

End Use Verification - Malaria Mali

EUV Period

May 2022

Country Overview and Sample Details

1. Overview	
a. Peak malaria season	June - September
b. Data Collection Start Date	5/23/2022
c. Data Collection End Date	6/18/2022
2. Service delivery points	
a. Total number of service delivery points visited	66
b. Total number of service delivery points in sampling frame	860
c. Total number of service delivery points in country	1654
3. District warehouses	
a. Total number of district warehouses visited	18
b. Total number of district warehouses in sampling frame	19
c. Total number of district warehouses in country	73
4. Regional warehouses	
a. Total number of regional warehouses visited	5
b. Total number of regional warehouses in sampling frame	5
c. Total number of regional warehouses in country	8
5. Central warehouses	
a. Total number of central warehouses visited	1
b. Total number of central warehouse sites in country	1
6. Regions	
a. Number of regions visited	6
b. Number of regions in sampling frame	6
c. Number of regions in country	11
d. The following regions were included in the sampling frame:	Bamako, Kayes, Koulikoro, Mopti, Segou, Sikasso
7. Districts	
a. Number of districts visited	23
b. Number of districts in sampling frame	42
c. Number of districts in country	73

Sampling and Data Confidence Attributes

SDP To achieve nationally representative results, sites are sampled in a two-staged approach. In Stage 1, districts are selected with probability proportional to size (PPS). Districts with a greater number of health facilities are more likely to be selected. In Stage 2, facilities from within those districts are randomly selected for survey visits. Then, during calculation of indicator results, facilities within populous districts are weighted more heavily because they represent a larger # of facilities.

Expected survey confidence level: >90%

Expected survey confidence interval (precision): < +/- 10%

These confidence and precision parameters hold for all facility-level indicators where the number of observations (n) is greater than 64. For indicators with fewer observations--such as where the n decreases because facilities do not have updated stock cards--the margin of error will be wider than +/- 10%.

Results are weighted to account for the representativeness of assessed facilities.

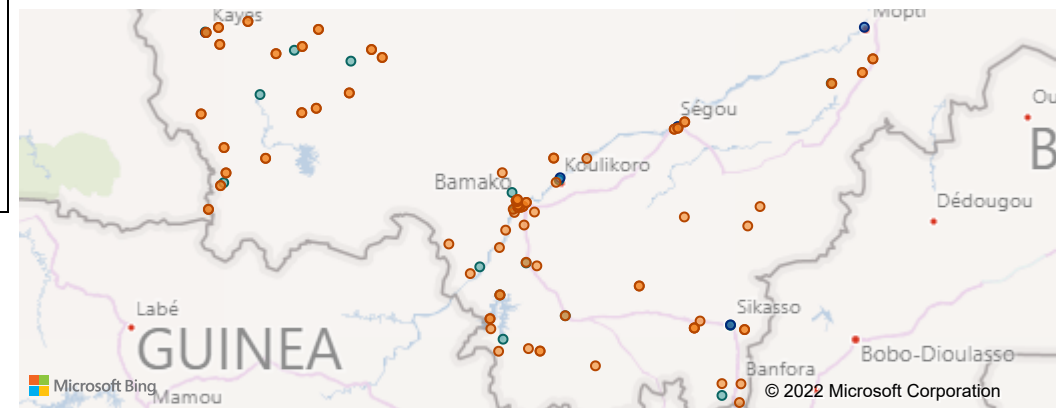
District warehouse For every health facility selected as a site during sampling, the corresponding warehouse for that district was also selected.

Regional warehouse The regional warehouse for each region included in the sample was selected.

Central warehouse The central warehouse is selected as a site during each EUV round.

Locations of visited facilities

● Central warehouse ● District warehouse ● Regional warehouse ● SDP



Locations are displayed for 88 facilities. An additional 2 facilities were visited, but location data is not available for those sites.



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MALARIA INITIATIVE

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- Actions Taken Since the Previous Survey



- 1 The NMCP, with support from GHSC-PSM, has set up an online platform called the Call Center. The objective is to improve the availability of malaria control inputs (MCIs) and reduce the risk of stock-outs in health facilities through a weekly call to collect inventories, verify the quality of logistics data and monitor the entry of logistics data. This activity initially involves 8 districts, 8 District Warehouses (DRCs) and 210 Community Health Centers (CSComs) in the regions of Kayes, Koulikoro, Mopti, Gao and Timbuktu.
- 2 GHSC-PSM supported the Regional Health Directorates (DRS) in scheduling training sessions on stock management. These training sessions are planned and in preparation and will be implemented in the regions during the fourth quarter of FY2022.
- 3 GHSC-PSM continued weekly surveillance of malaria control input stocks at the central and regional levels. Each week, an Excel file of the state of stocks at central and regional levels is prepared and shared with the various stakeholders involved in the input management. Depending on the availability of entries at the central level, orders from different depots at the regional level are processed to make the product available at the operational level.
- 4 The Ministry of Health, with the support of the GHSC-PSM, continued to follow up with stakeholders in the reporting of logistics information from health centers at the higher level in order to improve decision-making. The reporting rate for malaria control inputs increased from 97% in April 2022 to 98% in May 2022.

- Key Observations



- 1 Depending on the product, stockout rates on the day of the visit to the health facility ranged from 3% (RDTs) to 41% (AL 6x3). The rate decreased by almost half, for AL 6x3 and Artesunate 60 mg from 60% to 41% and from 52% to 26% between the two EUVs in October 2021 and May 2022. But in general, compared to the October 2021 data, stockout rates have declined for all products except RDTs and LLINs. The rates increased from 0% (October 21) to 3% (May 22), and from 7% (October 21) to 24% (May 22) respectively.
- 2 At the district and regional level, the stockout rate of AL 6x3 on the day of the visit was among the highest rates, at 11% (district) and 20% (regional) respectively. It should be noted that this product has been the most disruptive in the last three months, with an average number of stockout days of 5.9 for districts and 15.7 for stores at the regional level. This situation at the level of distribution centers has certainly influenced the availability of the product at the level of health centers. At the level of health centers, the average number of days of stockout in the last three months ranged from 0.1 (SP) to 25.3 (Artesunate 60mg). At the warehouse level, the stock status was generally better than that of the SDPs on the day of the visit. It should be noted that AL 6x4 and RDT were available at the district level. For the others, the stockout rate ranged from 6% to 11%. Only AL 6x3, AL 6x4 and RDT were out of stock in 20% of regional warehouses. All products were available centrally.
- 3 At least 75.2% of the establishments visited had at least three AL presentations compared to 73.7% in October 2021. Only 2.6% of institutions were unable to treat uncomplicated malaria cases (0 presentations)
- 4 As with previous EUV rounds, the main reason for stockouts indicated by stock managers was the unavailability of products at resupply points. This situation was reported by 41% of managers at the SDP level, 45% of managers at district level and 50% at regional level. These statements are general and could explain the state of commodity stocks during the survey. The results suggest that efforts need to be made to make adequate quantities of products available at distribution points which could improve product availability and track delivery at health centers. However nearly 20% mentioned other reasons such as poor internal management, orders not made at the right time, withdrawal of the products due to close expiry date etc.
- 5 Stock sheet update rates and data quality were better in distribution facilities than in health centers. On average, 46% of health centers updated stock records compared to 84% of stores at the district level and 75% of stores at the regional level. As for the quality of the data, only 43% of health centers had accurate data on inventory tracking tools compared to 75% at the district store level.
- 6 The products were generally stored in good storage conditions both at the level of the health facilities and at the level of the distribution centers. In fact, 100% of health care facilities had storage areas secured by a lock and key. The First Entry, First Out (FEFO) rule was respected in 92% of health facilities compared to 100% of distribution centers. However, 91% of health facilities have separated damaged and/or expired products from usable products compared to 100% also at the level of distribution centers.
- 7 Regarding malaria case management, 85% of the fever cases identified in the registries have been diagnosed with malaria. 73% have been diagnosed with RDT, which represents a slight decrease compared to the passage of October 2021 or 75%. The diagnosis rate based on clinical symptoms increased from 10% in October 2021 to 13%.



- Key Observations



- 8 49% of fever cases were diagnosed as malaria. Of the patient records reviewed, 19% were diagnosed as uncomplicated malaria, 8% as severe malaria and 2% as malaria, severity unknown. This means 36% of all diagnosed malaria cases were identified as severe. 26% of all malaria cases were children under five. At least 58% of malaria patients under five years of age received ACT treatment compared to 60% in the March 2021 edition. 21% of malaria cases were treated with artemether or quinine injections, 11% with injectable artesunate and 3% with both an ACT and a severe malaria treatment. Ten percent were untreated.
- 9 The malaria treatment guide was observed in 78% of the health centers visited. It should also be noted that among providers who manage malaria cases, the rate of agents trained on the administration of RDTs increased from 61% in October 2021 to 93% in May 2022. As for stock management, only 58% of the service providers identified during this edition have been trained. This rate has dropped significantly as it was at 72% in October 2021. This indicates a need for retraining of managers on stock management.

