

A Rapid Assessment of Severe Malaria Case Management Practices and Constraints in Angola

January and February 2020,
Angola



Republic of Angola
Ministry of Health
National Department of Public Health
National Malaria Control Program

SUPPORTED BY



MMV 
Medicines for Malaria Venture

Executive Summary

Malaria is the leading cause of death, hospitalization and school and work absenteeism in Angola. In 2018, the death toll in Angola represented 4% of total deaths attributable to malaria worldwide. Poor case management for uncomplicated and severe malaria may be significantly contributing to these results.

This study aimed to identify existing gaps in knowledge about severe malaria case management in Angola by collecting information at different health service levels and through different study populations. A mixed method cross sectional study was implemented in six districts, distributed evenly across three provinces, namely Cuando Cubango, Luanda and Uíge. Different tools were used to collect data about health facility conditions, health worker knowledge and training on severe malaria, and current practices for diagnosing and treating severe malaria patients. Data from patients and caregivers was also collected alongside qualitative information from focus group discussions held in communities.

Results showed critical gaps in the ability of the Angolan health system to effectively manage severe malaria cases. First and foremost, health worker training on severe malaria case management has been scarce, and where evident has been mainly supported by partners. The impact of this was reflected in the non-uniform use of artesunate as a first line malaria drug. There was a lack of knowledge regarding the preparation of injectable artesunate, and a clear preference for the administration of artemether as first line severe malaria treatment. Gaps related to guidance as to by whom, where and when rectal artesunate can and should be administered were also identified. The lack of training was also evident in the documented failure by some health workers to adhere to treatment guidelines.

This study also identified drug stock outs, inaccurate and/or missing malaria reporting data, and delays in health-seeking behaviour by patients as factors negatively affecting severe malaria case management in Angola. Drug stock outs were frequent both for uncomplicated and severe malaria drugs, mostly attributable to ineffective quantification mechanisms and poor supply systems. Malaria data was found to be prone to mistakes that may result in both under and over reporting of malaria, including severe malaria cases and malaria deaths. Data from private facilities is not integrated into national reporting systems, which is also contributing to inaccurate malaria burden reporting. Delays in health care seeking for logistical, financial, social and cultural reasons were identified through focus group discussions and interviews with key informants.

Ten key recommendations emerged from this assessment. In brief, it is recommended that the Angolan National Malaria Control Program, in conjunction with the Ministry of Health:

1. Clarify, formalise and share to all health facilities (HF), drug use recommendations by different level health workers and different level health facilities
2. Provide malaria case management training, including a module on severe malaria case management, to all HW every 2 to 3 years
3. Conduct regular on-the-job supervision of HW malaria case management in all HF, to ensure the correct application of training
4. Distribute malaria guidelines and job-aids to every HF
5. Review HF triage systems and produce triage guidelines including specific advice and protocols for malaria testing and treatment
6. Develop a private provider engagement strategy to ensure adherence to guidelines and reporting of cases
7. Review the drug quantification system
8. Develop formal protocols for local drug procurement
9. Review and improve malaria data systems
10. Strengthen community level health services and transport mechanisms to facilitate referrals

Table of Contents

Executive Summary	2
Team members, partner support and acknowledgments	6
Acronyms	7
1. Introduction	8
2. Objectives	9
3. Methodology	10
3.1. Stakeholder meeting rationale and purpose	10
3.2. Study Site	11
3.3. Study population and participants	12
3.4. Assessment coverage	12
3.5. Data Collection tools and Data Management procedures	13
3.6. Ethical considerations	13
4. Training and Piloting of Tools	14
5. Inception meeting	14
6. Timeline	15
7. Results	16
7.1. Care providers' knowledge and practices to diagnose and treat severe malaria	16
7.1.1. Health Care workers distribution and availability	16
7.1.2. Health workers training	19
7.1.2.1. Background training quality	19
7.1.2.2. Refresher trainings for severe malaria case management	19
7.1.3. Treatment Guidelines Availability and implementation	22
7.1.4. Severe Malaria Treatment Knowledge and practices	24
7.1.4.1. Severe Malaria Diagnosis	24
7.1.4.2. Severe Malaria Treatment	25
7.1.4.3. Severe Malaria Treatment Preferred Routes of Administration	27
7.1.4.4. Injectable Artesunate	28
7.1.4.5. Pre-Referral Rectal artesunate	29
7.2. Health facilities' capacity to provide the necessary services for high quality severe malaria management	30
7.2.1. Key commodities availability for severe malaria management	30
7.2.1.1. OPD/IPD conditions	30
7.2.1.2. Service provision for severe patients	32
7.2.1.3. Drug Availability	33
7.2.2. Health care seeking behaviours and Referral systems	39
7.2.2.1. Health seeking behaviours	39
7.2.2.2. Referral systems	43
7.3. Data collection and reporting	47
7.3.1. Accuracy of data reported on severe malaria	47
7.3.2. Burden of severe malaria	49
7.4. Community level health care seeking	50
7.4.1. Community level case identification constraints	50
7.4.1.1. Community perception of malaria as a health problem	51
7.4.2. Community level health care constraints	51

