SC4CCM

Supply Chains 4 Community Case Management

Community Health Supply Chain Midline Evaluation

Malawi

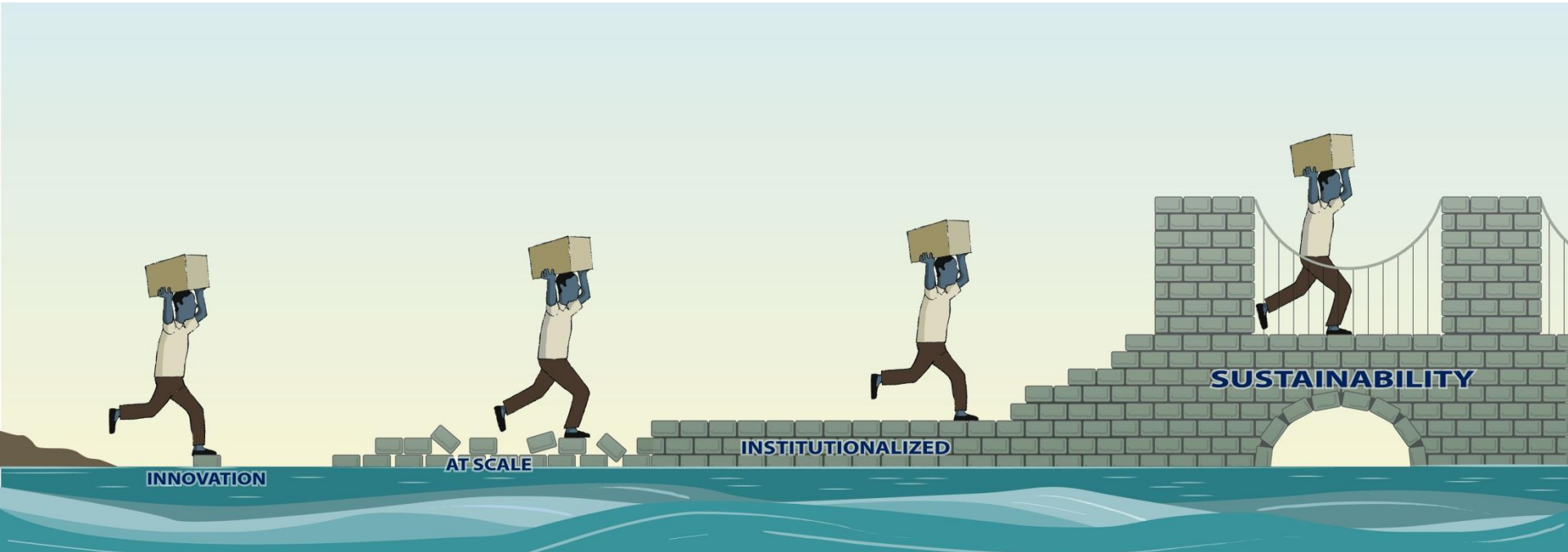
January to March 2013

JSI

JSI Research & Training Institute, Inc.

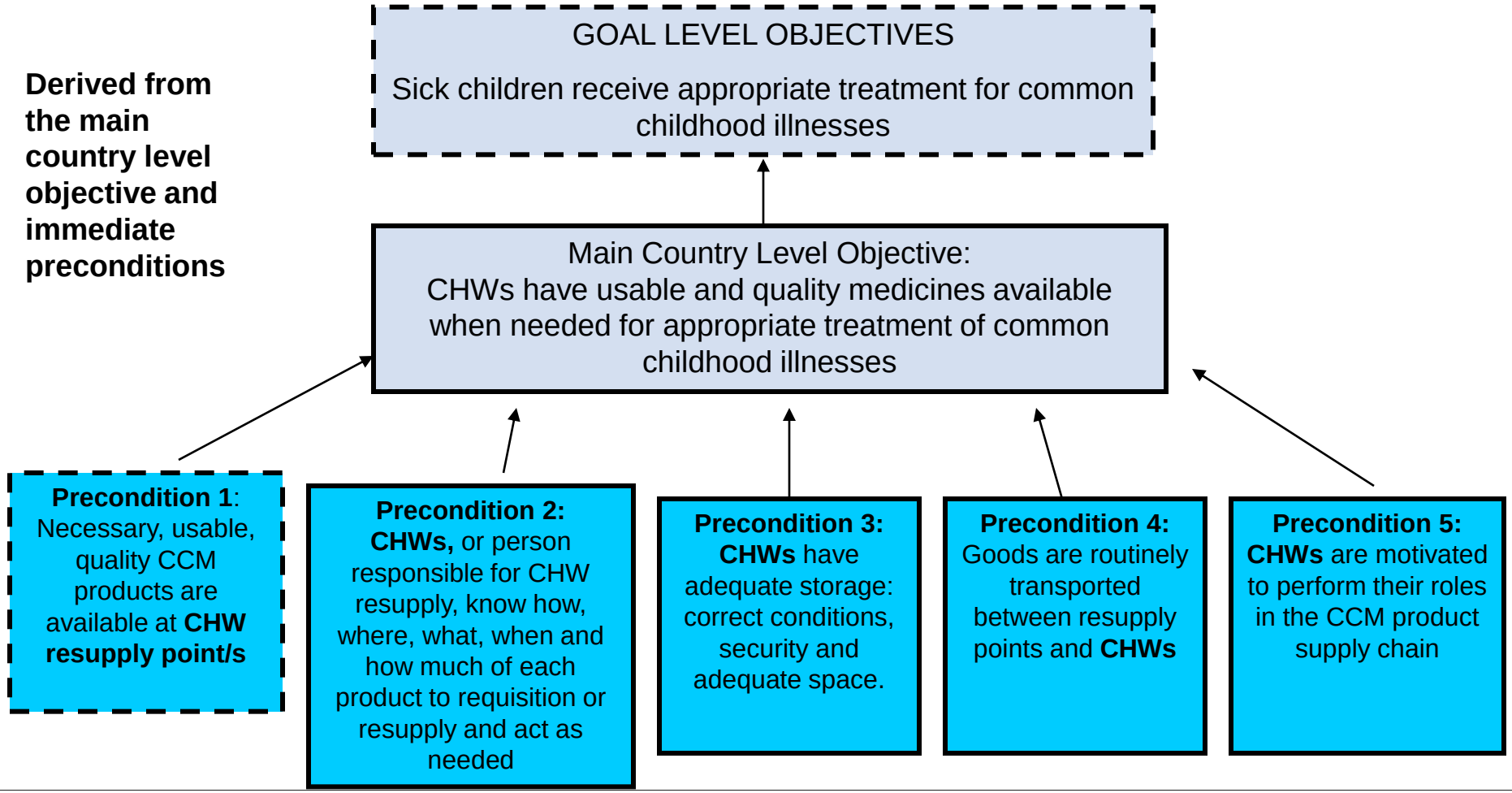
SC4CCM Project

SC4CCM is a learning project that seeks to identify **proven, simple, affordable** solutions that address unique supply chain challenges faced by CHWs. The project seeks to foster a sustainable approach to scale up and to ensure that MOH can own and adapt successful models to strengthen community supply chain practice. This will be achieved through facilitating the establishment of coordination mechanisms to guide stakeholders as they embark on institution building.



SC4CCM TOC: Core Indicators

Derived from the main country level objective and immediate preconditions



Baseline Assessment (2010)

- Very low levels of CCM products available at community level
  - only **27% of HSAs** had all CCM products needed (cotri, ORS and both ACTs) in stock on DOV
- HSA consumption data not consistently available at levels other than health center for timely logistics decisions
  - **43% of HSAs** reported they submit a report containing logistics data to health centers
  - Only **13% of health centers** reported HSA data separately from their own data to districts, others aggregated it or didn't report it at all
- 80% of HSAs relied on bicycles, 11% travelled on foot to collect products
  - **20%** HSAs identified transport as a constraint for collecting products, including "transport was always broken," "no transport available," "difficulties carrying supplies," and "too long to reach the resupply point."

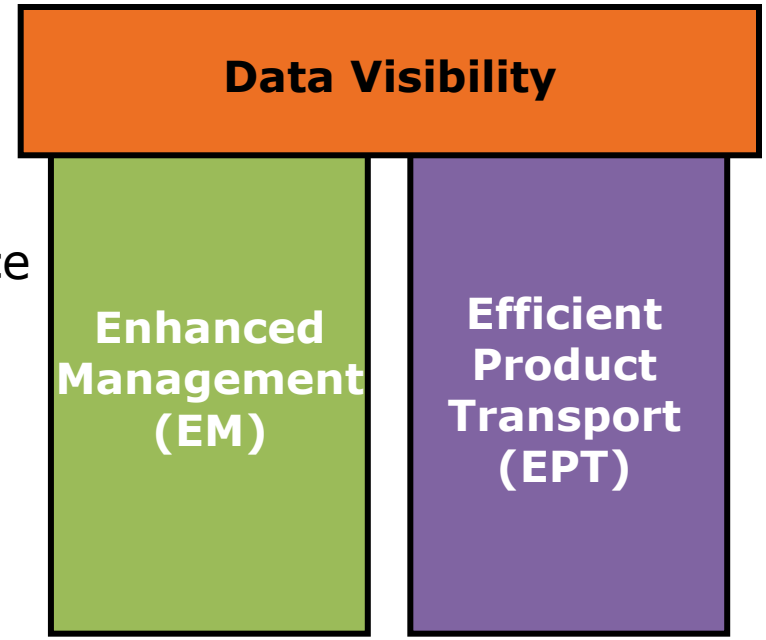
Improving Product Availability:
Two Interventions, one common theme

Cross Cutting Intervention: **cStock**, a SMS-based reporting and resupply system, to improve data visibility. cStock plays a **different role** in each intervention.