- Recommendations



- 1 To improve the availability of products at health centers, the PNLP must monitor the implementation of the call center in pilot health centers and ensure that the data collected is used for rapid decision-making.
- 2 To improve inventory management, especially the filling of stock cards, regional health directorates (DRS) must ensure the organization of training/retraining sessions for staff involved in inventory management at the operational level.
- 3 In order to support achievements, GHSC-PSM should continue weekly surveillance of malaria control input stocks at central and regional levels. GHSC-PSM should sensitize all stakeholders involved in the system to ensure the availability of products at the operational level.
- 4 To improve the availability of products at all levels of the distribution chain, the government (DPM, PNLP) must ensure the quality of the logistics data used in the quantification process, monitor compliance with the quantities recommended by the various partners included in the supply plan, and monitor compliance with delivery deadlines.

Stock Management

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The confidence and precision parameters hold for all service delivery point indicators where the number of observations (n) is greater than 64. For indicators with fewer observations-- such as where the n decreases because sites do not have updated stock monitoring tools-- the margin of error will be wider than +/- 10%. In this instance, results would become less representative of the population and only representative of the sites visited.

Figure 1a. % service delivery points (SDPs) stocked out on the day of visit				Figure 2a. Average stockout duration and % SDPs with updated stock cards			Figure 3a. % SDPs with accurate stock monitoring tools		
Category	% of facilities stocked out on the day of visit	# of facilities visited required to manage the product (n)	Average # of days stocked out in the last 3 months	# of facilities with updated stock card (n)	% of facilities with an updated stock card	# of facilities visited actively managing the product (n)	% of facilities with accurate data on the stock monitoring tool		
ACTs									
AL 6x1 (6 disp. tabs)	9%	66	6.2	36	51%	66	41%		
AL 6x2 (12 disp. tabs)	14%	66	8.0	34	47%	65	40%		
AL 6x3 (18 tabs)	41%	66	19.8	24	35%	50	41%		
AL 6x4 (24 tabs)	18%	66	15.9	29	40%	62	32%		
Severe Malaria Medicines									
Artesunate 60 mg inj. (vial)	26%	66	25.3	36	45%	65	42%		
Other Pharma									
SP 500/25 mg (tab)	8%	66	0.1	38	55%	64	39%		
Other Non-Pharma									
RDTs (test)	3%	66	1.7	34	48%	66	41%		
LLINs (piece)	24%	66	6.9	34	48%	65	37%		

Figure 2 and 3 definition notes: A facility is considered to have an **updated** stock card for a particular product when the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days. The stock card is considered **accurate** only if the physical count matches the ending balance.

The review period (previous three months) for this report is February 1, 2022 to April 30, 2022.

Number of service delivery points visited, by type

Facility Type	# of facilities visited
Hopital	1
CSRef	3
CSCOM	62
Total	66

Notes on service delivery point types and product management

Stock Management

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The confidence and precision parameters vary for warehouses. Please refer to the cover page of this report for more detail.

Figure 1b. % district warehouses stocked out on the day of visit				Figure 2b. Average stockout duration and % district warehouses with updated stock cards			Figure 3b. % district warehouses with accurate stock monitoring tools	
Category	% of facilities stocked out on the day of visit	# of facilities visited required to manage the product (n)	Average # of days stocked out in the last 3 months	# of facilities with updated stock card (n)	% of facilities with an updated stock card	# of facilities visited actively managing the product (n)	% of facilities with accurate data on the stock monitoring tool	
ACTs								
AL 6x1 (6 disp. tabs)	6%	18	1.5	14	78%	18	72%	
AL 6x2 (12 disp. tabs)	6%	18	0.6	14	78%	18	72%	
AL 6x3 (18 tabs)	11%	18	5.9	15	83%	18	83%	
AL 6x4 (24 tabs)	0%	18	4.1	15	83%	18	72%	
Severe Malaria Medicines								
Artesunate 60 mg inj. (vial)	6%	18	2.0	16	89%	18	78%	
Other Pharma								
SP 500/25 mg (tab)	6%	18	2.2	15	83%	18	83%	
Other Non-Pharma								
RDTs (test)	0%	18	0.0	16	89%	18	83%	
LLINs (piece)	11%	18	5.6	16	89%	18	83%	

Figure 2 and 3 definition notes: A facility is considered to have an **updated** stock card for a particular product when the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days. The stock card is considered **accurate** only if the physical count matches the ending balance.

Number of warehouses visited, by type

Facility Type	# of facilities visited
DRC	18
Total	18

Notes on warehouse types and product management

One district warehouse in the sampling frame could not be surveyed due to instability in the area.

The review period (previous three months) for this report is February 1, 2022 to April 30, 2022.

Stock Management

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The confidence and precision parameters vary for warehouses. Please refer to the cover page of this report for more detail.

Figure 1c. % regional warehouses stocked out on the day of visit			Figure 2c. Average stockout duration and % regional warehouses with updated stock cards			Figure 3c. % regional warehouses with accurate stock monitoring tools	
Category	% of facilities stocked out on the day of visit	# of facilities visited required to manage the product (n)	Average # of days stocked out in the last 3 months	# of facilities with updated stock card (n)	% of facilities with an updated stock card	# of facilities visited actively managing the product (n)	% of facilities with accurate data on the stock monitoring tool
ACTs							
AL 6x1 (6 disp. tabs)	0%	5	0.0	5	100%	5	80%
AL 6x2 (12 disp. tabs)	0%	5	0.0	4	80%	5	60%
AL 6x3 (18 tabs)	20%	5	15.7	3	60%	5	60%
AL 6x4 (24 tabs)	20%	5	5.3	3	60%	5	60%
Severe Malaria Medicines							
Artesunate 60 mg inj. (vial)	0%	5	0.0	5	100%	5	80%
Other Pharma							
SP 500/25 mg (tab)	20%	5	3.6	5	100%	5	100%
Other Non-Pharma							
RDTs (test)	0%	5	0.0	5	100%	5	80%

Figure 2 and 3 definition notes: A facility is considered to have an **updated** stock card for a particular product when the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days. The stock card is considered **accurate** only if the physical count matches the ending balance.

Number of warehouses visited, by type

Facility Type	# of facilities visited
Depot regional	5
Total	5

Notes on warehouse types and product management

The review period (previous three months) for this report is February 1, 2022 to April 30, 2022.

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The confidence and precision parameters vary for warehouses. Please refer to the cover page of this report for more detail.

Figure 1d. % central warehouse stocked out on the day of visit			Figure 2d. Average stockout duration and % central warehouse with updated stock cards			Figure 3d. % central warehouse with accurate stock monitoring tools	
Category	% of facilities stocked out on the day of visit	# of facilities visited required to manage the product (n)	Average # of days stocked out in the last 3 months	# of facilities with updated stock card (n)	% of facilities with an updated stock card	# of facilities visited actively managing the product (n)	% of facilities with accurate data on the stock monitoring tool
ACTs							
AL 6x1 (6 disp. tabs)	0%	1	0.0	1	100%	1	100%
AL 6x2 (12 disp. tabs)	0%	1	0.0	1	100%	1	100%
AL 6x3 (18 tabs)	0%	1	0.0	1	100%	1	100%
AL 6x4 (24 tabs)	0%	1	0.0	1	100%	1	100%
Severe Malaria Medicines							
Artesunate 60 mg inj. (vial)	0%	1	0.0	1	100%	1	100%
Other Pharma							
SP 500/25 mg (tab)	0%	1	0.0	1	100%	1	100%
Other Non-Pharma							
RDTs (test)	0%	1	0.0	1	100%	1	100%

Figure 2 and 3 definition notes: A facility is considered to have an **updated** stock card for a particular product when the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days. The stock card is considered **accurate** only if the physical count matches the ending balance.