8. Discussion and Recommendations	54
8.1. HW Distribution, Knowledge and Practices	54
8.2. Case Management Guidelines Display and Use	55
8.3. Severe Malaria Diagnosis and Treatment	55
8.4. Drug Supply Chain and Availability	57
8.5. Data Quality	58
8.6. Community Practices, Perceptions and Behaviours	58
8.7. Recommendations	60
9. Assessment Limitations	61
10. Annexes	62
Annex I – Health Facility Tool	62
Annex II – Community Health Worker Tool	62
Annex III – Focus Group Discussion Tool	62
Annex IV – In-dept Interview Tool	62
Annex V – Study Information and Informed Consent	62
Annex VI – Ministry of Health endorsement letter	62
AnnexVII – Inception meeting participants	62
Annex VIII – Images	62
Annex IX – NMCP Malaria Guidelines	62

List of Figures

Figure 1. Malaria Prevalence by province in Angola in 2015	10
Figure 2. Map of Angola with the selected provinces and districts	11
Figure 3. Proportion of health facilities with tools available to support uncomplicated and severe malaria treatment in the OPD	22
Figure 4. Proportion of health facilities with tools available to support uncomplicated and severe malaria treatment in the IPD	22
Figure 5. Drugs identified by HW as first line treatment for severe malaria (more than one response allowed)	25
Figure 6. Preferred route of administration of severe malaria drugs	27
Figure 7. Proportion of steps required to prepare Inj AS identified by health workers	28
Figure 8. Availability of essential material in OPD departments	30
Figure 9. Proportion of monthly malaria reports submitted	47
Figure 10 to Figure 11. Proportion of severe malaria cases in the past 6 months in the health facilities visited during the survey	49
Figure 12. Average distance to access a health facility. Source: GEPE/MINSA (2013)	59

List of Tables

Table 1. Distribution of Health Facilities and Communities visited	12
Table 2. Data collection tools	13
Table 3. Geographical Distribution of health workers within HF visited	16
Table 4. Distribution of health workers per type of service provision	17
Table 5. Proportion of health care workers trained on severe malaria case management	20
Table 6. Proportion of health facilities with trained health workers in OPD, IPD and Laboratory	20
Table 7. Proportion of health workers identifying severe malaria signs and symptoms.	24
Table 8. Average time (in minutes) to be screened and to be treated (Health workers and patients' responses)	32
Table 9. Proportion of health facilities with available severe malaria drugs	33
Table 10. Proportion of health facilities with key commodities available for severe malaria management per type of HF	34
Table 11. Health seeking behaviour from patients and caregivers	39
Table 12. Community health workers (ADECOS) treatment and referral practices	44
Table 13. Reasons and conditions for severe malaria referrals made at Health Facility level	45
Table 14. Reasons and transport mechanisms of severe malaria referrals received at Health Facility level	45

Team members, partner support and acknowledgments

Principal Investigators

José Franco Martins – National Malaria Control Program
Sérgio Lopes – The MENTOR Initiative

Quando Cubango Team

Abel Cassoma – The MENTOR Initiative
Ana Direito – The MENTOR Initiative
Costa Kiamazowa – The MENTOR Initiative
Júliana Canjuluca – Quando Cubango Provincial Malaria Focal Point
Rodrino Sassoma – The MENTOR Initiative

Luanda Team

Alexandre Evambi – The MENTOR Initiative
Bento Cassinda – The MENTOR Initiative
Dilunvuidi Pode – National School of Public Health
Joana Manuel – National Malaria Control Program
Mary Chimbili – The MENTOR Initiative
Zaulena Afonso – National School of Public Health

Uíge Team

Fortunato Maliano – The MENTOR Initiative
Lindeza Chaves – Uíge Provincial Health Cabinet
Manuel Messo – Uíge Provincial Malaria Supervisor
Sérgio Lopes – The MENTOR Initiative
Mario Mossi – The MENTOR Initiative

Acknowledgements

We highly appreciate the engagement, support and guidance of Hans Rietveld (Medicines for Malaria Venture) and Tendayi Kureya (Development Data) during the design and implementation of this assessment.

The investigators recognise and appreciate the engagement and support provided by the Provincial Health Cabinets of Cuando Cubango, Luanda and Uíge. Likewise, the support provided by the municipal administration and municipal departments of health of Cazenga, Cuangar, Kilamba Kiaxe, Menongue, Uíge and Sanza Pombo was essential to complete this assessment within the planned timeline.

We are grateful for the generous support and collaboration of the communities, local community leaders (sobas), Health Workers and Community Health Workers of all villages visited during this assessment.

Acronyms

ACT	Artemisinin Combination Therapies
ARC	Artesunate Rectal Capsules
CHW	Community Health Worker (in Portuguese Agente Desenvolvimento Comunitário: ADECOS)
FGD	Focus Group Discussion
HF	Health Facility
HFM	Health Facility Manager
HW	Healthcare Worker
IDI	In Depth Interviews
IPD	In-patient Department
IM	Intramuscular
Inj AS	Injectable Artesunate
IV	Intravenous
KI	Key Informant
MMV	Medicines for Malaria Venture
MOH	Ministry of Health
mRDT	Malaria Rapid Diagnostic Test
NMCP	National Malaria Control Program
OPD	Out-patient Department
SMCM	Severe Malaria Case Management
WHO	World Health Organization

1. Introduction

Malaria is a preventable and curable disease that affects mostly sub-Saharan countries.

