”)
- Quantity Received (during month) (e.g. “2”)

DOES NOT CAPTURE

- Consumption, which is automatically calculated (to minimize data collection).
- Number of days stock out lasted prior to report
- Whether treatment could not be given due to stock out

Definition of a stockout

Percentage of the HSAs associated with product that have a stock-out of that product for the current month

Stockout data reported on 19 products, including:



LA 1x6 & LA 2x6



Paracetamol



ORS and Zinc



Cotrimoxazole

Stock Indicators Available in Reports⁹

Reporting Rates

- % reporting: on-time, late, non-reporting
- HSA individual reporting profile

Stock Status

- % of HSAs stocked out by product
- HSA stock status (adequate, stock out, overstock) by product
- Number of stockout days

Consumption Data

- Average monthly consumption (for last 60 days)
- MOS (current period)
- Total actual consumption; total consumption adjusted for stock outs

Resupply

- Aggregated quantity required to ensure HC can resupply CHWs, by product

Lead Times

- Time between: 1) HSA sending SOH report & 2) Supervisor sending order-ready msg.
- Time between: HSA 1) receiving order-ready msg. & 2) sending product receipt msg.
- Average lead time by district/facility/HSA

Order Fill Rates

Alert Summary

- % of HSAs with EOs (emergency orders) that HCs cannot resupply
- % of HSAs resupplied but remain below EOP
- % HSAs registered but have not added products they manage
- % HSAs not reporting receipts

⁹Source: Malawi MOH, User Manual for cStock, Ver 1.0, (Oct. 2012)



APEs use upSCALE app to record 1) patient-level treatment data & 2) stock data



upSCALE app sends data to CommCare platform that forwards to DHIS2 (SIS-MA)



Health facility supervisors monitor APE stock data on tablet app



Gov't health officials view APE dashboard in DHIS2 (SIS-MA)

CHW DATA COLLECTION FORMS: Relevant upSCALE Modules¹³

Stock Data

Enter **beginning balance** in 'stock inventory' form

Enter **quantities received** from kit in 'stock entry' form

Enter **stock adjustments** in 'stock exit' form



Treatment Data

Record **quantities of medicines given to each patient**

- App automatically deducts from stock balance

CAPTURES

- Beginning balance & ending balance
- Quantities received
- Stock adjustments (e.g. CHWs lending stock)
- Whether treatment could not be given due to stock out

DOES NOT CAPTURE

- Resupply calculations (CHWs receive standardized kits, packaged by Central Medical Stores) in a push system

¹² Source: Communication with Malaria Consortium, Dec. 2018. and <https://www.malariaconsortium.org/upscale/pages/about-upscale>

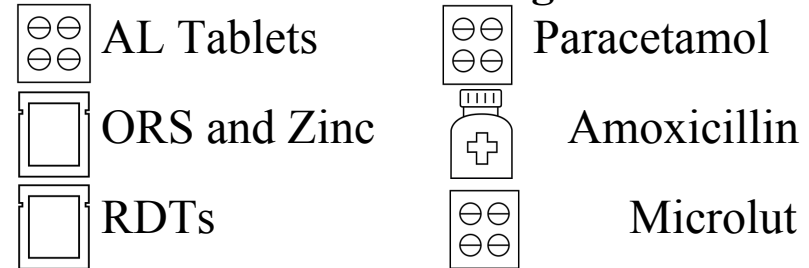
¹³ Source: <https://www.malariaconsortium.org/media-downloads/850/upSCALE-%20mHealth%20system%20strengthening%20for%20case%20management%20and%20disease%20surveillance>

Stockout Definition & Indicators MOZAMBIQUE

Definition of a Stockout (SO) in DHIS2

Percentage of the APEs that have a stock balance of 0 in monthly inventory

Stockout data reported **on 27 products**¹⁴, including:



Stock Indicators Available in Reports¹⁵

In Supervisor's Application

- % of APEs stocked out by product
- % of cases unable to be treated due to SO
- APE stock status (adequate, running low, stock out) by product (See Figure 1)