Number of warehouses visited, by type

Facility Type	# of facilities visited
Depot central	1
Total	1

Notes on warehouse types and product management

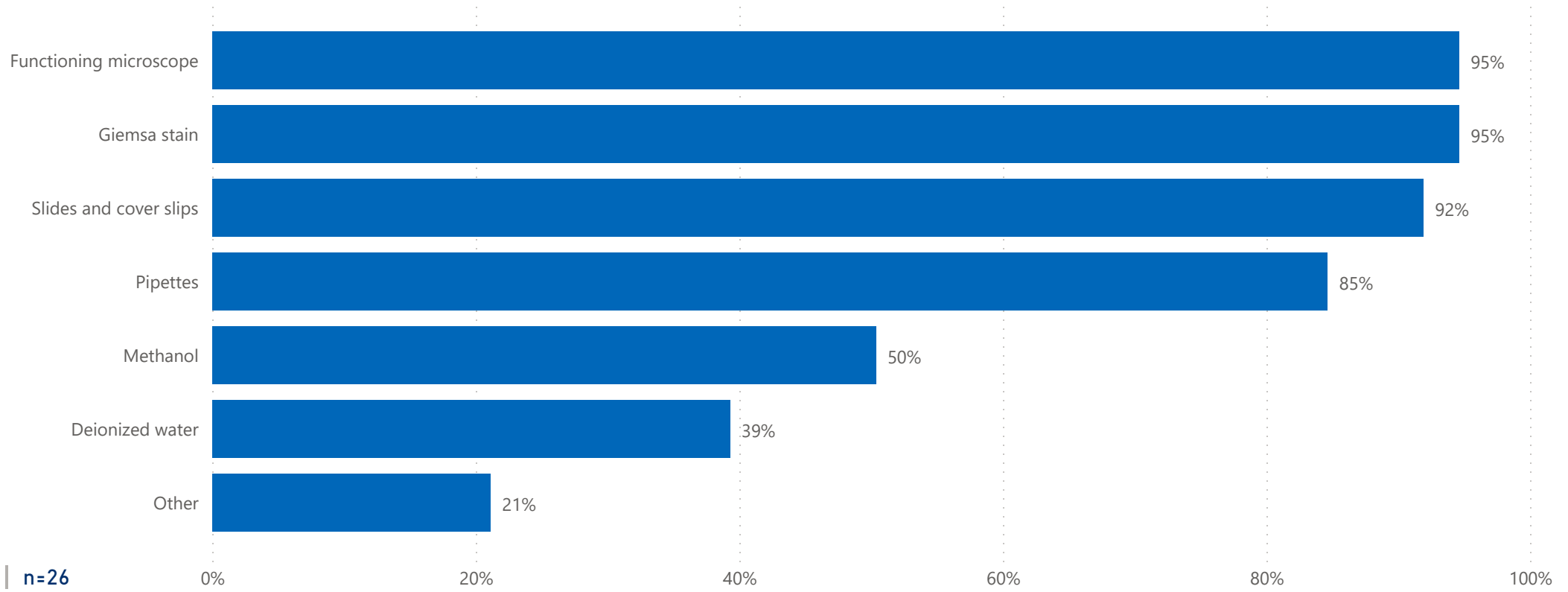
The review period (previous three months) for this report is February 1, 2022 to April 30, 2022.

Stock Management

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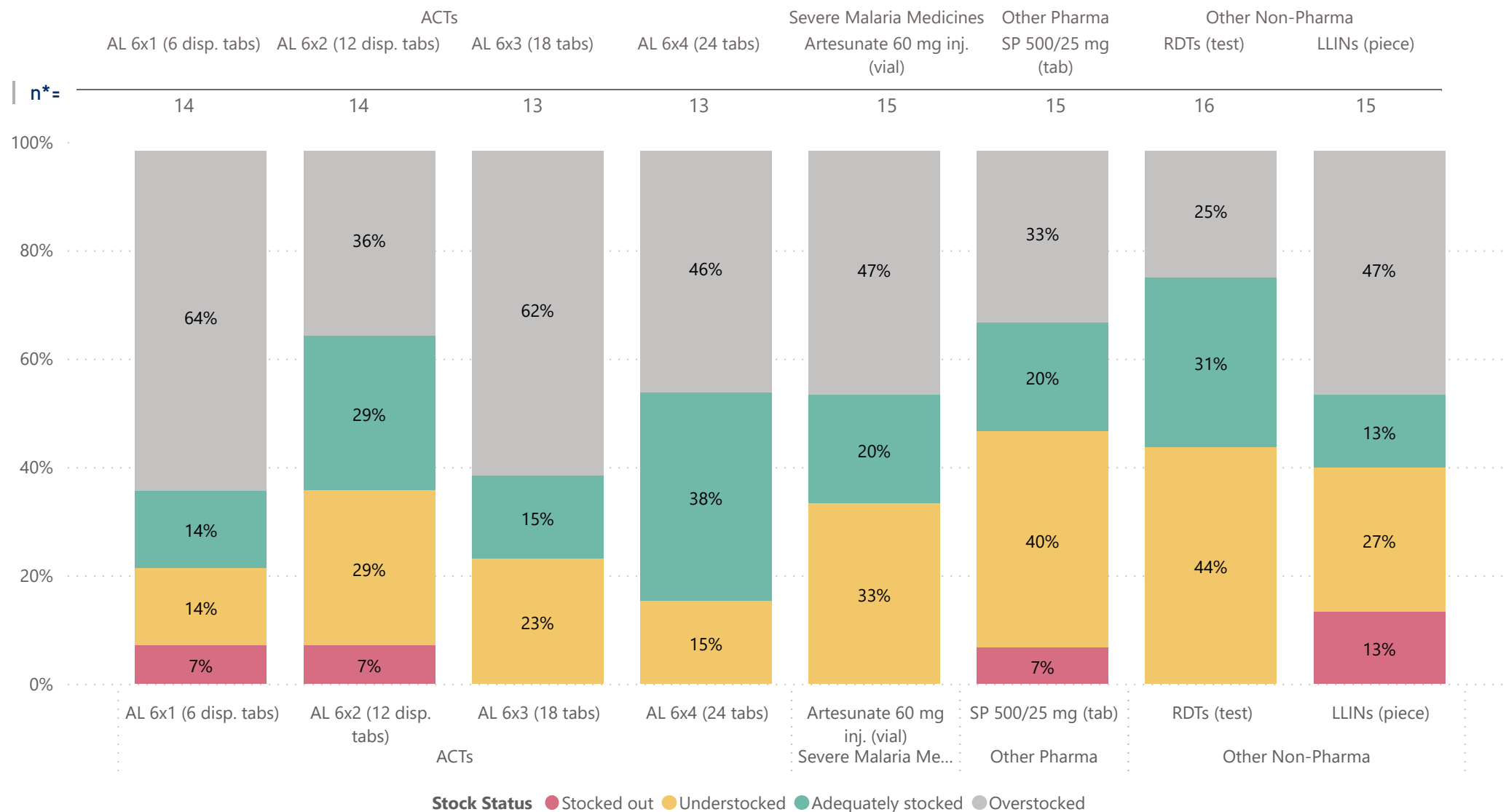
Figure 4. Microscopy reagents, equipment, and supplies available



Stock Management

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Figure 5a. District warehouse stock levels ("Stocked According to Plan")* on the day of site visit, according to established min/max policies



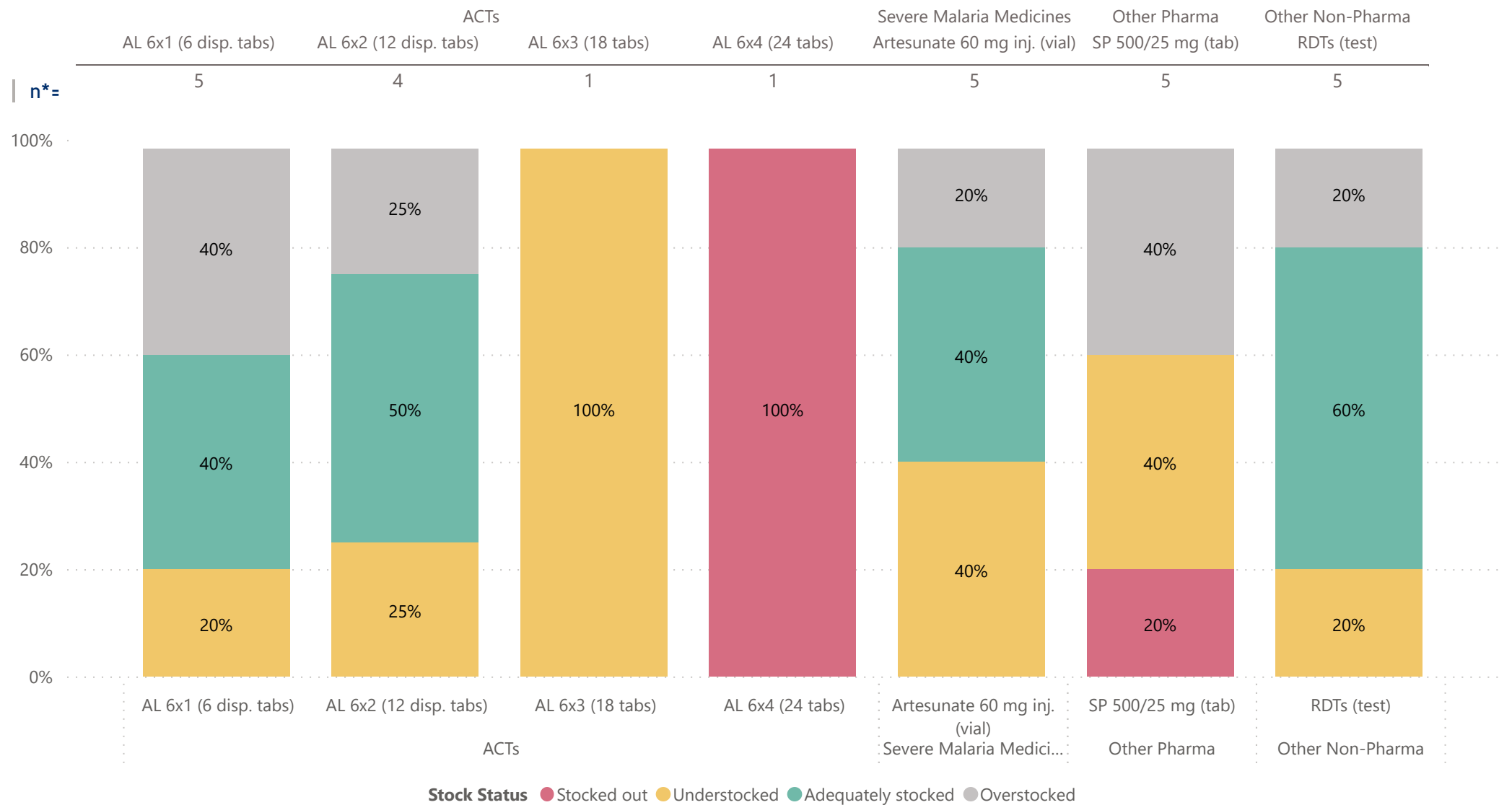
Facility Type	Commodity	Minimum	Maximum
DRC	All	2	4

*The denominator for "facility stock levels on day of visit, according to established max/min policies" includes those facilities visited who had all of the following: 1) an updated stock card for the specific product (meaning that the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days), 2) at least 1.5 months of in-stock days of data, and 3) complete data for number of units issued. Malaria seasonality affecting consumption patterns in the previous three months could distort the current stock status of a product. An in-stock product with no consumption (units issued) during the period is considered overstocked.