Despite the global reduction noted in the past decades, in 2018, malaria accounted for an estimated 405,000 deaths worldwide, with 95% of these deaths occurring in Africa.¹ In WHO's Global Technical Strategy (GTS) 2016-2030, a key milestone for 2020 is to reduce malaria related deaths by 40%, which requires a greater focus on severe malaria case management.²

Sub-optimal case management of severe malaria poses a serious threat to achieve this milestone.

Many factors, both individual (demand) and systemic (supply), have been identified to be linked with poor outcomes for severe malaria cases. In regard to the demand for treatment, patient lack of knowledge about disease severity, non-prompt healthcare seeking behaviour, as well as broader socio-economic determinants of health such as education and income, are key factors for poor malaria outcomes.

On the healthcare or supply side, poorly equipped health facilities to treat severe malaria, staffed with untrained or poorly trained health workers have a negative impact on patients' health outcomes. Additionally, regular stock-outs of essential medical commodities and absence of supervision further contribute to inadequate healthcare and directly or indirectly contribute to poor outcomes for severe malaria cases.^{3,4}

In Angola, malaria is still the leading cause of death, medical consultations and work or school absenteeism. It represents nearly 35% of the demand for curative care, 20% of hospital admissions, 40% of perinatal deaths and 25% of maternal mortality.⁵ WHO estimated 7 million malaria cases and 13,000 deaths in Angola in 2018.¹ This figure represents a total of 4% of malaria deaths worldwide, which is particularly concerning as it affects mostly pregnant women and children under 5 years of age.⁶

Whilst the entire Angolan population is at risk for malaria, there is a significant heterogeneity of transmission across the country due to the variation in climatic conditions. For example, malaria is hyperendemic in the northeast provinces, meso-endemic with stable transmission in the central and coastal provinces and highly seasonal in the southern provinces.⁷

Previous research done on malaria case management in Angola identified that incorrect case management of malaria cases was associated with lack of health care worker training and antimalarial stock outs.⁸ Apart from specific case reports,^{9,10} there has been limited research done in Angola that focuses on severe malaria case management to identify key challenges and bottlenecks. This information gap urgently needs to be filled as Angola aligns its own targets with international ambitions of reducing malaria related mortality by 80% in 2020.

This report will contribute to a better understanding of these underreported challenges. It uses information from a rapid assessment that was carried out across three Angolan provinces focusing on major challenges of severe malaria case management nationally. The assessment was led by Angolan National Malaria Control Program with the support of The MENTOR Initiative and Medicines for Malaria Venture.

1. World Health Organization. (2019). *World Malaria Report 2019*. Geneva. <https://www.who.int/publications-detail/world-malaria-report-2019>

2. OMS. (2015). *Estratégia técnica mundial para o paludismo 2016-2030*. 30.

3. Liberia Liberian National Malaria Control Programme. (2019). *A rapid assessment of severe malaria case management in Liberia*. Available on: <https://www.severemalaria.org/resources/a-rapid-assessment-of-severe-malaria-management-in-liberia>

4. Uganda Ugandan National Malaria Control Programme. (2019). *Severe Malaria Case Management Uganda*. 1–36. Available on: <https://www.severemalaria.org/in-the-field/projects/severe-malaria-assessment-uganda>

5. Ministério de Saúde Angola. (2012). *Plano Nacional de Desenvolvimento Sanitário*.

6. Programa Nacional de Controlo de Malária. (2019). *Dados Epidemiológicos anuais de Malária em 2018*.

7. Programa Nacional de Controlo de Malária. (2015). *Plano Estratégico Nacional de Controlo da Malária em Angola 2016-2020*.

8. Plucinski, M. M., Ferreira, M., Ferreira, C. M., Burns, J., Gaparayi, P., João, L., Da Costa, O., Gill, P., Samutondo, C., Quvinja, J., Mbounga, E., De León, G. P., Halsey, E. S., Dimbu, P. R., & Fortes, F. (2017). Evaluating malaria case management at public health facilities in two provinces in Angola. *Malaria Journal*, 16(1), 1–10. <https://doi.org/10.1186/s12936-017-1843-7>

9. Van Hong, N., Amambua-Ngwa, A., Tuan, N. Q., Cuong, D. D., Giang, N. T. H., Van Dung, N., Tinh, T. T., Van Tien, N., Phuc, B. Q., Duong, T. T., Rosanas-Urgell, A., D'Alessandro, U., Van Geertruyden, J. P., & Erhart, A. (2014). Severe malaria not responsive to artemisinin derivatives in man returning from Angola to Vietnam. *Emerging Infectious Diseases*, 20(7), 1199–1202. <https://doi.org/10.3201/eid2007.140155>

10. D'Abramo, A., Gebremeskel Tekle, S., Iannetta, M., Scorzolini, L., Oliva, A., Paglia, M. G., Corpolongo, A., & Nicastri, E. (2018). Severe Plasmodium ovale malaria complicated by acute respiratory distress syndrome. *Angola, I. N. de E.* (2017). *Inquérito de Indicadores Múltiplos e de Saúde 2015-2016*.

2. Objectives

The general objective of this rapid assessment was to close existing gaps in knowledge about severe malaria case management in Angola and support the NMCP with recommendations to close these gaps by collecting information at different levels of health services and through different study populations.