EM uses a team and customer service approach to:

- **meet** regularly
- **monitor** performance
- **problem solve**
- **recognize** achievements

cStock used for HSA resupply and performance monitoring



EPT aims to make transportation more efficient by:

- teaching HSAs **bicycle maintenance**
- making **product collection more flexible**.

cStock used for HSA resupply

…both with the goal of **reducing stockouts** and **improving product availability**

cStock: Data & Product Flow

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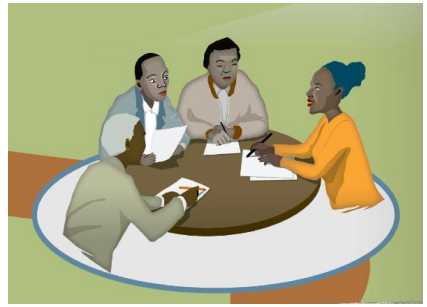
District, Zonal and Central staff access HSA logistics data via **dashboard**

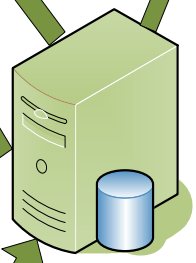


Product Flow

Data Flow

Health Center supplies the HSA based on SMS message

HSA sends SMS with SOH each month



The database calculates - MOS and resupply quantities, reporting rates, number and duration of stock outs, displays on **dashboard**

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Objective of Midline Assessment

1. Assess & compare the **impact of the two intervention groups** (EM and EPT) on improving supply chain performance at the community level against a group of 4 baseline but non-intervention districts

2. Provide **evidence about cStock** as an effective system for making community supply chain data more visible

3. Provide evidence around the interventions tested by SC4CCM to identify successful SC practices and support the MOH of Malawi to identify and take action towards **scaling up promising activities.**

Assessment Methodology

- **Qualitative**
  - Logistics system assessment workshop (LSAT)
  - Key Informant Interviews
  - Focus Group Discussions
- **Quantitative**
  - Facility based survey (LIAT) using mobile data capture
    - Collected stock data for 13 tracer commodities

Sampling: Malawi Midline (BL)

	EPT	EM	NI	Total
	Machinga, Nkhatabay, Mulanje	Nkhotakota, Nsanje, Kasungu	Zomba, Ntchisi, Salima, Mzimba North	
District	3 (3)	3 (3)	4 (4)	10 (10)
HC	25 (26)	23 (25)	28 (26)	76 (77)
HSAs	78 (85)	81 (80)	90 (85)	249 (249)

Focus Group Discussion (FGD) Sampling

Two FGDs of 6-10 people per intervention district, from 3-4 HCs outside the LIAT sample: 1) HSAs (2 male/female per HC);

2) HC staff handling CCM products (HSA Supervisors, Drug Store In-Charge, HC In-Charge)

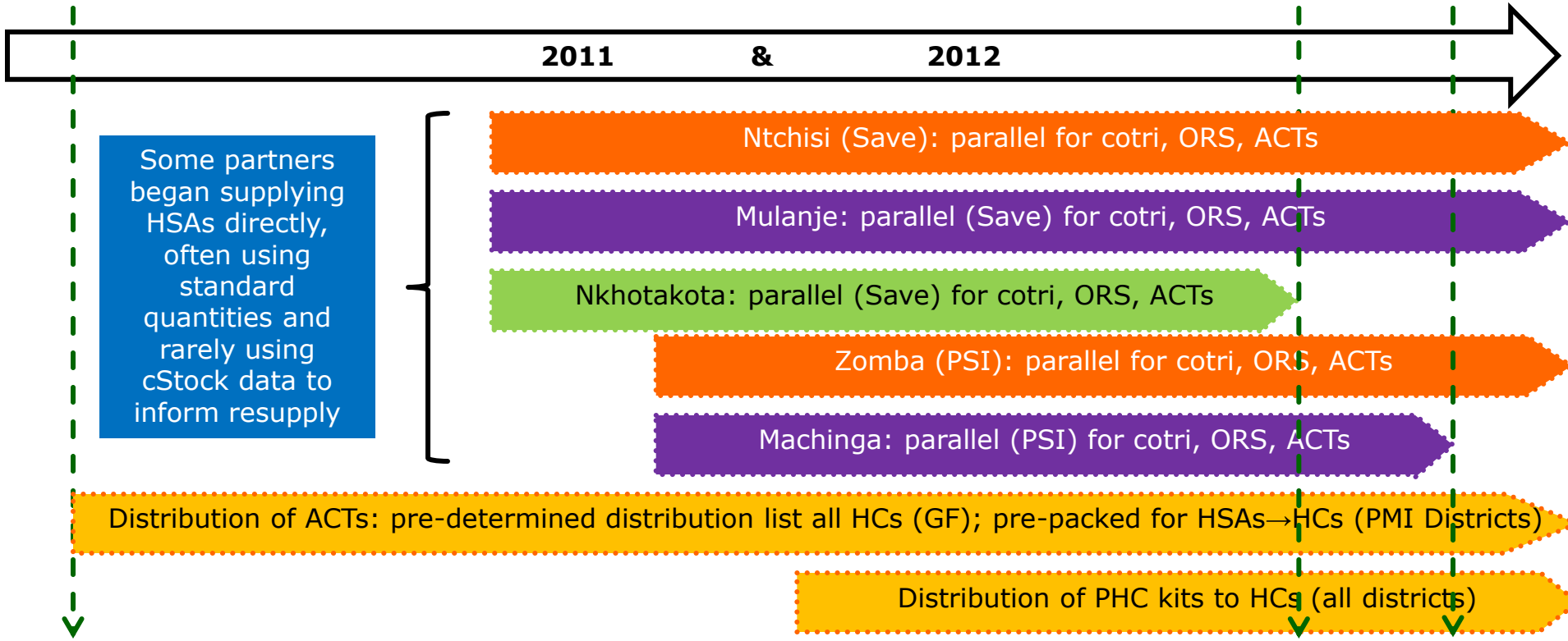
Only **139** of 249 sampled HSAs at BL were managing health products; at ML all 249 HSAs sampled were managing products.

Contextual Factors

- Significant scale up of CCM since baseline
  - Overall number of functional village clinics across assessment districts has more than doubled since baseline.
- Limited resources have affected multiple aspects of supply chain
  - procurement, district purchasing, product distribution and supervision

- Parallel system for CCM product resupply in all districts for majority of intervention period (introduced after baseline)
  - Procurement and distribution of PHC kits for HC level and ACTs for HCs and some HSAs
  - CCM partners procuring and distributing key CCM products directly to HSAs.

Partner Supported CCM Products



At BL, CCM products distributed through MOH SC; zinc only in Kasungu

Nkhotakota and **Machinga** were aligned with the timing of the MOH SC for distribution, use of cStock to determine resupply quantities

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Midline Results

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cStock Evaluation Results

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Criteria to Evaluate mHealth Systems

- Faster access to data i.e. virtually real-time as opposed to days, weeks or months
  - mobile phones are available and network coverage is good
- Better and more timely decision making
  - Data is presented on a dashboard that is easy to use
- More accountability due to the visibility of the data
- A reduction in the use of paper and printing materials
- A reduction in staff time taken to prepare reports
- A reduction in the need to travel which saves time, fuel, wear & tear on vehicles

RHINO (Routine Health Information Network) Listserve
http://www.rhinonet.org/

Ease of Use & Challenges

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Since October 2012 reporting rates have consistently been **above 80%** for all districts (vs. 43% at baseline). Challenges with data transmission do not seem to be affecting reporting rates.

99% of HSAs and HC staff have mobile phones

81% HSA and **78%** HC staff have network coverage at work all the time, (**100%** at least sometimes)

80% HSAs have access to a phone charger all the time and **10%** at least sometimes

Few HSAs **(24%)** reported challenges

- 7% didn't always have access to phone charger
- 6% reported network not always available
- 3% cited error messages
- 1% mentioned not being able to send messages with Airtel because of no credit.

FGDs: we walk long distances to charge our phones. (Nkhotakota)

cStock: Access and Use of Dashboard

Reported frequency districts access dashboard (n=6)

	EM	EPT
Once/mo	-	2
1-2 x /week	2	1
3-5 x/ week	1	-

Majority of districts (5) report that cStock website takes **1 minute or less** to load

All (6) respond not being discouraged from using cStock because of page loading time

Benefits of cStock dashboard

- Provides data for coordination***
- Provides data for planning**
- Cheaper, fastest way of delivering information*