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Figure 5b. Regional warehouse stock levels ("Stocked According to Plan")* on the day of site visit, according to established min/max policies



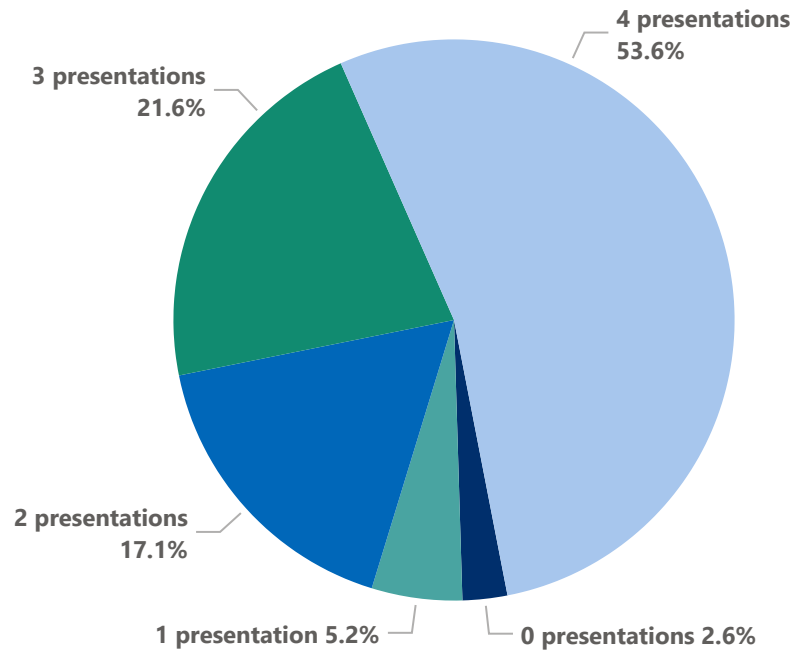
Facility Type	Commodity	Minimum	Maximum
Depot regional	All	1	3

*The denominator for "facility stock levels on day of visit, according to established max/min policies" includes those facilities visited who had all of the following: 1) an updated stock card for the specific product (meaning that the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days), 2) at least 1.5 months of in-stock days of data, and 3) complete data for number of units issued. Malaria seasonality affecting consumption patterns in the previous three months could distort the current stock status of a product. An in-stock product with no consumption (units issued) during the period is considered overstocked.

Stock Management

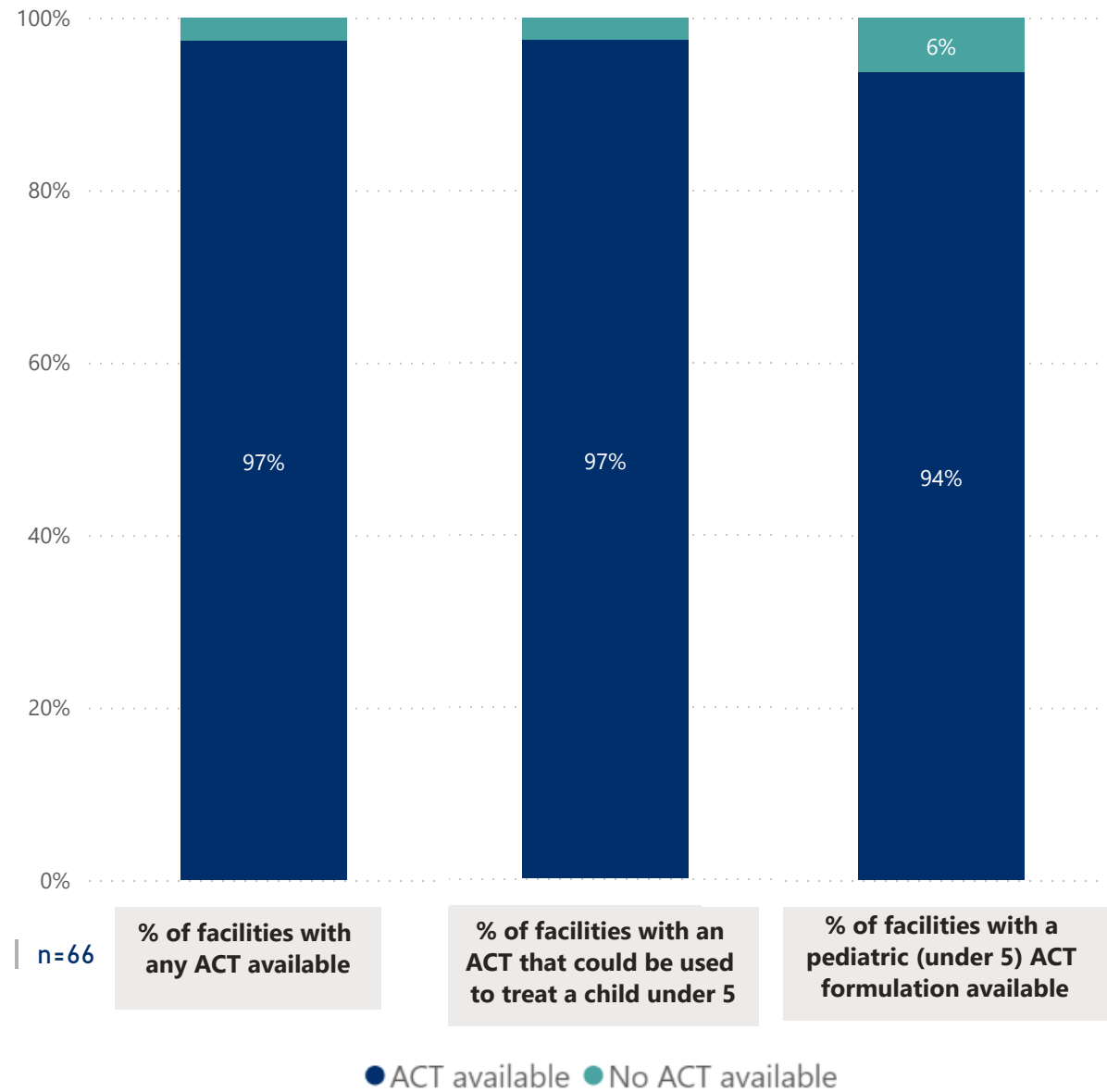
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Figure 6. AL index of availability (Percentage of facilities by number of AL presentations in stock)



n=66

Figure 7. ACT availability by age group



n=66

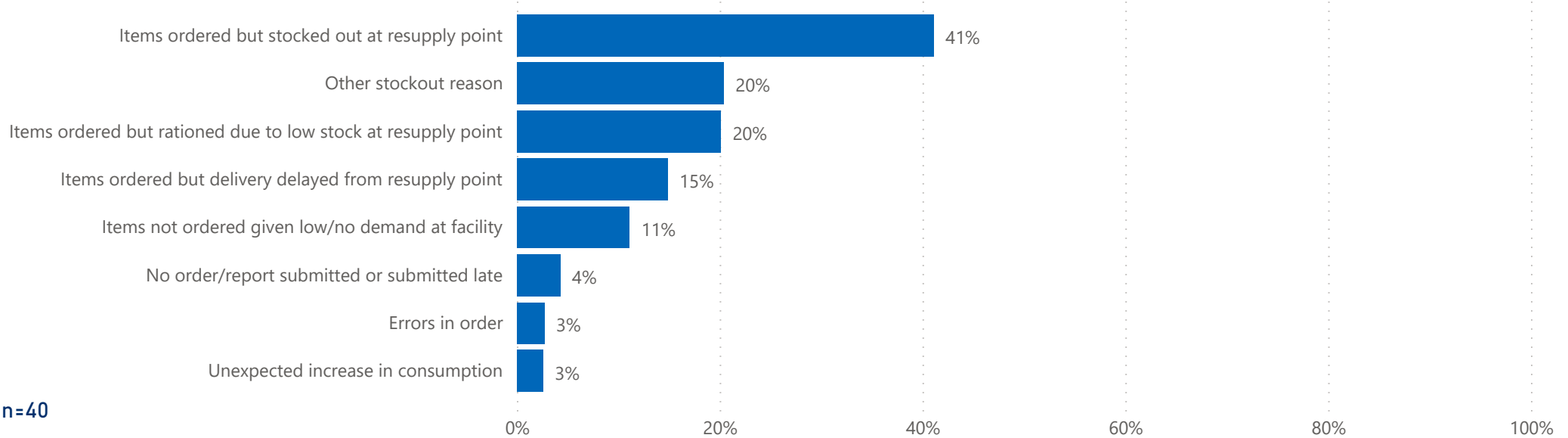
Definition: ACTs that could be used to treat a child under 5 include AL 6x1 (6 disp. tabs), AL 6x2 (12 disp. tabs), AL 6x3 (18. tabs), and AL 6x4 (24. tabs). Pediatric (under 5) ACT formulations include AL 6x1 (6 disp. tabs) and AL 6x2 (12 disp. tabs).