The secondary objectives were:

- 1.** Evaluate care providers knowledge of and practices for diagnosis and treatment of severe malaria:
 - a. Identify gaps in health care workers' (HW) training and supervision for severe malaria case management;
 - b. Evaluate adherence to and implementation of national and WHO treatment guidelines;
 - c. Assess healthcare providers' preferences and practices in the diagnosis and treatment of severe malaria;
- 2.** Evaluate health facilities' capacity to provide the necessary services for good quality case management of severe malaria:
 - a. Availability of key commodities for severe malaria management, including supply chain effectiveness at different levels;
 - b. Human Resource capacity at all levels;
 - c. Infrastructure for provision of severe malaria at health facilities;
 - d. Referral pathways including from community to primary health care and from primary health care to secondary hospital level;
- 3.** Assess the burden of severe malaria in Angola:
- 4.** Identify the major challenge for early health- seeking behaviour at community level:
 - a. Case identification at community level: persons responsible and challenges patients face for seeking care in time;
 - b. Key constraints for prompt health care seeking and referral.



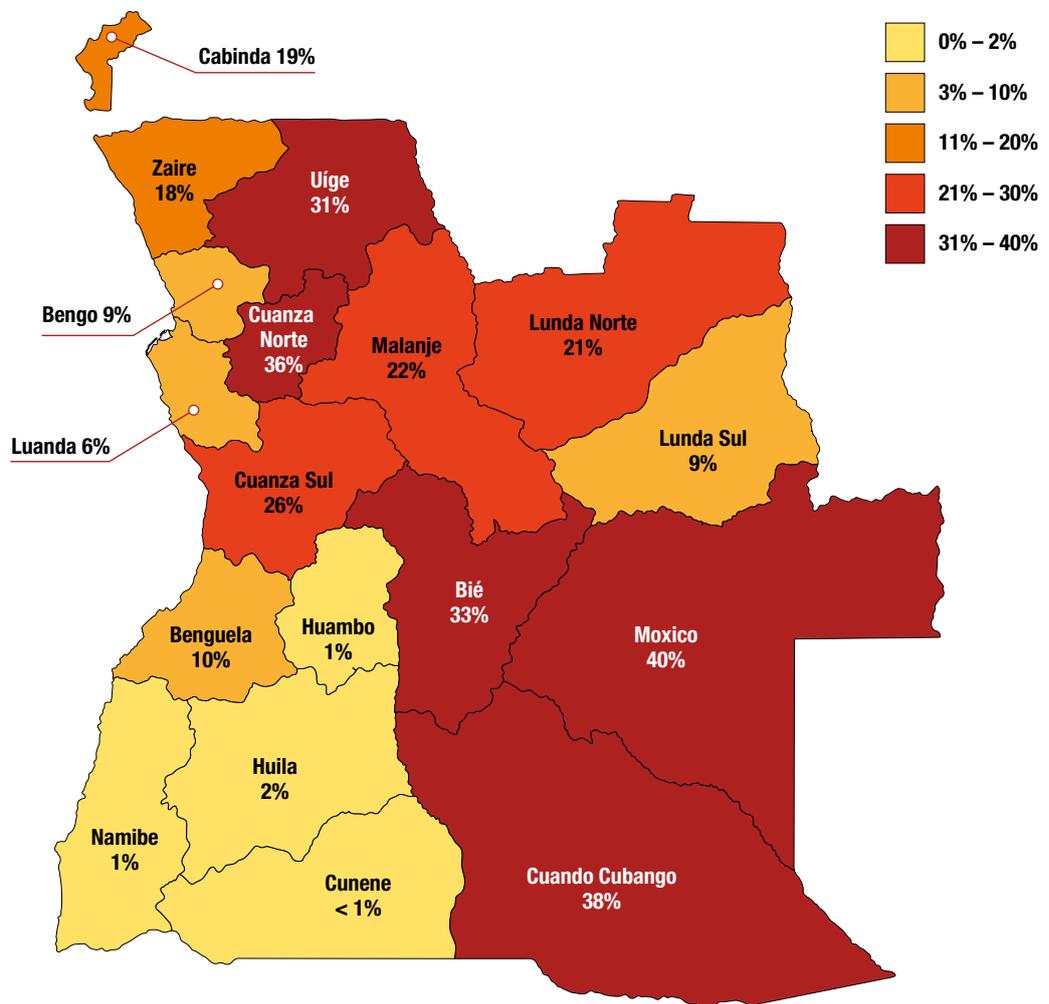
3. Methodology

3.1. Stakeholder meeting rationale and purpose

A cross-sectional study was conducted in three Angolan provinces: Cuando Cubango, Luanda and Uíge in early 2020. The provinces were selected in coordination with NMCP to ensure representative examples of different epidemiological, cultural and health system characteristics. The provinces of Uíge, in the north, and Cuando Cubango in the south are rural with a variety of stable and unstable malaria transmission patterns whilst Luanda is a densely populated urban area with more differentiated health care units.