In DHIS2

- # of APEs stocked out by product
- # of patient seen who could not be appropriately treated due to stock-outs

Figure 1. Stock levels for an APE, as seen in supervisor app's stock module

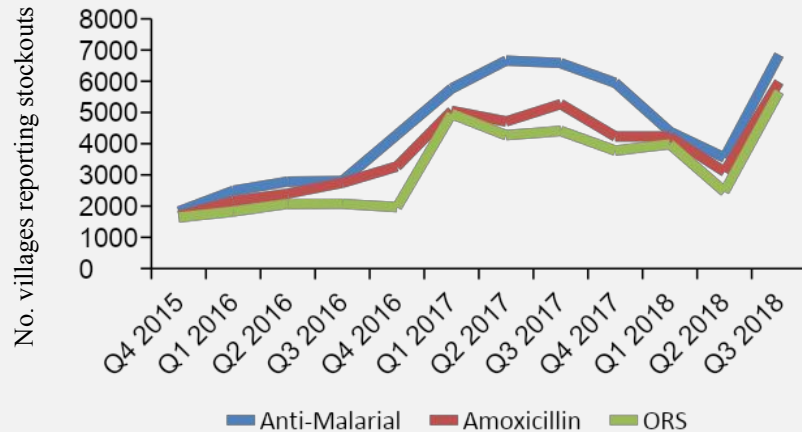
Stock Item	Count
Paracetamol, 250mg	80
Supositórios Artesunato, 50mg	8
Teste Rápido de	79

¹⁴Includes all products in paper-based system; three of these products not reported in DHIS2

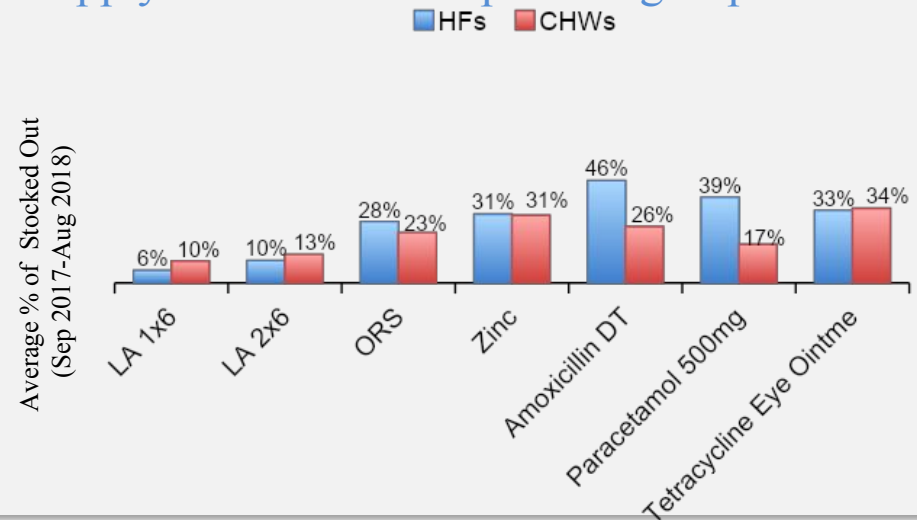
¹⁵Source: Communication from Malaria Consortium, December 2018

Country deep-dives support that stockouts occur on a regular basis and impact treatment

Uganda: many villages experience stockouts on a regular basis

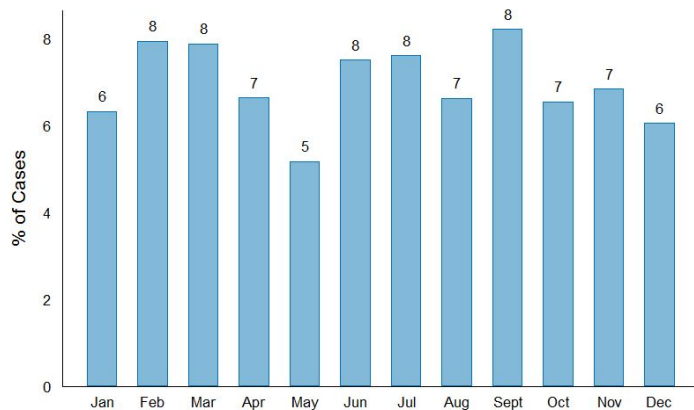


Malawi: stockouts affect all levels of the supply chain across all product groups