Note: Results may differ between Fig 6 and Fig 7 due to calculation rounding.

Stock Management

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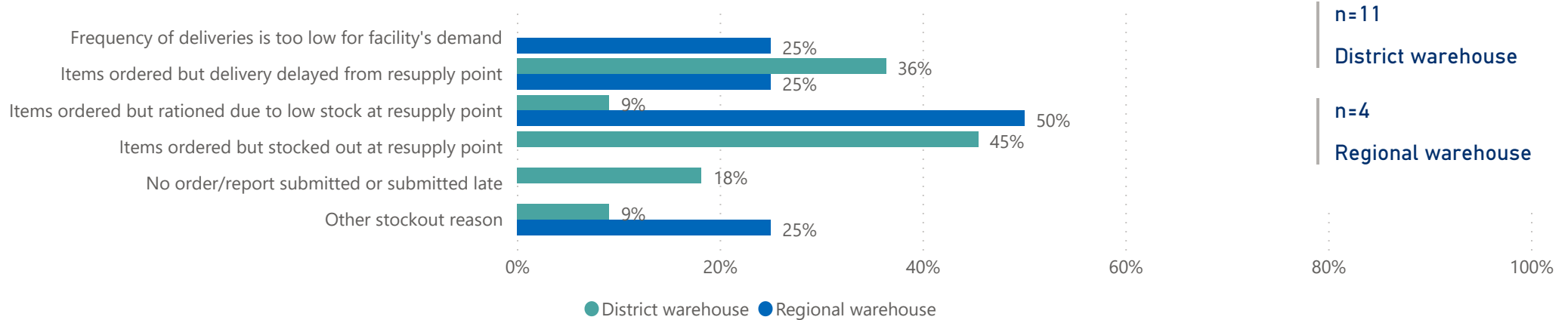
Figure 8a. Primary reported reasons for stockouts at service delivery points



n=40

Other reported reasons for stockouts at SDPs included: poor internal management, order not placed at the right time, order not delivered, AL had expired for near expiry, product was out of stock or not ordered on a regular basis, order not made because there are no cases of malaria in this period, products ordered but the quantity is insufficient, product not ordered by the facility due to lack of information.

Figure 8b. Primary reported reasons for stockouts at warehouses



n=11

District warehouse

n=4

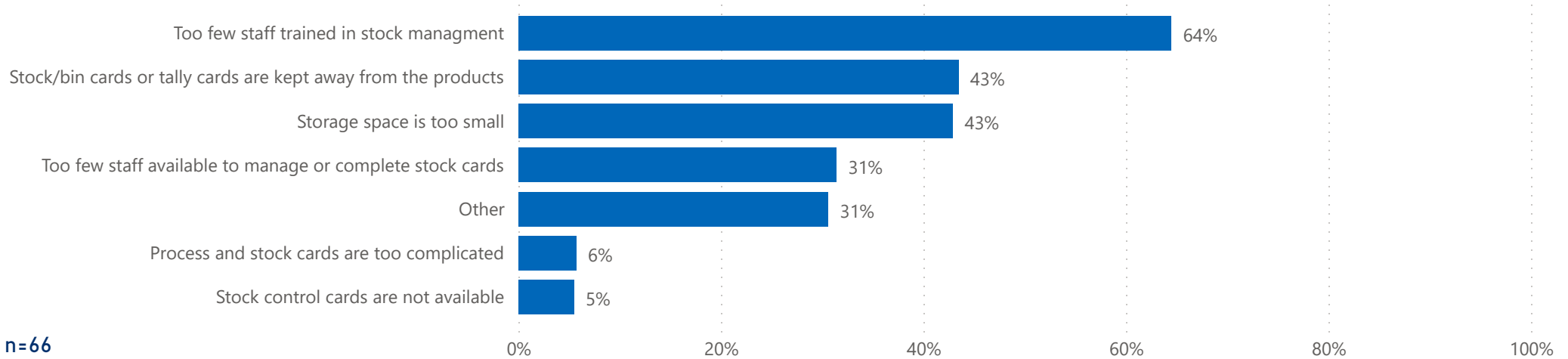
Regional warehouse

A single site may report multiple reasons for stockouts. Only facilities that had at least one product stocked out in the last 3 months are included in this indicator. The review period (previous three months) for this report is [February 1, 2022](#) to [April 30, 2022](#).

Stock Management

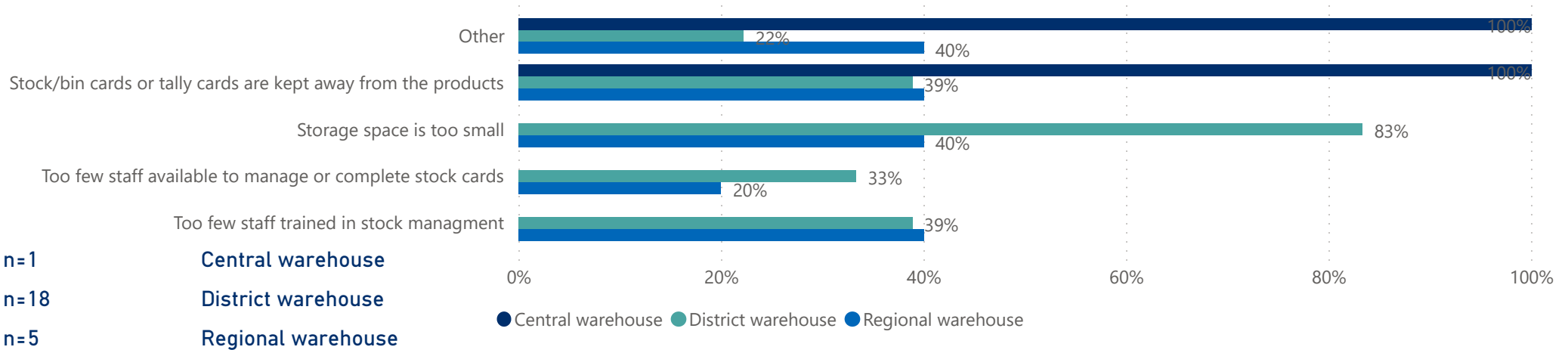
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Figure 9a. Types of stock management challenges experienced by service delivery points



Other stock management challenges at SDPs included: lack of training of the new manager of DV, lack of a refrigerator at DV, layout of the premises, training of the DV manager and the DTC in logistics management of medicines, acquisition of a larger depot and training of the DV manager and the DTC in drug logistics management, credits are not paid, need for training in medication logistics management, DV Manager Training on Drug Logistics Management, continuing training of the manager, training of the DV manager and the DTC in drug logistics management in drug logistics management, training of the DV manager on the logistics management of medicines, training of the new IO on the CPNr, dilapidated premises, training of the second DV manager and the DTC in drug logistics management, provision of daily scorecards to the DV.

Figure 9b. Types of stock management challenges experienced by warehouses

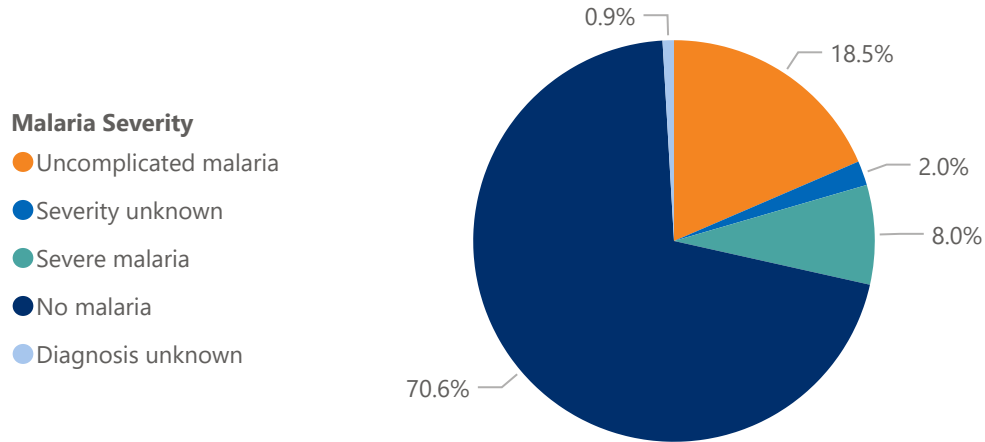


Other stock management challenges at warehouses included: need for delivery truck, DRC Manager Training on Drug Logistics Management, opening of an OSPSANTE/DISH2 Access Account for the New Chief Medical Officer, insufficient staff (DRC manager also takes care of the Lab), DRC lack of management of the mosquito nets, provision of a new room for the DRC with more space, problem with the new software.