District IMCI Coordinators in EM received more training in the dashboard than EPT, and as a result appear to use cStock more consistently for coordination and planning

cStock Role in Report & Request of Health Products

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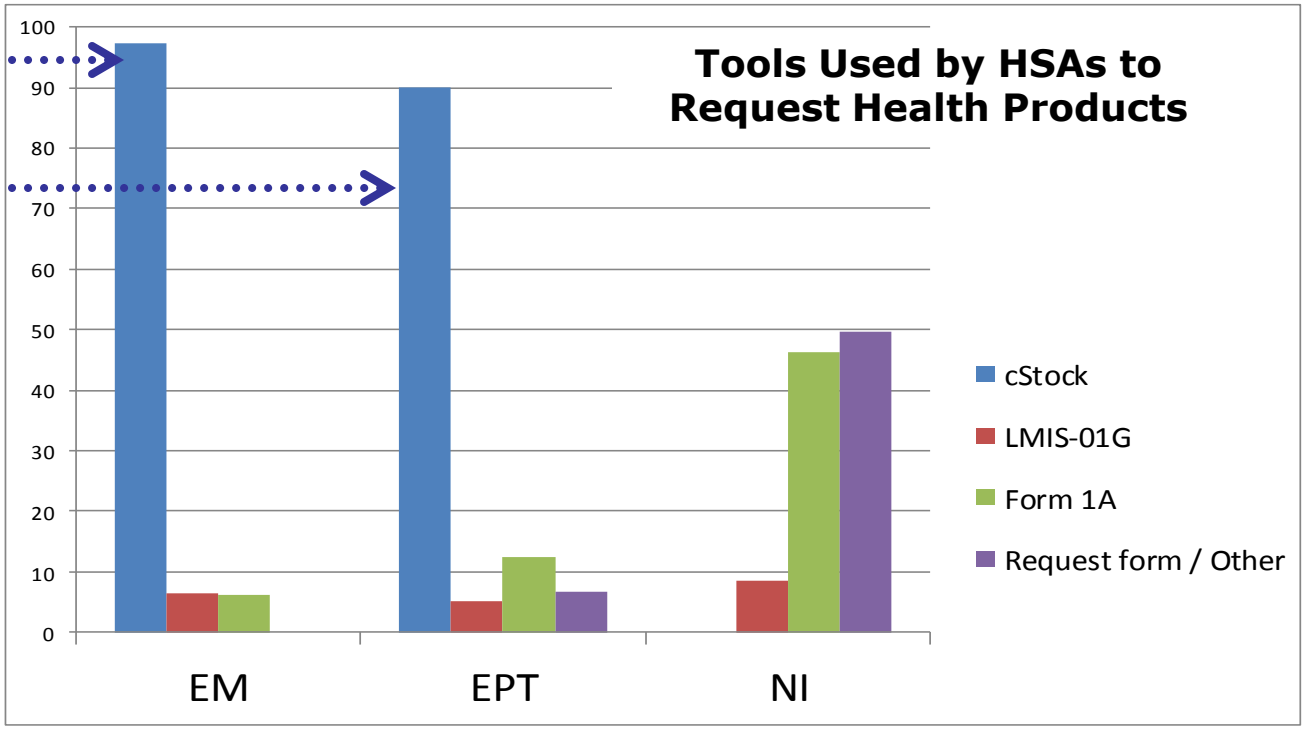
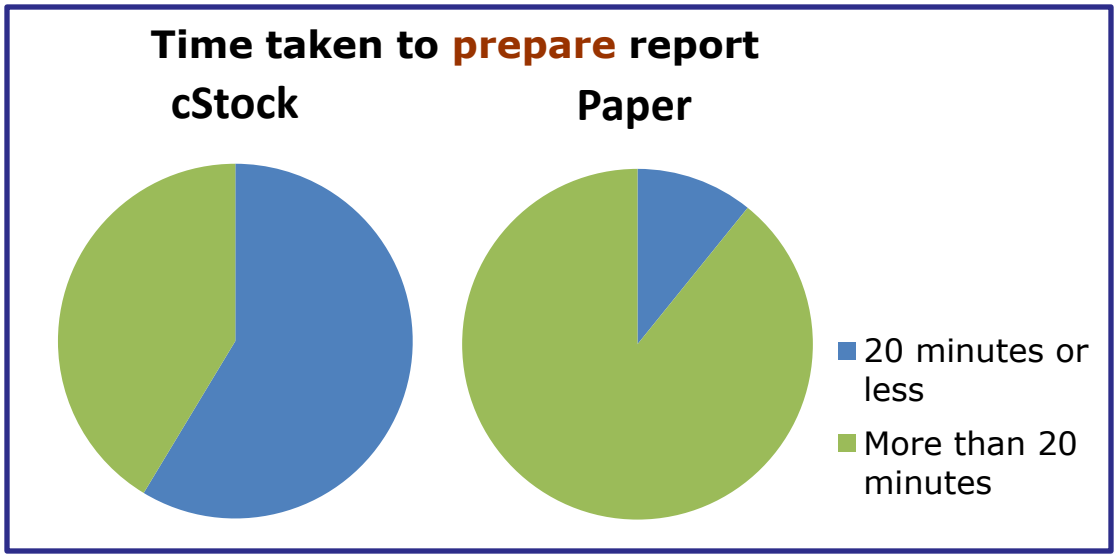
cStock has become **primary tool for requesting resupply from HC**

- Request includes reporting partial logistics data (SOH, receipts)
- Less consistency in comparison districts in forms used to request products



cStock has not replaced paper logistics reporting form, **100%** of HSAs report that they are submit Form 1A which contains logistics data

Time to prepare and submit requests and collect products



Time taken to prepare and submit cStock report

FGDs: "…. as for cStock , the report goes the fastest and gets me the supplies I need in time, whilst the paper form can take 3 days, cStock does not." (HSAs, Kasungu)

"It is within 5min we are done with the report." (HSAs, KK)

99% respondents found cStock saved them time in **collecting** products

FGDs: "the travel time has been reduced because we are only forced to travel when our products are ready" (HSAs, Nkhotakota)

cStock has saved HSAs time in **preparing** orders/requests compared to paper forms, in **submitting** requests, and in **collecting** products

Pre-packing HSA Orders

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Drug Store In Charge Use of cStock	Total
Use cStock to determine how much to resupply HSAs	91%
Pack order before HSA arrives at HF	57%

Prepacking happens more than half the time, but room for improvement

District DVWs: **prepacking** does not happen all the time because **space** is a challenge, HC staff are **busy** and/or have other priorities, and **concurrent availability** of both -- HSA Supervisors can't go into drug store alone

FGDs: "*…it depends on drug availability, if they are little drugs, we need to share and they calculate with the help of supervisor how much to give to each HSA. We just find out that our drugs have been packed for us and we just accept the drugs and then we sign for the receipt of drugs and we also go back to cStock to inform them that we have received the drugs.*" (Kasungu, HSAs)

cStock: Summary

- Improved visibility into stock data for HSAs by central and district levels through reporting two data elements – SOH and receipts
- Primary means for HSAs to request resupply
- Saved time in submitting data, collecting products
- System easy to use and understand by users

Criteria to evaluate mHealth systems

✓ Faster access to data

✓ Better, more timely decision making

✓ A reduction in staff time to prepare requests

✓ A reduction in the need to travel

↔ A reduction in use of paper, printing materials

↔ More accountability, due to greater visibility

EM: Core Features

DPAT members - District IMCI coordinator/district pharmacist, HSA supervisors, Drug Store in charges, HSAs

District Product Availability Teams (DPAT):

- Quarterly district meetings, monthly at health centers (no per diem)
- Use of **management diaries** at district, HCs to track SC issues and actions taken
- Development and use of **performance plans, targets, recognition**

cStock dashboard/alerts/reports:

- Use of **cStock HF reports** to monitor targets in DPAT performance plan (district print and distribute each month)
  - Later resupply worksheet was modified to enable HC DPAT's to monitor targets using this rather than cStock reports
- Use of **data from cStock dashboard** to guide timely problem solving and decision making at district and health centre to address SC issues

Implementation: Rollout, Monitoring, Intervention Support

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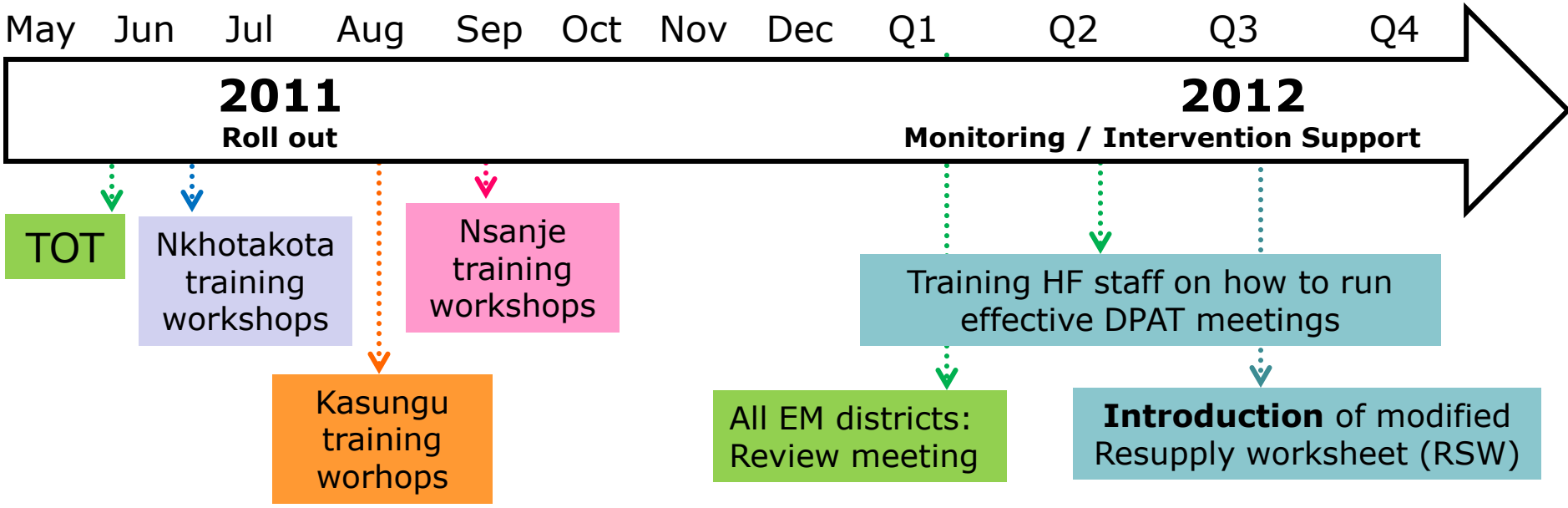

# trained from sample	HC Sup	Drug store IC	HSA
Nkhotakota	100% (n=6)	83% (n=6)	100 % (n=21)
Nsanje	100% (n=6)	33% (n=6)	100 % (n=18)
Kasungu	92% (n=13)	92% (n=6)	100 % (n=21)

Joint monitoring and supervision (District IMCI coordinators, SC4CCM) of DPAT uptake and sharing quarterly results on performance