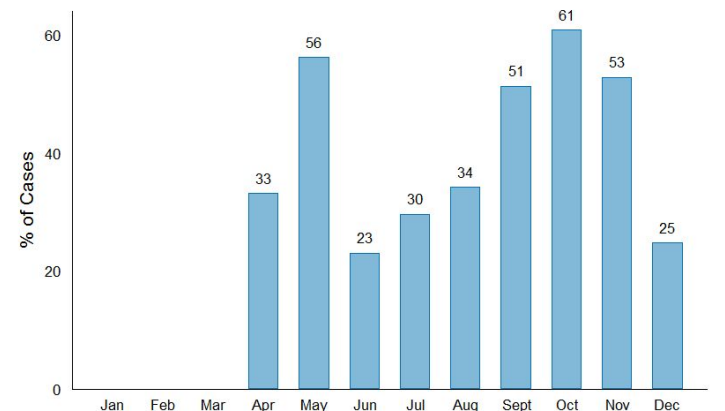


Mozambique: stockouts were the root cause for non-treatment in Cabo Delgado in 2017

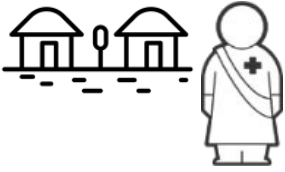
% of cases that did not receive treatment due to stock outs (2017)



% of febrile cases not received RDT due to stock outs (2017)



What are the bottlenecks driving CHW stockouts?



1. COMMUNITY LEVEL

- ❖ **TRANSPORTATION:** Lack of transportation for resupply
- ❖ **HUMAN RESOURCES:** Inadequate staff capacity or lack of standardized SCM training
- ❖ **SUPERVISION:** Poor or irregular supervision
- ❖ **STORAGE:** Lack of storage or poor stock management
- ❖ **PRODUCT LIST:** No standard supply list or policies on products CHW can dispense



2. RESUPPLY POINT

- ❖ **RESUPPLY ISSUES:** Lack of resupply procedures or stockout at resupply point
- ❖ **HUMAN RESOURCES:** Inadequate staff capacity or lack of standardized training
- ❖ **SUPERVISION:** lack of guidelines for providing supervision