A single site may report multiple stock management challenges.

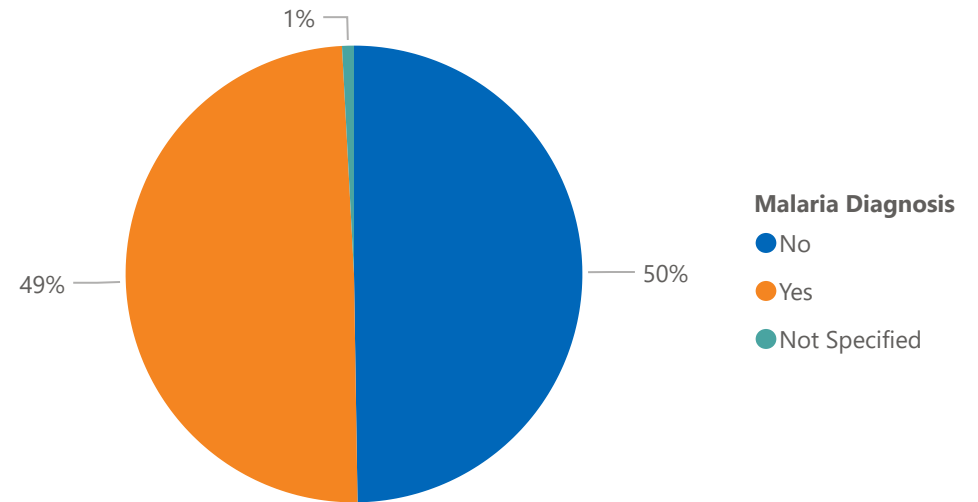
To maintain sampling and data confidence attributes, all case management results are **presented in terms of the average facility**. For instance, Figure 10 shows that **at the average facility**, one can expect that 19% percent of patient records examined were uncomplicated malaria. The number of observations (n) provided for these figures indicates both the number of facilities whose results are averaged together to produce the figure, as well as the number of case records underlying the facility-level results.

Figure 10. Patient records examined by malaria diagnosis and severity



n=66 facilities, comprising 1320 patient records from the previous month

Figure 11. Fever cases by malaria diagnosis



n=64 facilities, comprising 627 fever cases

Figure 12. All malaria cases by age group

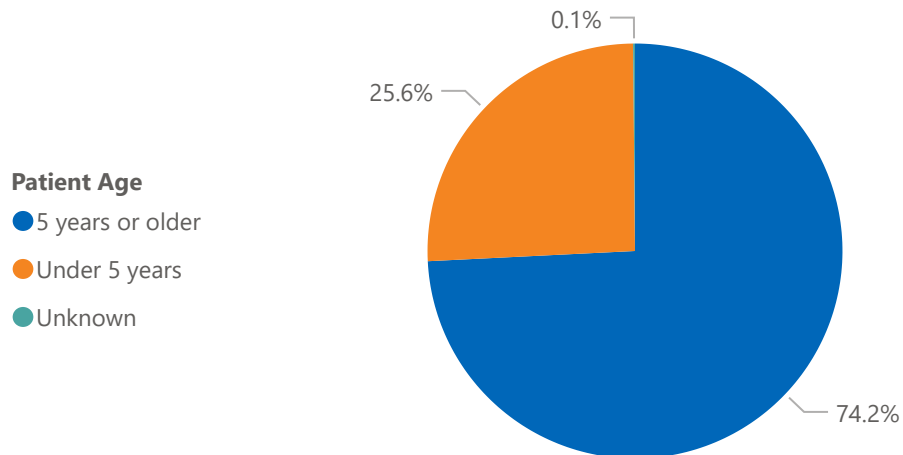
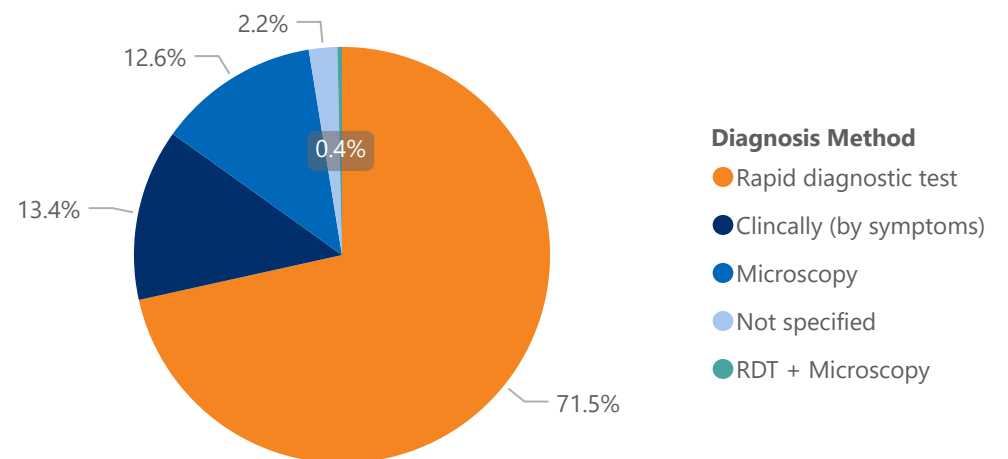


Figure 12 and 13 n=62 facilities, comprising 391 malaria cases

Figure 13. All malaria cases by diagnosis method



26 facilities offer microscopy services.

To maintain sampling and data confidence attributes, all case management results are **presented in terms of the average facility**. For instance, Figure 14 shows that **at the average facility**, 58% percent of malaria cases under 5 were treated with an ACT. The number of observations (n) provided for these figures indicates both the number of facilities whose results are averaged together to produce the figure, as well as the number of case records underlying the facility-level results.