Frequency of DPAT Meetings

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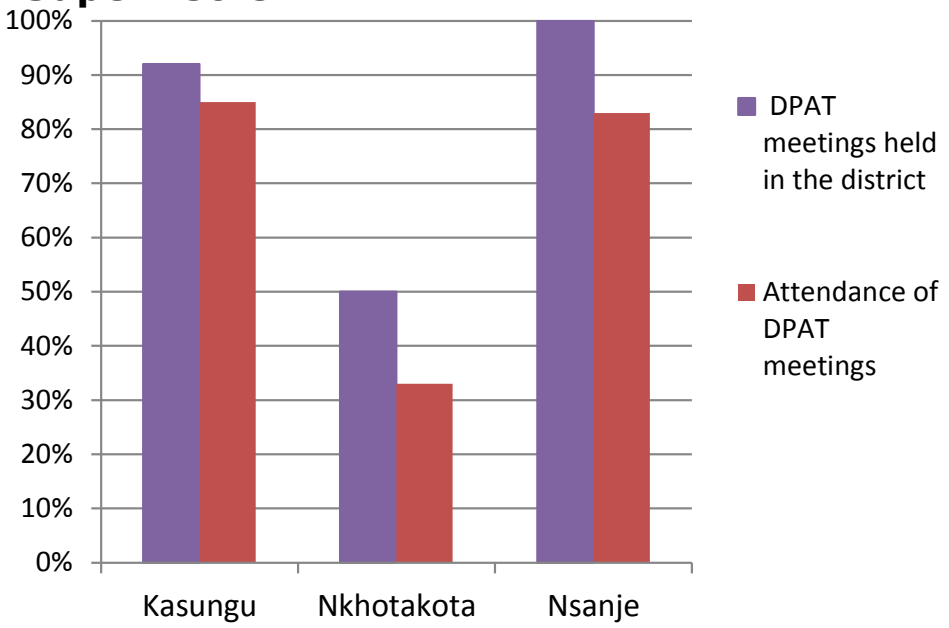
DPAT at Districts

District IMCI coordinator/district pharmacist, HSA supervisors

Frequency of District DPAT reported by HSA Supervisors

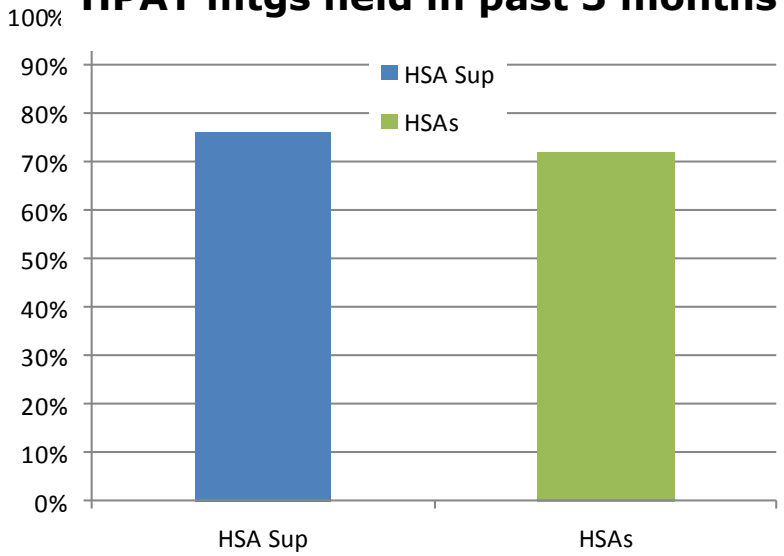


EM District DVWs: Kasungu/Nsanje take advantage of **Quarterly CCM Review** Meetings to hold **DPAT meetings**

HPATs at Health Centers

HSA supervisors, Drug Store In-charge, HSAs

HPAT mtgs held in past 3 months



EM District DVWs: Reinforced FGD finding that **HPATs were held more frequently** than DPATs; in some districts HPAT meetings were **aligned with timing** of HSAs monthly resupply collection

DPATs: Performance Monitoring, Topics, Recognition & Rewards

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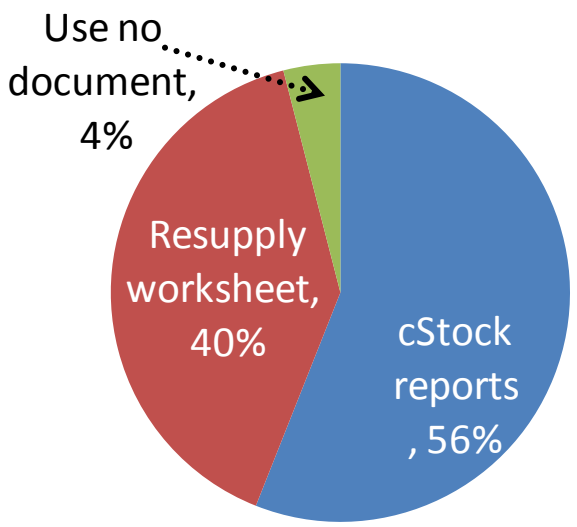
Using cStock data for Performance Monitoring



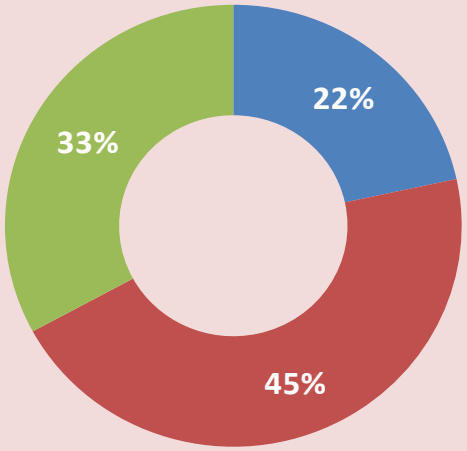
Data Source: Document used by HSA Supervisors to monitor targets

Recognition Awareness: 92% HSA Supervisors know their recognition plan and **82%** HSAs are aware of rewards

Giving Rewards: 68% HSA Supervisors report giving rewards, **15%** HSAs report receiving rewards

How HSA Supervisors use cStock data	EM (n=25)
Follow up on non-reporting HSA's	24%
Follow up on Incomplete Reports	24%
Follow up on stocked out products with districts	32%

Topics Discussed in DPATs (HSA Survey)



Performance Plans & Targets

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All **3 District** IMCI Coordinators have DPAT plans and targets, 2 could show printed copies and name 1 performance target

44% HC staff had print copies of DPAT plans and targets and could name one performance target, 24% could show printed copies of plans

83% of HSAs know about performance plan, **85%** about targets

FGDs: *"we use the papers where the vision, mission and the targets are recorded and we always refer to the targets when having DPAT meetings" (Nsanje HC)*

Management Diaries

All 3 District IMCI Coordinators use **management diaries** to document problem solving and track actions/decisions

100% HSA supervisors use documentation to track actions/decisions

- **84%** use management diary, **16%** use notebook

Why DPATs are useful (LIAT: Districts, HF)

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Promotes teamwork**

Solutions are made collectively and team work is strengthened

Includes everyone at the hospital, therefore able to work hand in hand

Problem Solving*

Improve planning and direct feedback from supervisors

Able to assist each other on practical problems

Enhances sharing of ideas and solutions to challenges

Recognition*

Compliment performers

Facilities know their performance and performers are congratulated

Performance Monitoring **

They improve performances by HSAs and coordination at all levels

They give updates on performance

Improves performance

Better Product Availability***

Ensures Product Availability at community level

Helps identify ways of making sure HSAs have products in VC

Helps identify and improve shortfalls

100% District, HSA supervisors reported finding DPATs useful

SC4CCM

EPT Core Features

A continuous review inventory control system

- Flexible schedule, aligned to HSA routines
  - HSAs order every time they go to the HC for other purpose rather than once a month
  - Enables smaller, more frequent top-up orders and reduces special trips to HC for product resupply

Regular bicycle maintenance performed by HSAs

- Regular maintenance leads to reduced number and severity of breakdowns and repairs needed to keep the bicycles functioning