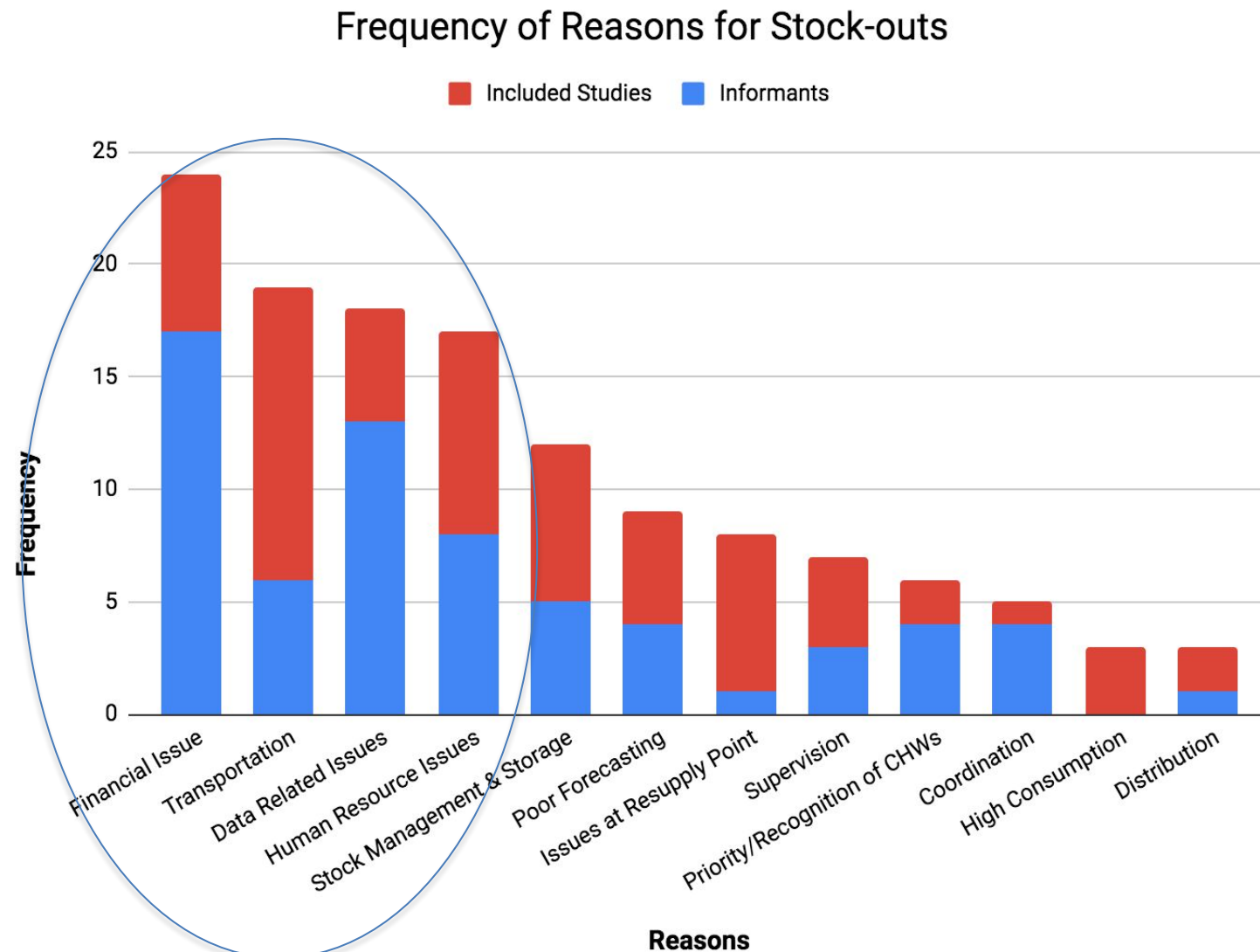
3. HIGHER LEVELS

- ❖ **FINANCING:** Lack of financing for supplies or lack of financing for CHW program activities
- ❖ **QUANTIFICATION:** National quantification does not include CHW data & needs (or poor forecasting occurs)
- ❖ **DISTRIBUTION:** Weak distribution system in national supply chain

4. CROSS-CUTTING ISSUES

- ❖ **LACK OF INTEGRATION:** CHWs & their supplies are not integrated into the national supply chain system
- ❖ **DATA SYSTEM:** Lack of reporting procedures & recording tools. Information system doesn't capture CHW logistics data. No data visibility into product availability at the community level.
- ❖ **PRIORITY OF CHW:** Low priority of CHW program or stock. MOH policies don't officially recognize CHWs.
- ❖ **COORDINATION ISSUES:** Poor coordination/communication across SC levels or among donors/programs