11. World Health Organization. (2019). *World Malaria Report 2019*. Geneva. <https://www.who.int/publications-detail/world-malaria-report-2019>

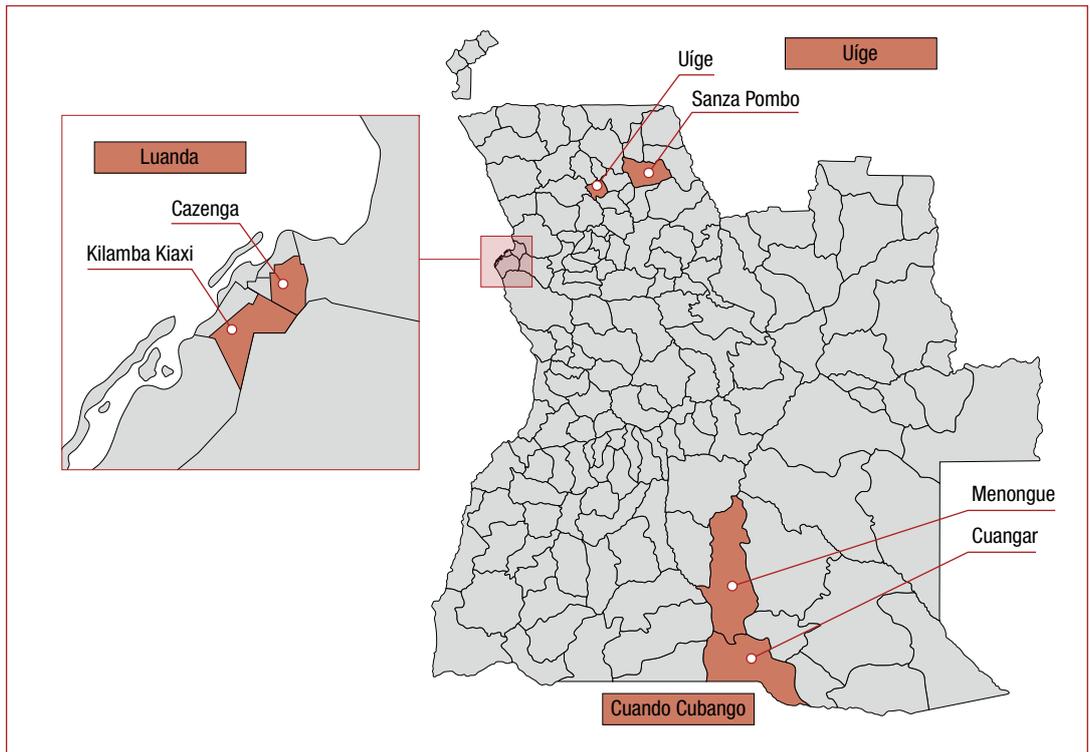
Figure 1. Malaria Prevalence by province in Angola in 2015¹¹



3.2. Study Site

In each province, two districts were selected based on malaria related deaths and hospitalization reported figures, as well as urban/rural characteristics. In Cuando Cubango, Menongue and Cuangar were selected; in Luanda, Cazenga and Kilamba Kiaxe were selected and in Uíge, Uíge Municipality and Sanza Pombo were selected. Cuangar and Sanza Pombo are classified as rural districts whilst Menongue, Cazenga, Kilamba Kiaxe and Uíge are urban districts. Cuangar, Uíge and Sanza Pombo were also included given the presence of former community health workers that were also targeted for this study (ADECOSs).

Figure 2. Map of Angola with the selected provinces and districts



A total of 23 Health facilities were assessed consisting of approximately 4 health facilities (1 hospital and 3 health posts or centres) in each district (see Table 1). The health facilities (HF) were also identified based on malaria related deaths and hospitalization figures or, in the absence of these figures in rural posts, the number of malaria cases reported.

Eighteen villages were also selected based on the distance to nearest HF (see Table 1). Half of the selected villages were located less than 5km from the nearest health facility while the remainder were further than 5 kms. Specific villages (12) without Community Health Workers (ADECOS) were also assessed to understand how behaviours and practices might differ in the absence of outreach workers.

Adjustments to the initial selection were made in agreement with local authorities and according to local constraints found. The changes made are presented below.

3.3. Study population and participants

The following study groups were selected for this assessment:

- Health facility workers: In each HF the health facility manager (HFM) and two health practitioners (Nurses or Doctors depending on the level of health care provision) were interviewed individually.
- Patients and caregivers: In each health facility, two patients or caregivers attending the HF were interviewed individually.
- Community health workers: Where existing, one community health worker in selected villages was interviewed.
- Community members: In each selected village, some community members were called to participate in focus group discussions (FGD).
- Key-informants: Key decision makers and relevant program managers were requested to participate in in-depth interviews (IDI).

Apart from key-informants and community health workers, all participants were selected based on their availability for the interview. Health workers who were available were invited to participate in the interview. FGD participants were also selected based on their availability and interest to participate. Once in the village, the team asked for available adults (above 18 years old), preferably caregivers for children.

3.4. Assessment coverage

The team conducted a total of 23 health facility assessments and visited 18 communities where 25 FGD were conducted. The list of health facilities, villages visited and participants per province and district is provided in Table 1.