Implementation: Rollout, Monitoring, Intervention Support

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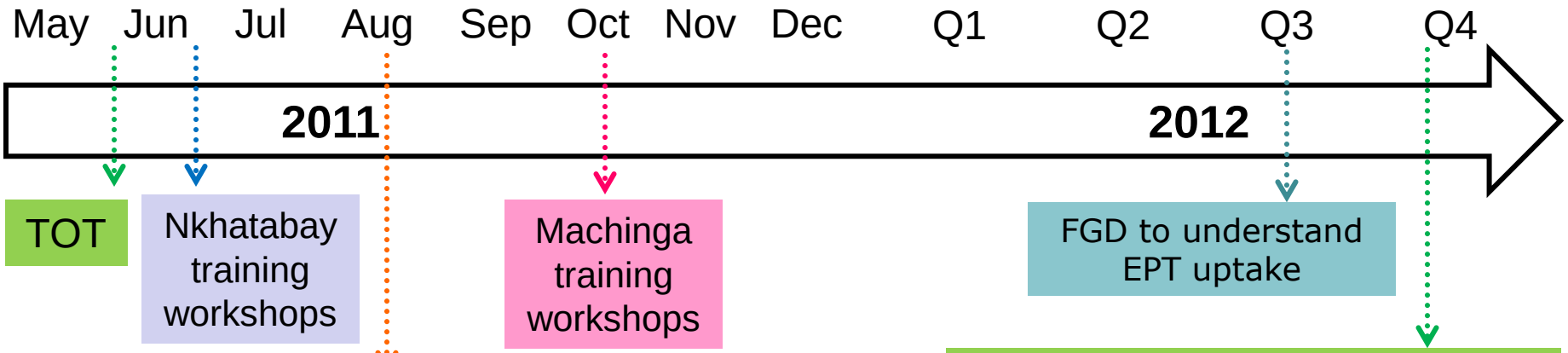
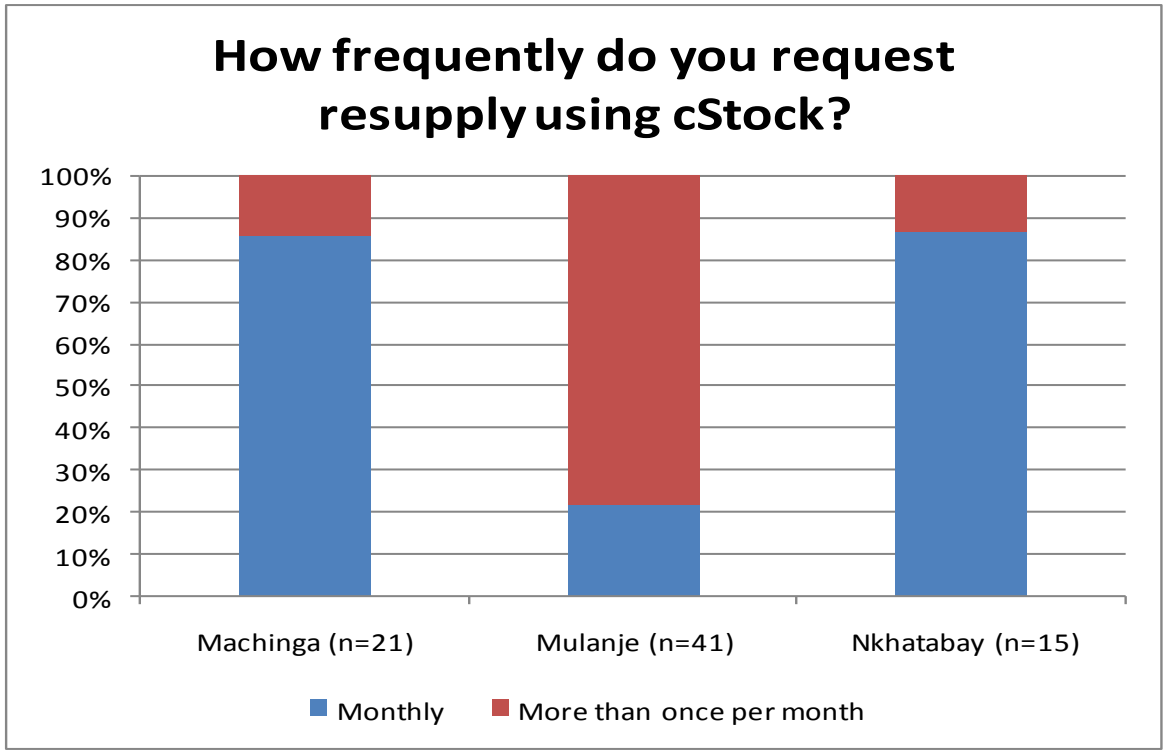


# trained from sample	HC Sup	Drug store IC	HSA
Mulanje	100% (n=13)	75% (n=12)	100 % (n=42)
Machinga	100% (n=5)	60% (n=6)	100 % (n=21)
Nkhatabay	100% (n=5)	80% (n=5)	100 % (n=15)

Inventory Control



Frequency of collection

HSAs went an average of **1.05 times** to collect products from HC in last 30 days compared to 1.19 times (EM) and 0.9 (NI)

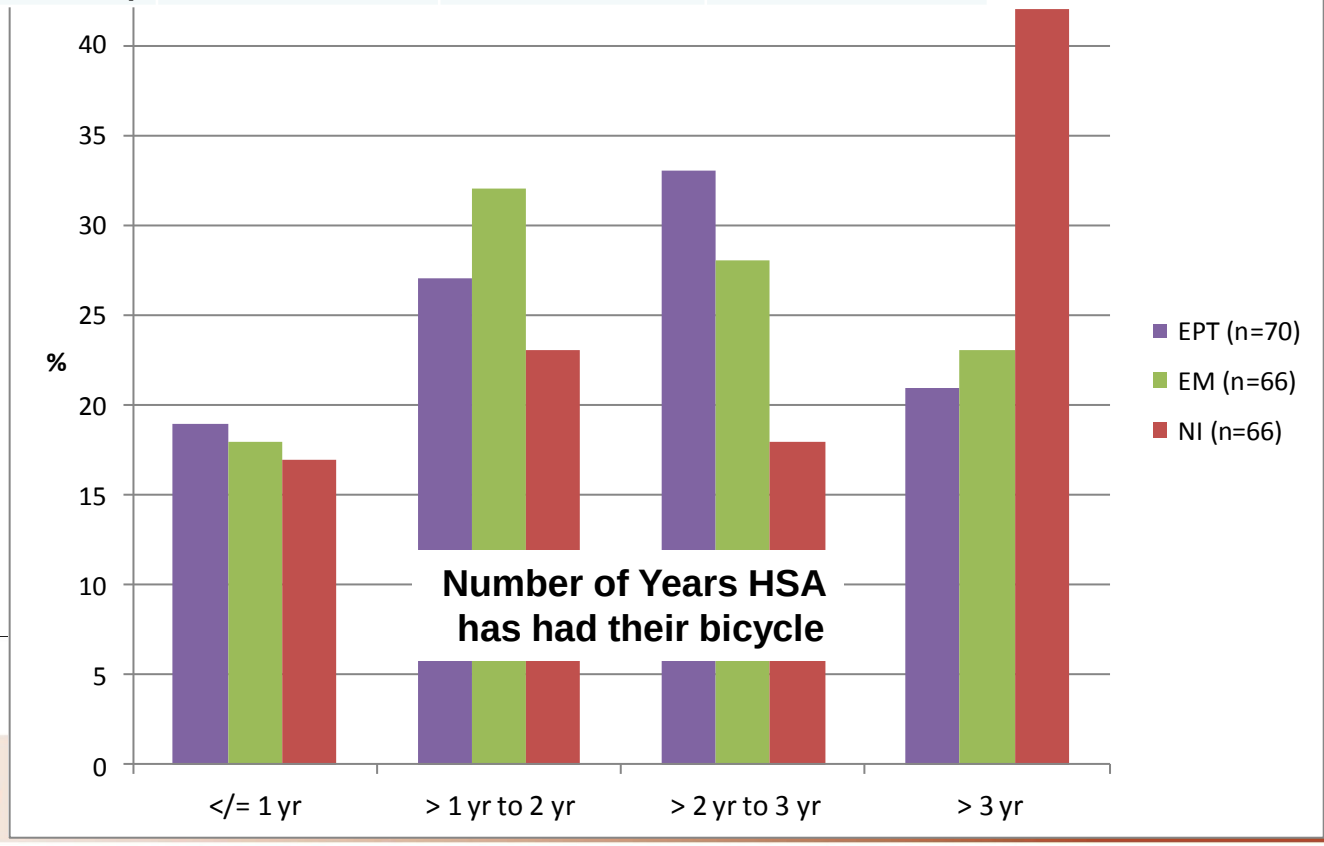
EPT District DVWs: Uptake of continuous review inventory control was low because:

- **HC staff** and **HSAs** considered **frequency** of picking/packing and stock taking **burdensome**
- Limitations related to the **fixed timing** of resupply due to parallel SCs in two districts

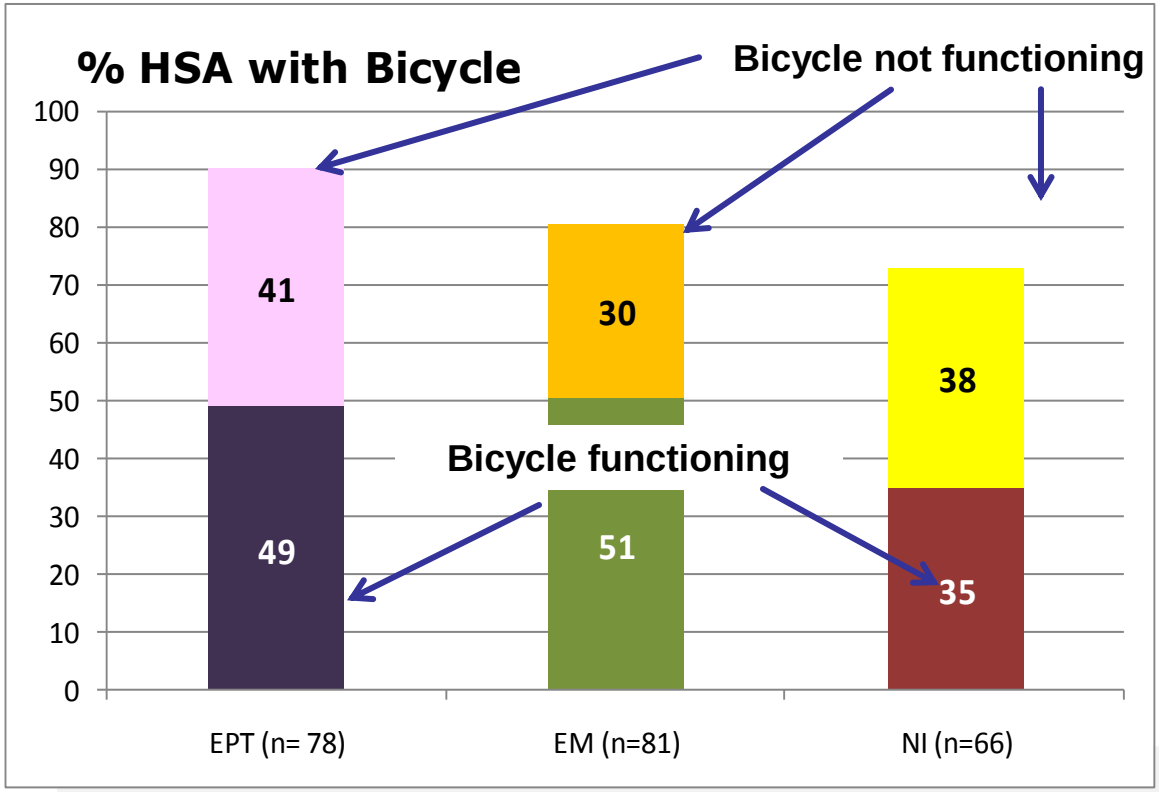
Contextual Results: Source and Age of Bicycles

HSAs	EPT (n=70)	EM (n=66)	NI (n=66)
% have bicycle	90	81	73
% bicycle provided by MOH	24	**55**	**62**
% bicycle provided by partner	**70**	42	29
% bought it using my own money	6	3	9

EPT districts have more challenging topography (e.g. mountains) compared to EM districts



Bicycle Maintenance: By Intervention



94% HSAs in EPT districts trained in bike maintenance, **89%** have a job aid, **93%** have a toolkit

Bicycle maintenance training and access to materials **has not resulted** in more bicycle maintenance and better functioning bicycles with fewer breakdowns.