Figure 14. Malaria patients under age 5 by treatment

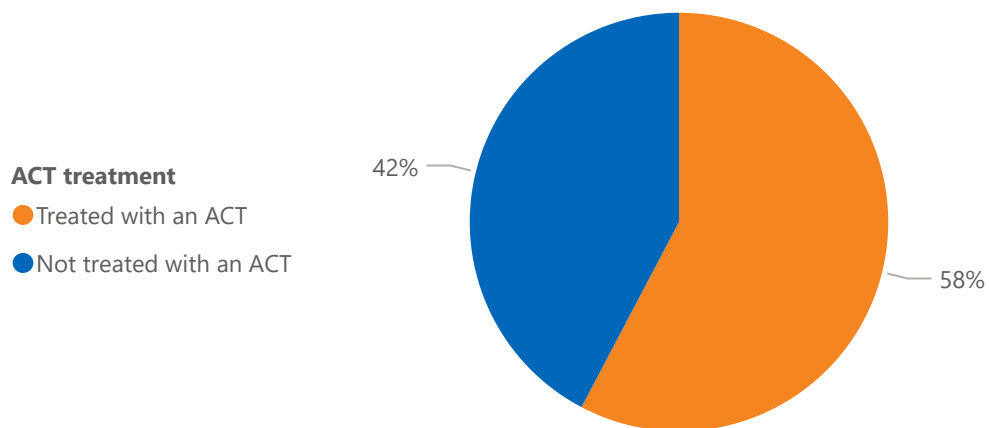


Figure 14 and 15 n=44 facilities, comprising 124 malaria patients under 5

Figure 15. Percentage of malaria patients under 5, by treatment type

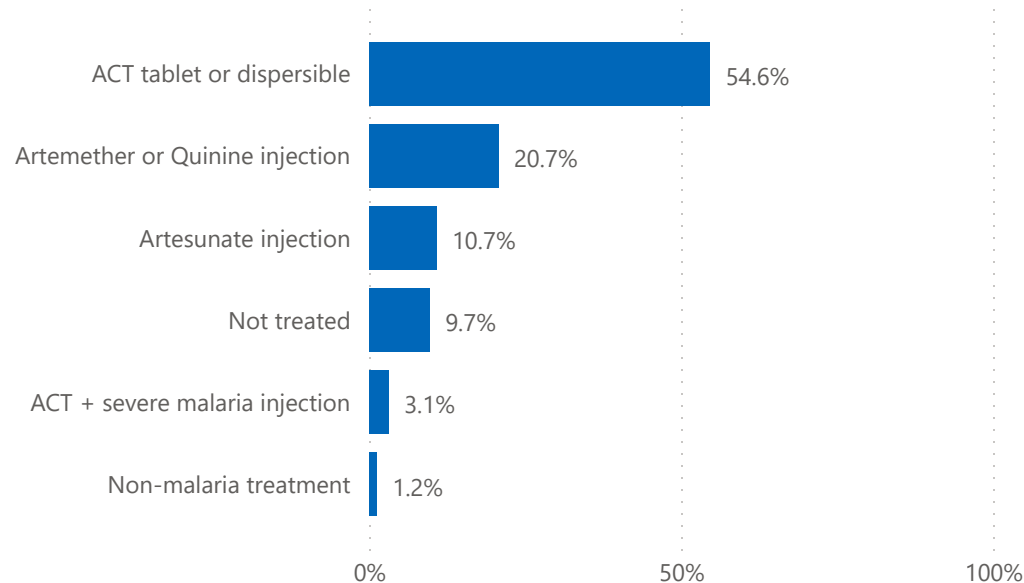
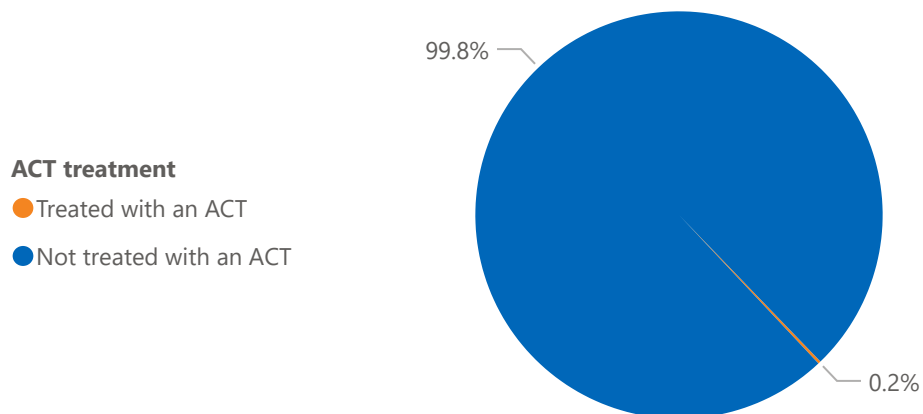
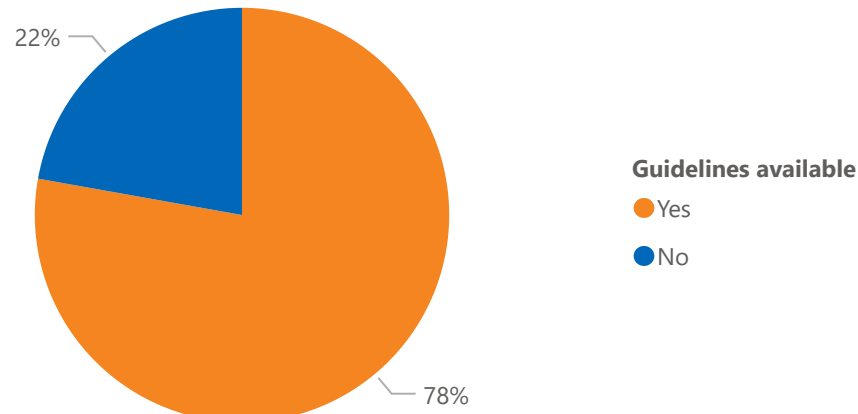


Figure 16. Percentage of non-malaria cases in patients under 5 treated with an ACT



n=65 facilities, comprising 291 non-malaria patients under 5

Figure 17. Percentage of facilities with malaria treatment guideline available



n=66 facilities visited

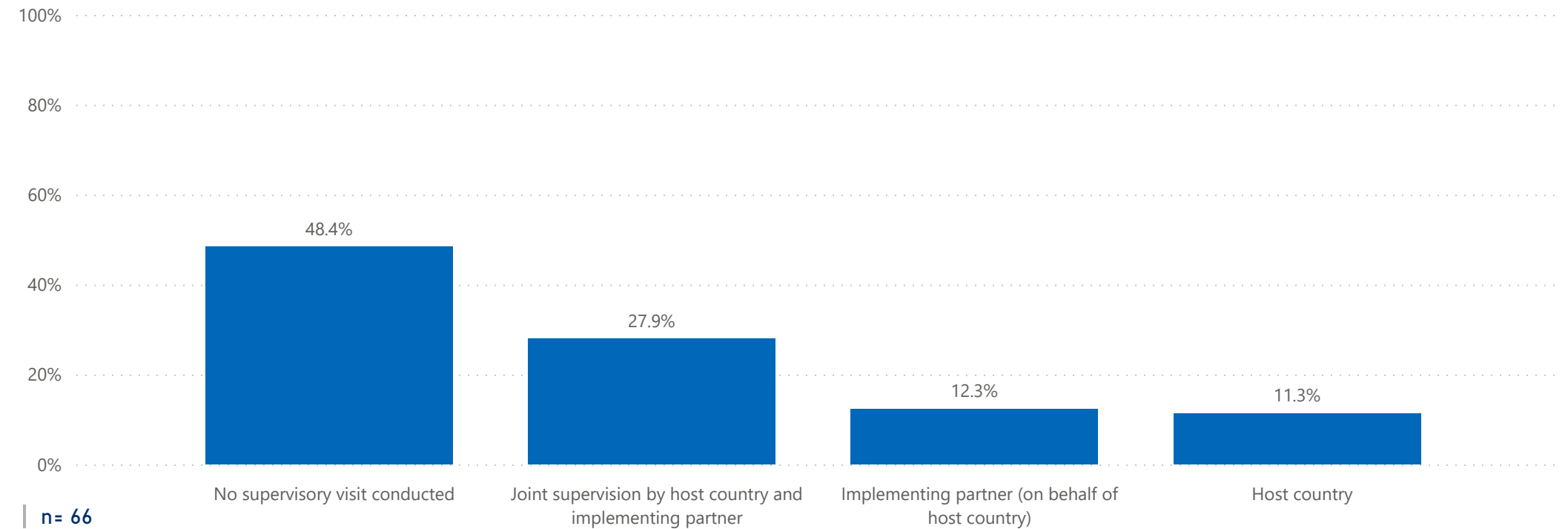


Figure 18. Percentage of staff trained in the areas in which they work

Work area	% of staff trained in the areas in which they work	Total # of staff responsible	# of facilities reporting training data (n)
Stock management	59%	171	66
Malaria case management	82%	428	66
Rapid diagnostic tests (RDTs)	93%	438	66
Intermittent preventive treatment of malaria in pregnancy (IPTp)	91%	234	66
Microscopy	94%	62	26

Training methods may include on-the-job training (in-service training), workshop or conference (in-service training), workshop or conference (pre-service training), and university/college (pre-service training). Sites with incomplete or unknown training data are excluded from Figure 18.

Figure 19. Percentage of supervisory visits conducted in the previous 6 months, by entity

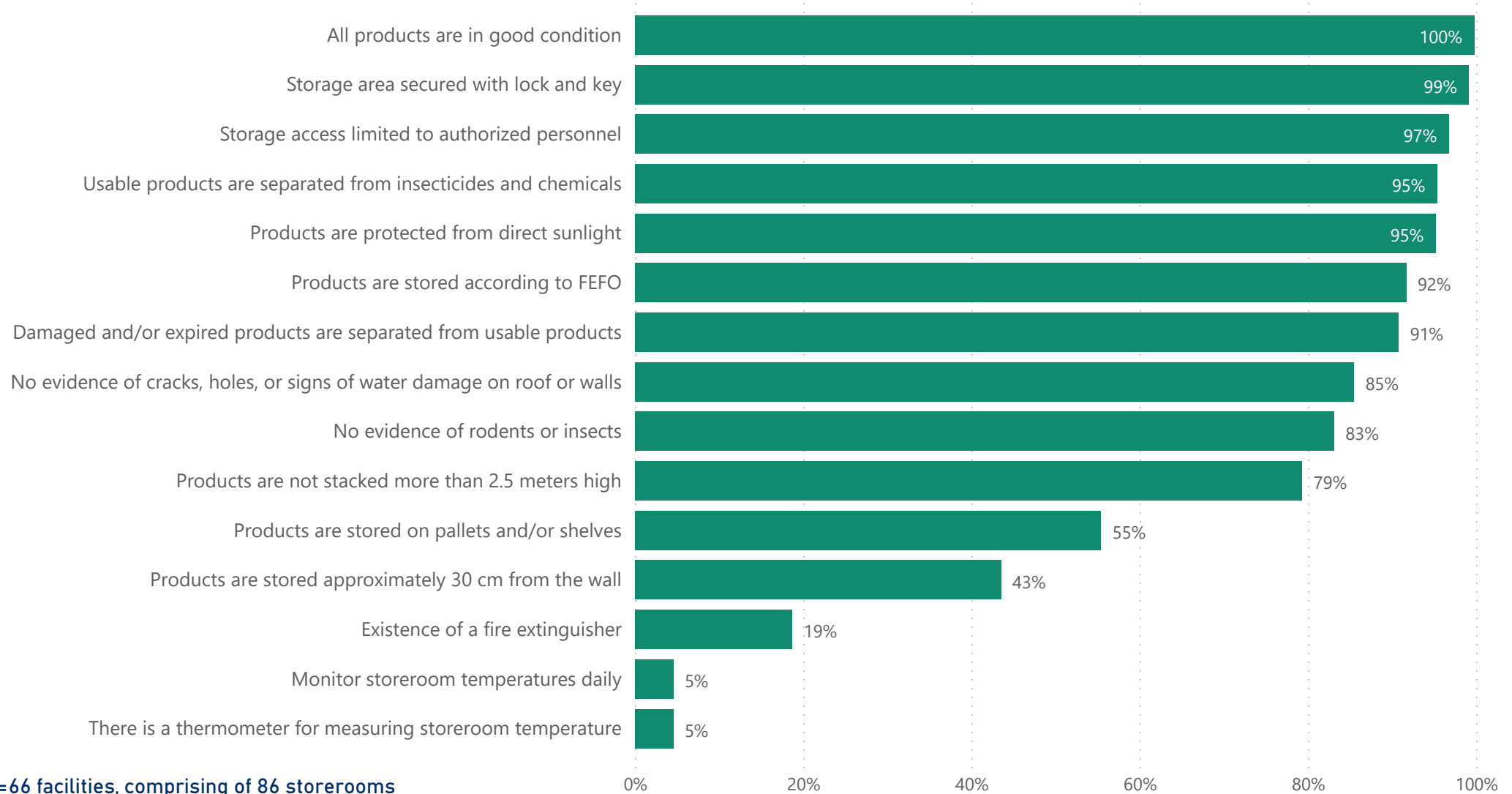


Storage Conditions

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Figure 20a. Percentage of service delivery point storerooms that meet best practices



n=66 facilities, comprising of 86 storerooms

Service delivery points may have more than one storeroom.