Table 1. Distribution of Health Facilities and Communities visited

N (%)	Cuando Cubango		Luanda		Uíge		Total
	Cuanguar	Menongue	Cazenga	Kilamba Kiaxe	Uíge	Sanza Pombo	
Health Facilities	4 (17%)	5 (22%)	3 (13%)	3 (13%)	4 (17%)	4 (17%)	23
Health Facility manager	4 (19%)	4 ¹ (19%)	3 (14%)	3 (14%)	4 (19%)	3 ¹ (14%)	21 ¹
Health workers	7 ² (16%)	7 ² (16%)	6 (14%)	6 (14%)	8 (18%)	8 (18%)	44 ²
Patients and caregivers	4 ³ (11%)	7 ³ (18%)	6 (16%)	6 (16%)	8 (21%)	7 ³ (18%)	38
Communities	9 (50%)	0 (0%)	9 (50%)	18			
Community members FGD	16 ⁴ (64%)	0 (0%)	9 (36%)	25			
ADECOS	5 (42%)	0 ⁵ (0%)	0 ⁵ (0%)	0 ⁵ (0%)	4 (33%)	3 (25%)	12
Decision makers and managers	5 (42%)	6 (50%)	1 (8%)	12			

1. HFM was not available for the interview.

2. Only 1 HW per facility.

3. HFs did not have patients or caregivers available for interview.

4. In Uíge, only 1 FGD was performed per community whilst Cuando Cubango had 2 (one for each gender group).

5. Districts with no ADECOS program.

3.5. Data Collection tools and Data Management procedures

Four tools were used in this assessment to collect data. Most of the tools were adapted from previous severe malaria assessments conducted in Liberia and in Uganda and were adjusted to the Angolan context. Table 2 below summarizes the key tools used and the key focus of each tool.

Table 2. Data collection tools

Tool	Component	Targeted study group	
HF tool (Annex I)	HF conditions	Existence of key life-support material; HF organization and triage protocols; existence of key SMCM guidelines and job aids; laboratory conditions for malaria diagnosis; pharmaceutical commodities and severe malaria burden;	HF staff
	HFM interview	HF human resources; referral pathways practices;	HFM
	HF staff interview	Knowledge of SMCM; treatment procedures and preferences; training and supervision; referral pathways practices;	Health workers
	Patients and caregiver interview	Knowledge and practices for uncomplicated and severe malaria; health care seeking.	Patients and caregivers
ADECOS tool (Annex II)	Knowledge and practices for uncomplicated and severe malaria identification and responses; referral pathways; case management for children and pregnant women; training and supervision;	ADECOS	
FGD tool (Annex III)	Identification of severe malaria signs and symptoms; community perception on the need to promptly seek for health care; resources available to respond to needs; major barriers to access care on time; community pathways to decrease malaria burden and deaths.	Community members	
IDI tool (Annex IV)	Malaria and severe malaria burden; diagnosis and treatment constraints; training and supervision gaps; technical guidelines implementation; referral mechanisms and stock management.	Decision Makers and managers	

Data was collected by teams of trained workers who received daily supervision. Each team was composed of two data collectors and each supervisor was responsible for two teams. Data was collected on paper and regularly checked for consistency and missing information. Data was later entered into an excel database and analysed for frequencies and proportions. Interviews were recorded on a voice recorder. The content was then transcribed into a word processor. Content analysis was conducted by two researchers and results were triangulated to identify major topics and themes reported by interviewees.

3.6. Ethical considerations

This study was endorsed by the Minister of Health (Annex VI) as an essential piece of research to characterize one of the most prevalent diseases in Angola. Individual, written, informed consent was obtained from all eligible respondents. All questionnaires and interviews were coded to keep all personal information anonymous. Files were archived anonymously to ensure information confidentiality.

4. Training and Piloting of Tools

The training of data collectors was conducted on January 21, 22 and 23, 2020 in Luanda. A combination of theoretical and practical methods were used during training to both explain questionnaire content and also rehearse the questions. All data collection tools were reviewed with and by the team and tested through role-play exercises. On the 23rd of January, the data collectors implemented the tools in a pilot study at a Luanda hospital, practicing data collection under real conditions. Supervisors provided individual and general feedback on the pilot implementation to the data collectors. At the completion of the training, each team drafted a fieldwork micro-plan.