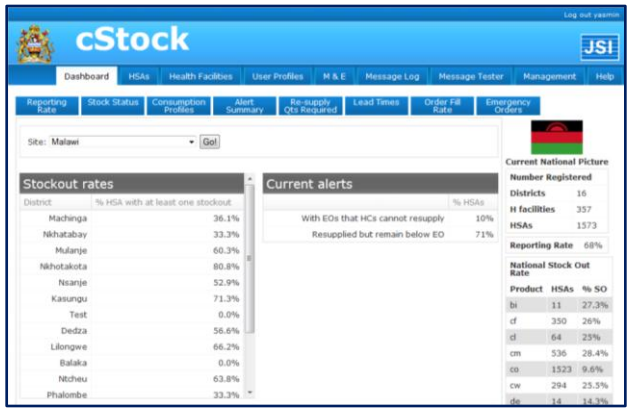
	EPT (n=78)	EM (n=81)	NI (n=90)
% HSAs with maintenance materials	**90**	29	26
% HSAs performed maintenance regularly	(n=69) 74	(n=66) 69	(n=66) 62
% report bicycle breakdowns last 30 days	40	37	48

Comparing EM and EPT

Performance indicators from cStock over time

In most key SC performance indicators, measured over time, **EM** districts generally performed better than **EPT** districts

- In EM, DPAT/HPAT meetings focused on monitoring and discussing these SC indicators, and played a crucial role in improvements



The DPAT model fostered **better team spirit** and **friendly competition** in improving SC performance

cStock: Reporting

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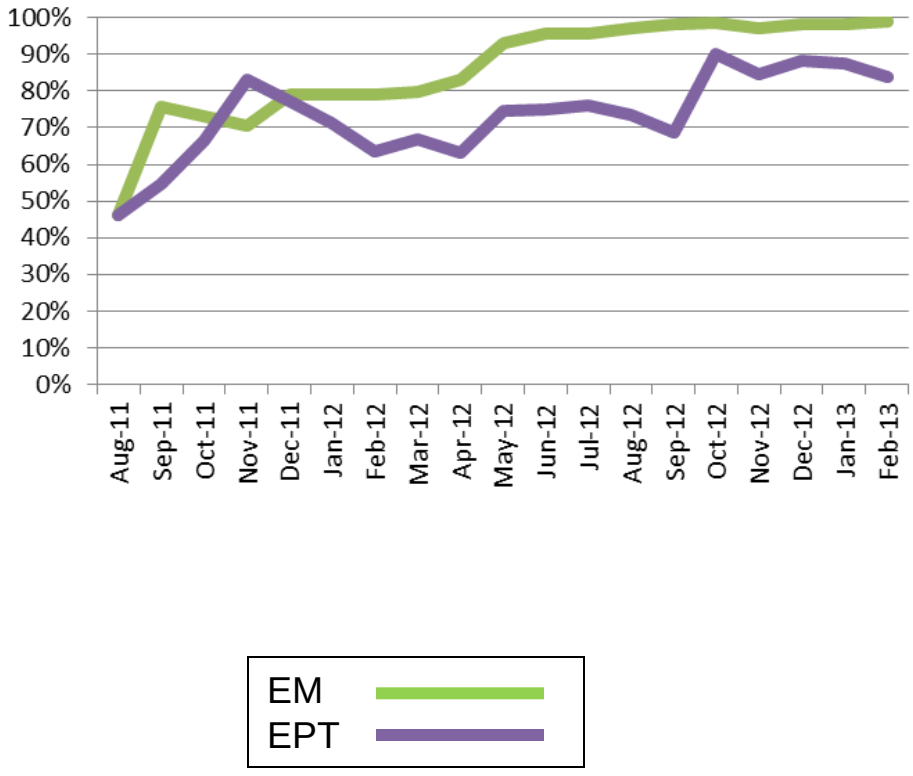
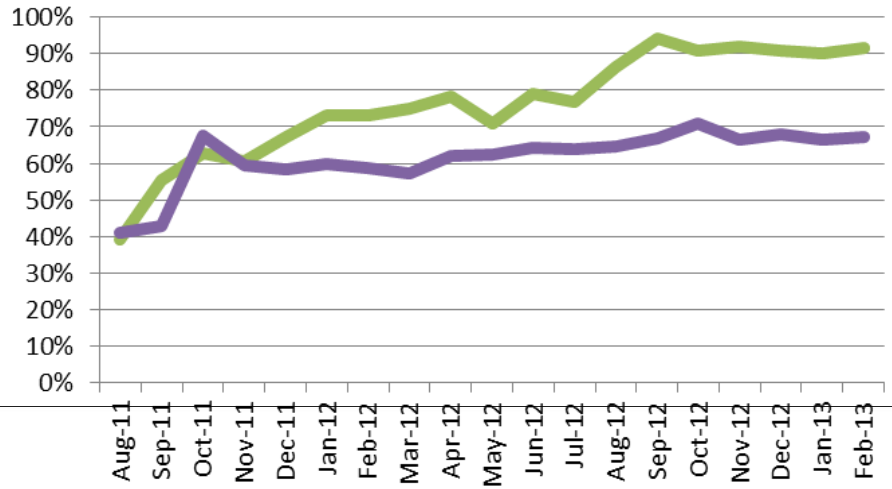
Reporting Rate



In general EM districts performed better than EPT districts on all aspects of reporting

Reporting Completeness



cStock: Lead Time

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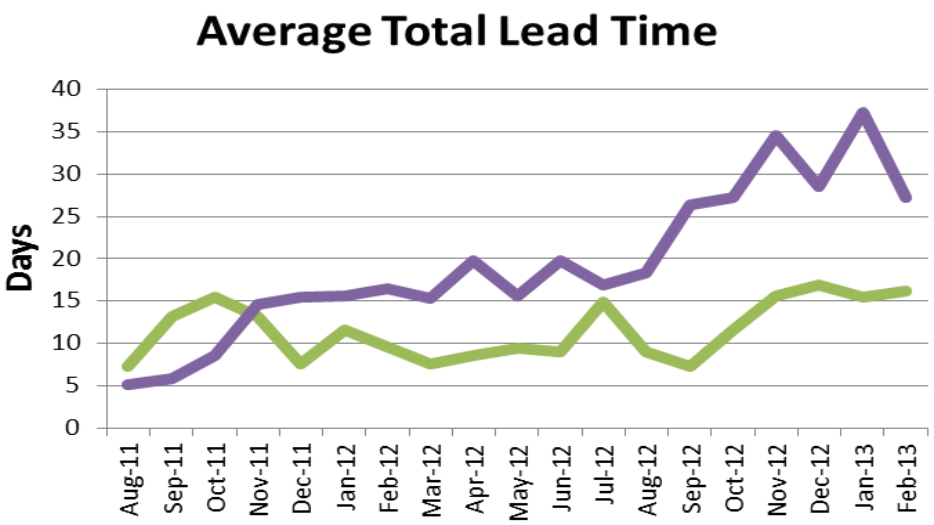
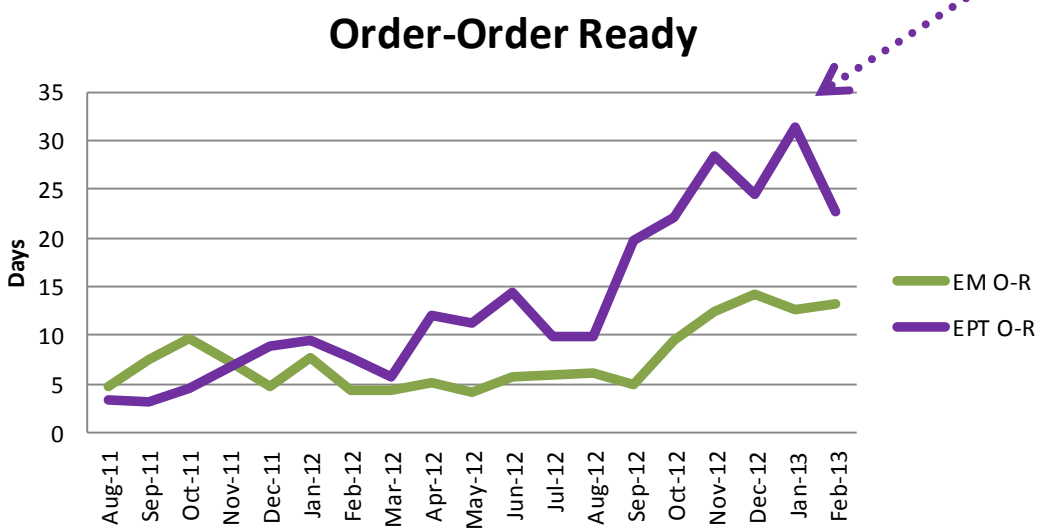