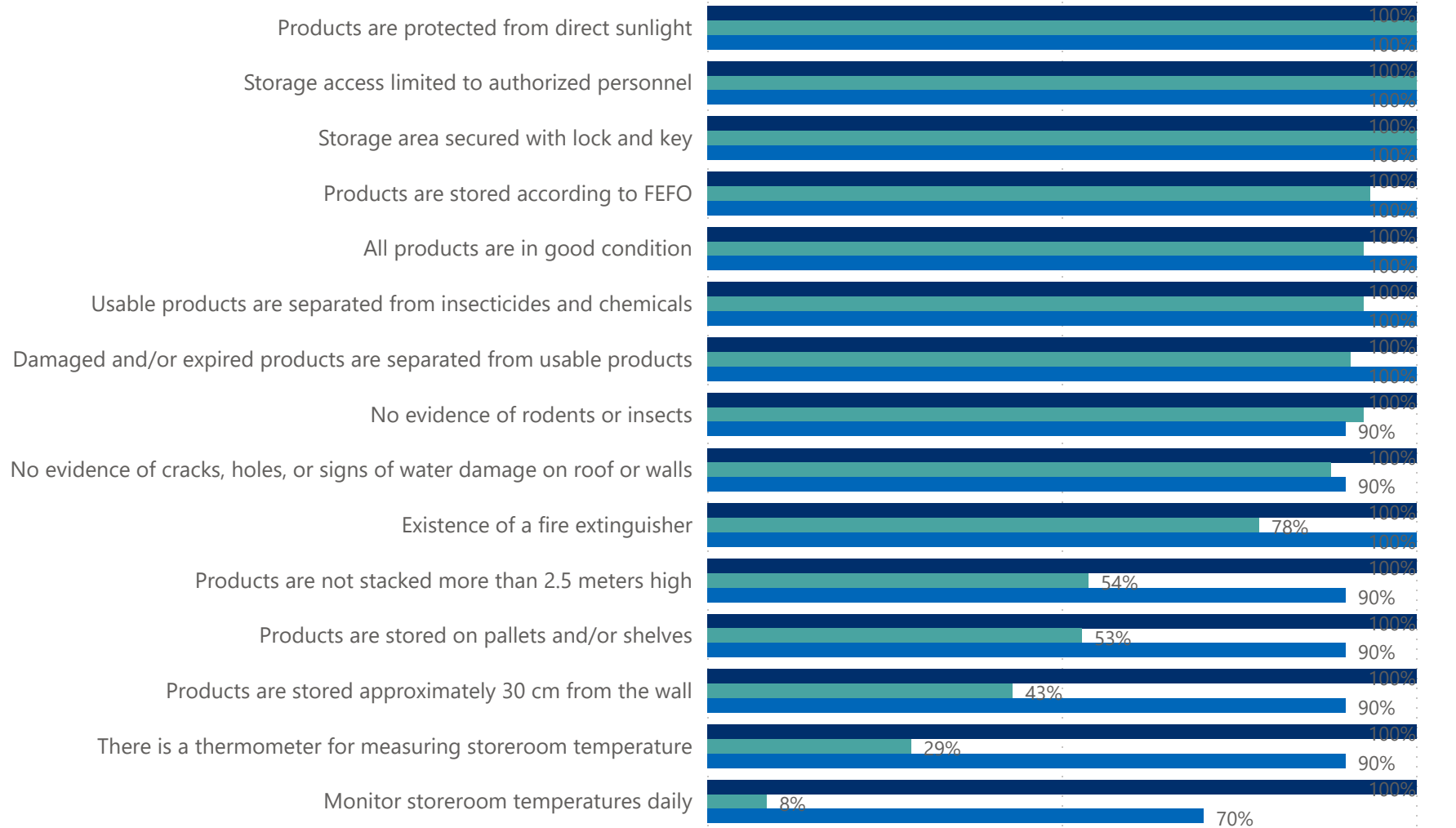
Storage Conditions

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Figure 20b. Percentage of warehouse storerooms that meet best practices

Supply Chain Level

- Central warehouse
- District warehouse
- Regional warehouse



n=1 facility, comprising of 4 storerooms

Central warehouse

n=18 facilities, comprising of 36 storerooms

District warehouse

n=5 facilities, comprising of 11 storerooms

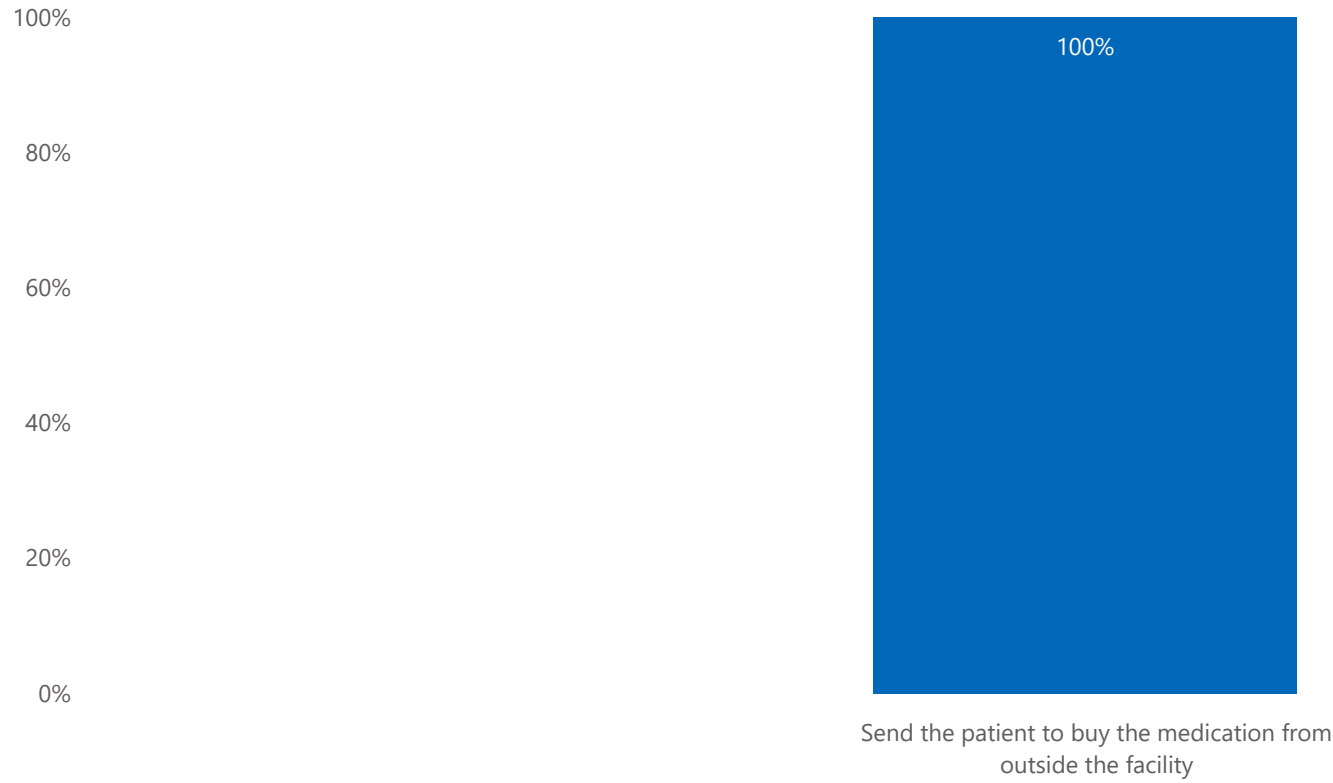
Regional warehouse

Warehouses may have more than one storeroom.



Stock Management

Figure 21. Actions taken in the past 12 months when there is no Artemether + Lumefantrine (AL) available at an SDP



| **n=1** These 1 facilities reported a stockout of all 4 presentations of AL at some point in the past 12 months.