5. Inception meeting

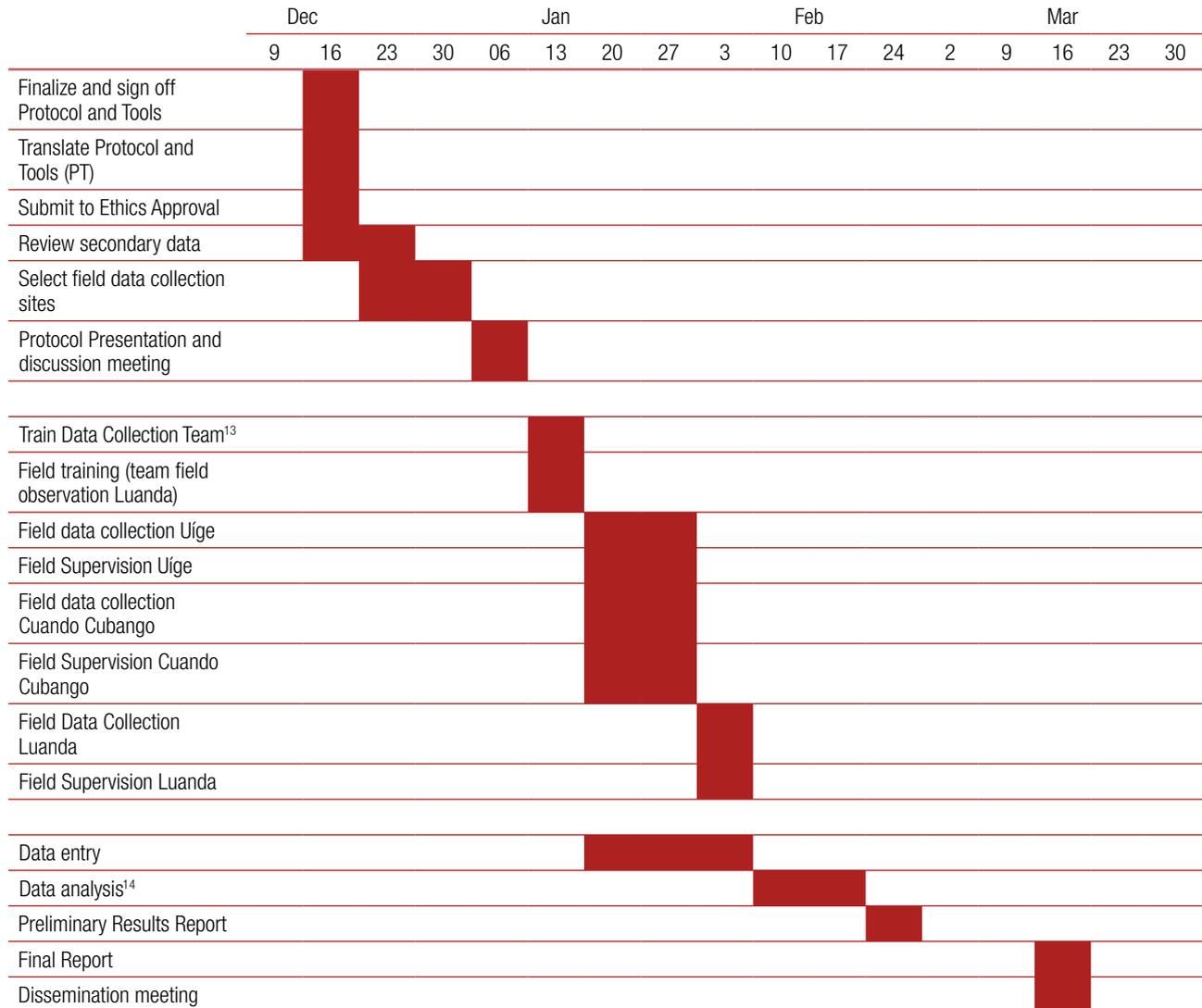
An inception meeting was held on January 29th in Luanda and convened several partners working in the malaria sector within Angola. The meeting focused on presenting study methods and aimed to gather as many ideas and information as possible to improve study Protocol and Tools. Key recommendation from meeting participants were:

- The need for more clarification for end users about Artesunate Rectal Capsules (ARC): who should administer ARC and in which circumstances. It was recommended that the survey address this issue by including questions about ARC use in the health facilities surveyed.
- It was noted that each of the assessment components would merit a single study, and it was highlighted that severe malaria component was not applicable to Community Health Workers as they are trained to refer and not treat severe malaria cases.
- The importance of checking patients' files to understand the differences between reported practices and actual practices was emphasised. Participants agreed that health workers often know the correct treatment recommendations but do not apply them in practice.
- The importance of these survey results shall support the new draft of The National Strategic Plan. The need for this survey had been recognised in a 2019 severe malaria workshop conducted in Luanda to fill knowledge gaps.¹²
- The importance of selecting villages not covered by ADECOSs to understand the differences in knowledge and practices of population and assess impact of social mobilisation on early health-seeking behaviour. This was taken into consideration during field data collection.

12. OMS. (2015). *Estratégia técnica mundial para o paludismo 2016-2030*. 30.

The meeting had 13 participants out of the 25 invitations sent (Annex VII). Most of the considerations were taken into account and, when necessary, adjustments to the tools and procedures were adopted.

6. Timeline



13. Liberia Liberian National Malarial Control Programme. (2019). *A rapid assessment of severe malaria case management in Liberia*. Available on: <https://www.severemalaria.org/resources/a-rapid-assessment-of-severe-malaria-management-in-liberia>

14. Ugandan Ugandan National Malaria Control Programme. (2019). *Severe Malaria Case Management Uganda*. 1–36. Available on: <https://www.severemalaria.org/in-the-field/projects/severe-malaria->

7. Results

Results of this assessment are presented below as defined in the key objectives. Where possible we try to integrate quantitative information gathered through questionnaires with qualitative information collected through interviews and FGD.

7.1. Care providers' knowledge and practices to diagnose and treat severe malaria

In this section, results from the analysis of health workers (HW) capacity to manage severe malaria cases are presented. The following analysis covers basic information regarding HW distribution and training, as well as severe malaria training, supervision practices and existence of key guidelines and manuals. Qualitative information collected through interviews and FGD which validates and/or complements the quantitative findings are also considered.

7.1.1. Health Care workers distribution and availability

This survey identified the scarce and unequal distribution of HW in Angola. Luanda HFs have the largest proportion of HW, which is easily justified by the greater population served by these facilities. Likewise, it is also in this province that greater expertise is available, as specialist doctors were only found in Luanda's HF. Similarly, the proportion of doctors in individual HF is skewed towards a greater concentration in Luanda and in urban districts of Uíge and Cuando Cubango provinces. A similar trend is found when looking at the distribution of nurses. While this may be justified by the need to ensure balanced ratios of HW per population (naturally higher in urban settings), the absence of qualified nurses and midwives in Cuangar, as well as absence of key support staff (Laboratory technicians and Pharmacists) in Cuangar and Sanza Pombo reflects the scarcity of skilled staff working in these locations. For SMCM, it is very concerning that the highest level of medical professional available in Cuangar is a nurse with only a technical nursing degree. This may explain why many Angolan patients in the southern border region regularly search for health care provision in Namibia.