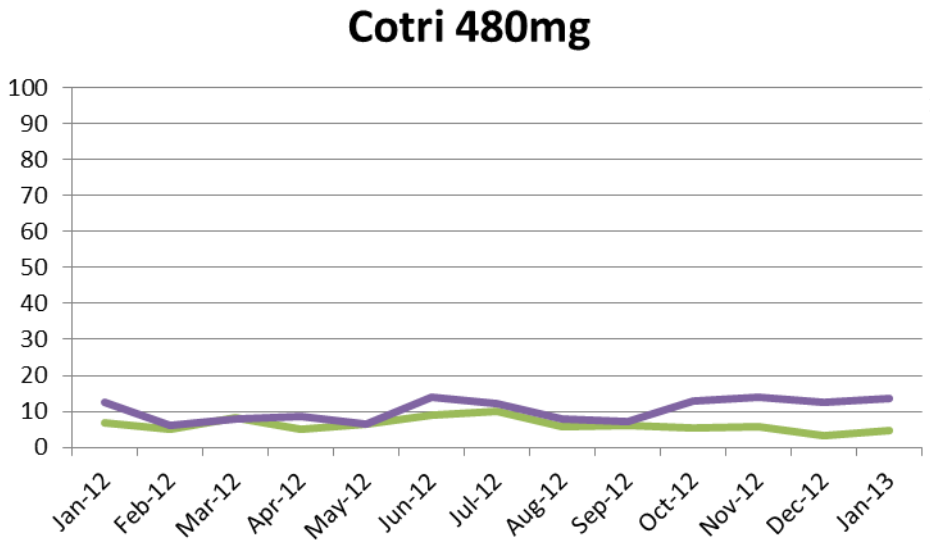
On average HC's in EM group took **7.6 days** to respond after a request and the EPT group took **13.5 days**.

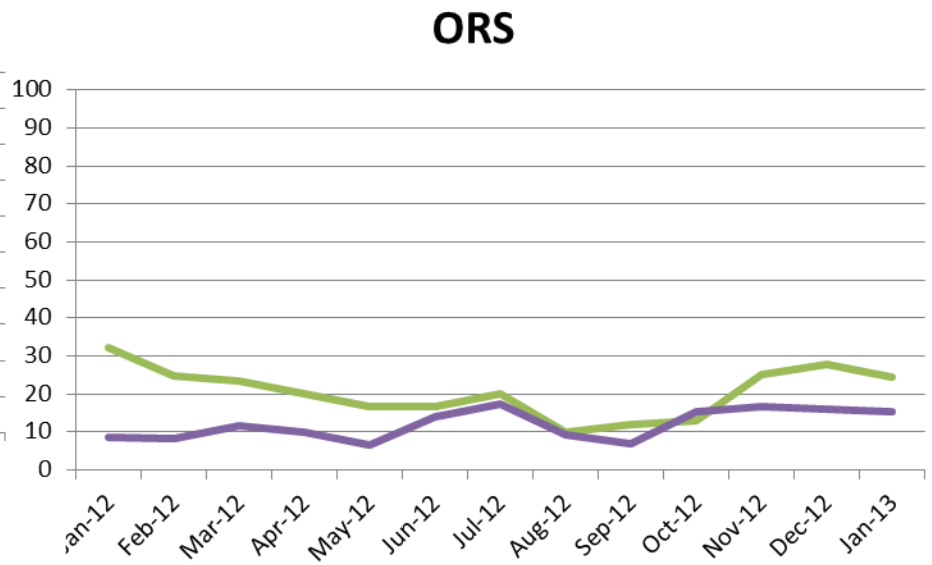


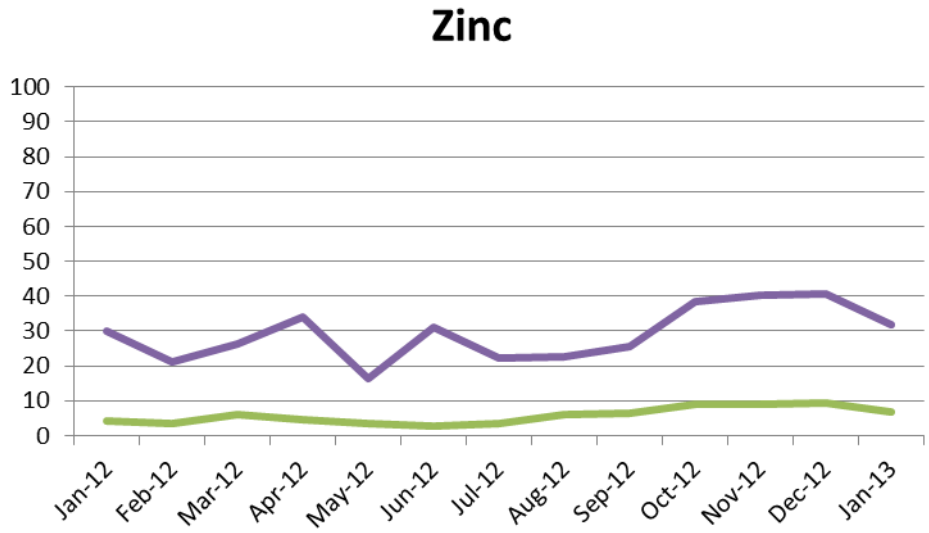
HCs in EPT districts in recent months have taken up to **30 days** to respond

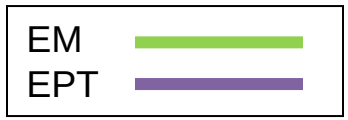
Greatest contributor to long lead time in EPT is "order to order ready" period (this is how long HC takes to check stock, pack and send order ready message so that HSA can come collect)

cStock: % HSAs with Stockouts



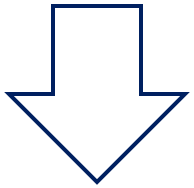






Comparing EM and EPT

What drove differences in performance between EM and EPT districts?



cStock is used in both groups so changes can be directly attributed to the DPAT component, which drove the higher level of performance in the EM group

Product Availability

100% of midline sample managed ALL CCM products for diarrhea, malaria and pneumonia

HSAs have usable and quality medicines available when needed for CCM

Of the HSAs who manage health products

62% ML (27% BL)had the **4 tracer** drugs* in stock DOV

75% ML (35% BL) had the **3 tracer** drugs** in stock DOV

*cotrimoxazole, LA 1x6, LA 2x6, ORS
** cotrimoxazole, LA1x6 and/or LA2x6, ORS

% HSAs with 3 Key Drugs in Stock on DOV

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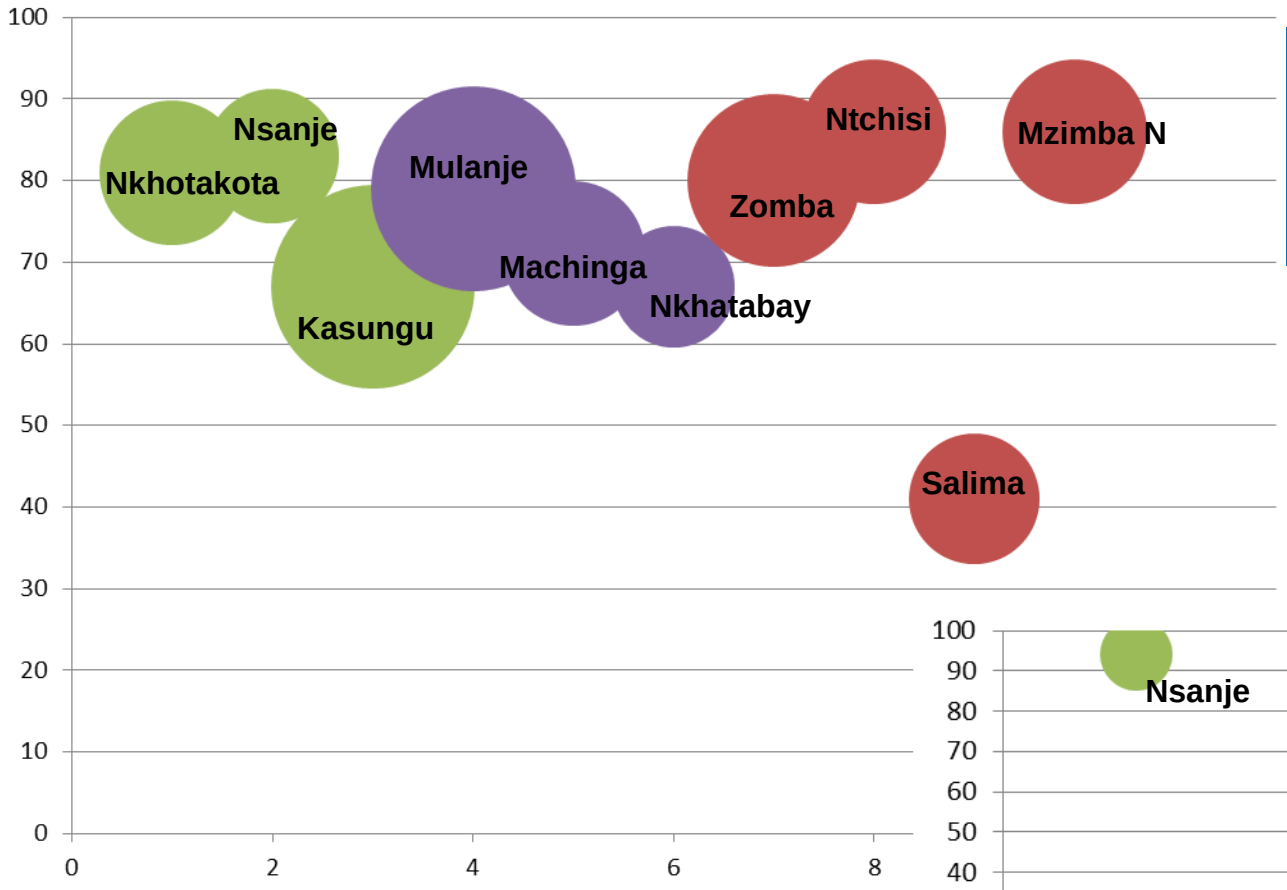
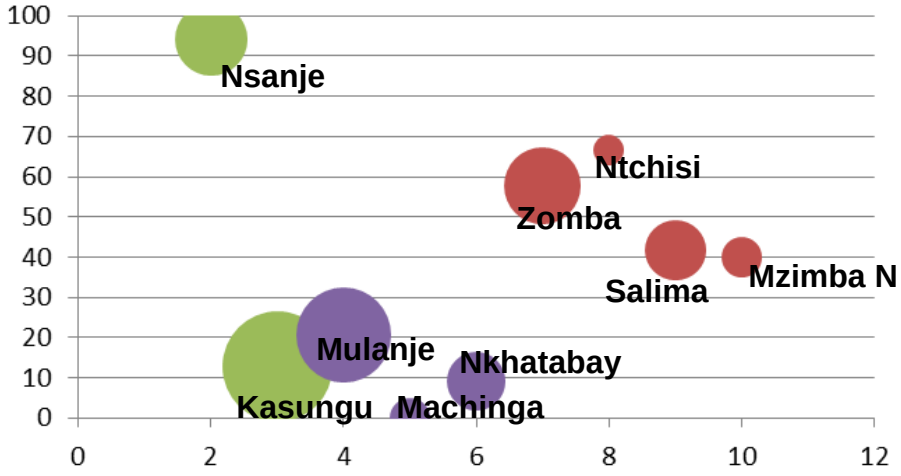
Midline