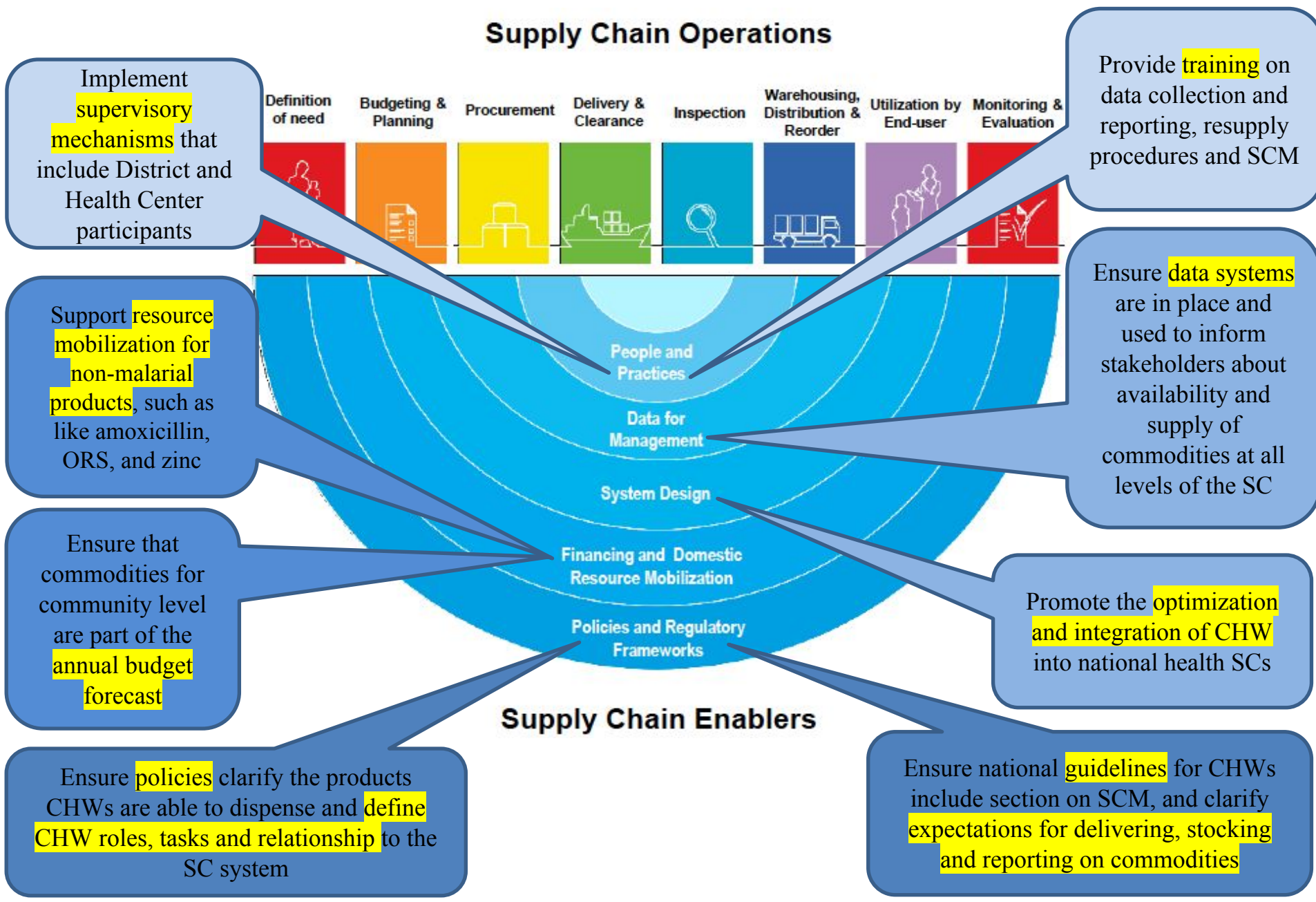
Backup – cited reasons for stock-outs



CONCLUSIONS


- Although limited data is available there is **evidence that stock-outs occur across a wide spectrum of commodities on a regular basis and impact treatment**
- There are **many underlying reasons for stockouts** and **interventions to address these need to be tailored** to the local context and its challenges
- There is a strong case to **strengthen supply chain management** and to **improve end-to-end visibility of stocks** to proactively use stock information for management.
- There is **a true know-do gap**. I.e. there is plenty of guidance on this topic (from forecasting, to distribution, to storing,...) but we need to learn more about what causes the implementation issues

SOLUTIONS





Thank you

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