Increased availability across **ALL** districts except Salima

Baseline



cotrimoxazole, LA 1x6, LA 2x6, ORS

N.B. No HSAs in Nkhotakota managed health products at baseline

% HSAs In Stock DOV:
BL vs. ML and by Intervention group

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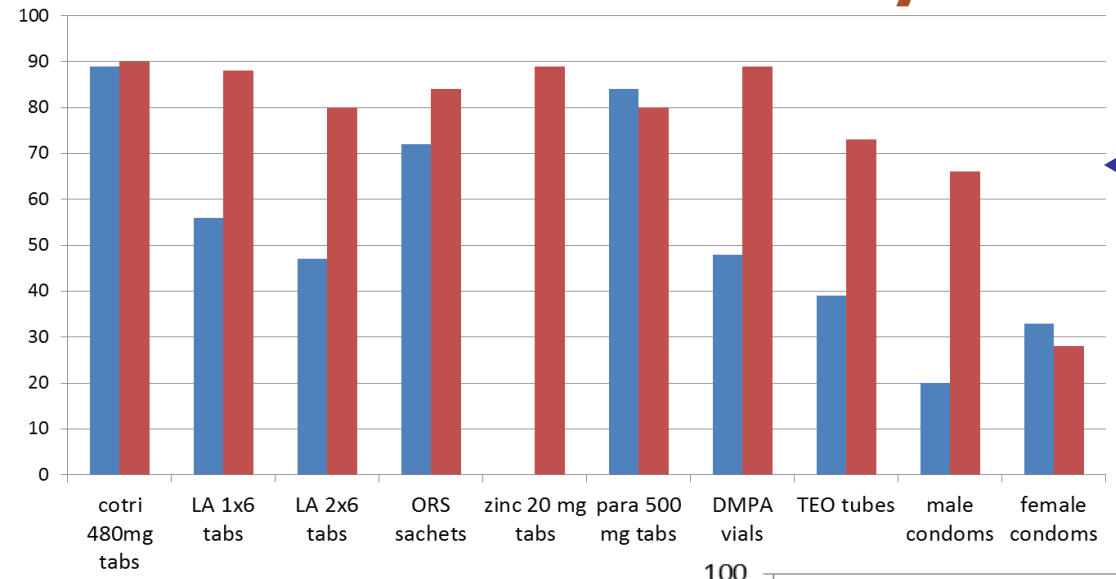
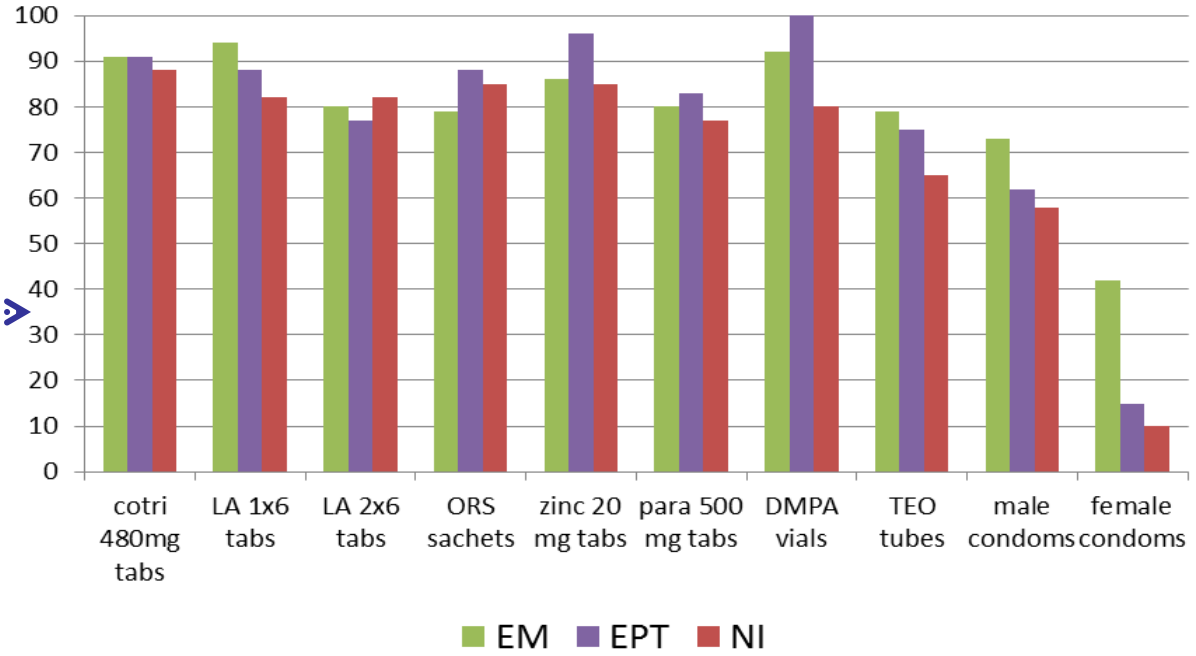


Increased availability of all products, except paracetamol and cotrimoxazole

No difference in availability across each group, likely due to distribution through parallel SCs



SC4CCM

Results by Core Indicators

Product Availability more than **doubled**, but hard to attribute to effect of interventions

Main Country Level Objective:
CHWs have usable and quality medicines available when needed for appropriate treatment of common childhood illnesses

Precondition 1: Necessary, usable, quality CCM products are available at **CHW resupply point/s**

Precondition 2: CHWs, or person responsible for CHW resupply, know how, where, what, when and how much of each product to requisition or resupply and act as needed

Precondition 3: CHWs have adequate storage: correct conditions, security and adequate space.

Precondition 4: Goods are routinely transported between resupply points and **CHWs**

Precondition 5: CHWs are motivated to perform their roles in the CCM product supply chain

Supply Chain Performance Indicators

Improvements seen in indicators for preconditions 2, 5 attributable to impact from EM intervention (and cStock component of EPT)

No improvement seen in indicators for precondition 4, where EPT was intended to have impact

Snapshot of Findings

- **Product availability** more than doubled at ML vs BL
  - No real difference across districts or intervention groups, increased availability from parallel SCs masked possible improvements related to the interventions
- **cStock** has improved community logistics data visibility, saved time, and is well understood and liked by users
- **Enhanced Management** was well-implemented and led to improved SC practices, processes
  - DPAT/HPAT meetings facilitated teamwork, better performance monitoring, problem solving, action planning, decision making
- **Efficient Product Transport** did not take off as expected
  - flexible inventory control mechanism not implemented
  - bicycle maintenance training did not achieve intended impact

Q&A
Discussion

EM District Recommendations

Scale up Enhanced Management Package and cStock, with the following modifications

1. Conduct quarterly DPAT (district) and monthly HPAT (health center) meetings
2. Expand existing curriculum to include:
   - techniques on running effective DPAT meetings
   - use of modified resupply worksheet when printed cStock reports not available
3. Conduct EM orientations for DHMT
4. Establish National Product Availability Team to address issues of product availability
5. Add functionality to **cStock** to:
   - allow districts to send targeted messaging through dashboard
   - Enable comparison of cases seen and drugs used

EPT District Recommendations

Scale up cStock with the following modifications

- Resupply quantities should be to the lowest unit of issue
- Provide OJT for new users and during supervision
- Reinforce pre-packing

Discontinue flexible inventory control system instead strengthen existing fixed **monthly** reporting schedule

Bicycle maintenance training should be continued with the following modifications

- Give HSAs ownership of bicycles to encourage better maintenance
- Modify bicycle maintenance section in initial HSA training by adding checklists and maintenance schedule, and hands-on practice elements to training methods

Proposal for Scale Up

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Endorse district recommendations for scale up of **modified EM package**, including cStock as an **integral** element of package

Difference in SC performance levels between EM and EPT groups was **due to DPAT**, cStock is the foundation

Implications for scale-up

cStock currently going to scale without DPAT component → need to train **3** EPT **+ 9** existing cStock districts in **DPAT**

and

scale whole **EM package** to remaining **15** districts