Unfortunately, it was not possible to obtain the population size served by each HF to allow calculations of ratios of HW per population served. Table 3 below details the distribution of type of HW per location surveyed.

Table 3. Geographical Distribution of health workers within HF visited

N (% by location)	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kíaxe	Uíge	Sanza Pombo	
Specialist doctors	0 (0%)	0 (0%)	30 (7%)	6 (1%)	0 (0%)	0 (0%)	36 (3%)
Doctors	0 (0%)	7 (8%)	11 (2%)	10 (2%)	10 (7%)	3 (7%)	41 (3%)
Nurses (nursing degree)	0 (0%)	25 (27%)	65 (14%)	45 (9%)	36 (24%)	10 (23%)	181 (14%)
Nurses (technical nursing degree)	10 (43%)	38 (41%)	161 (35%)	227 (46%)	46 (31%)	6 (14%)	488 (39%)
Nurse Assistant	10 (43%)	7 (8%)	37 (8%)	65 (13%)	16 (11%)	19 (44%)	154 (39%)
Midwives	0 (0%)	0 (0%)	6 (1%)	36 (7%)	14 (9%)	1 (2%)	57 (5%)
Diagnostic & Therapeutic Technician	0 (0%)	9 (10%)	78 (17%)	91 (19%)	14 (9%)	0 (0%)	192 (15%)
Laboratory Technician	3 (13%)	0 (0%)	59 (13%)	11 (2%)	9 (6%)	4 (9%)	86 (7%)
Pharmacy Technician	0 (0%)	7 (8%)	15 (3%)	1 (0.2%)	4 (3%)	0 (0%)	27 (2%)
Total	23 (2%)	93 (7%)	462 (37%)	492 (39%)	149 (12%)	43 (3%)	1262 (100%)

When looking at the distribution per type of HF (Table 4 below), it is obvious that the majority of HW are performing their duties in differentiated health Facilities (Provincial or Municipal hospitals). While it may be acknowledged that these facilities require more staff, the joint analysis of geographical distribution and the distribution per type of HF reinforce the scarcity of HW in remote rural areas (where health centres and health posts are located).

Table 4. Distribution of health workers per type of service provision

N (% by location)	Provincial Hospital	Municipal Hospital	Maternal Child Care Center	Health center	Health post	Total
Specialist doctors	30 (83%)	5 (14%)	1 (3%)	0 (0%)	0 (0%)	36 (100%)
Doctors	6 (15%)	27 (66%)	2 (5%)	6 (15%)	0 (0%)	41 (100%)
Nurses (nursing degree)	46 (25%)	75 (41%)	28 (15%)	32 (18%)	0 (0%)	181 (100%)
Nurses (technical nursing degree)	81 (17%)	245 (50%)	47 (10%)	114 (23%)	1 (0%)	488 (100%)
Nurse Assistant	37 (24%)	72 (47%)	18 (12%)	18 (12%)	9 (6%)	154 (100%)
Midwives	0 (0%)	23 (40%)	12 (21%)	22 (39%)	0 (0%)	57 (100%)
Diagnostic & Therapeutic Technician	57 (30%)	100 (52%)	9 (5%)	26 (14%)	0 (0%)	192 (100%)
Laboratory Technician	44 (51%)	10 (12%)	13 (15%)	19 (22%)	0 (0%)	86 (100%)
Pharmacy Technician	13 (48%)	9 (33%)	2 (7%)	3 (11%)	0 (0%)	27 (100%)
Total	314 (25%)	566 (45%)	132 (10%)	240 (19%)	10 (1%)	1262 (100%)



The distribution and availability of qualified health staff was also identified during qualitative data collection. This problem is felt particularly in remote areas of Cuando Cubango and Uíge:

“... staff in quantity and quality is a problem in our district and, who knows, even in the whole country...”

(IDI 1, Cuando Cubango)

“We have a great deficit in human resources, particularly doctors. It is a very low number for the populations demand.”

(IDI 12, Cuando Cubango)

“Another method [to improve access to health care] is to increase the number of nurses in the health posts.”

(FG 20, Uíge)

Lack of available staff in health facilities has been widely reported by patients as a recurrent problem to accessing health care. Remoteness of location seems to be related to the unwillingness of health staff to work in health posts. Health staff turnover has been frequently reported by communities who benefit from a health infrastructure but that frequently have no staff available:

“The Administrator brought a nurse. The nurse spent only a night here. He woke up and said goodbye to the community [...] and never came back.” *(FGD 8, Cuando Cubango)*

“The nurse that was placed here arrived on a Saturday and left on the following Sunday”

(FGD 18, Cuando Cubango)

“The nurses they are sending here, they are not from here. In two days, they are moved somewhere else.” *(FGD 21, Cuando Cubango)*

In some cases, lack of specific staff has been clearly pointed out as a liability to ensuring adequate diagnosis and management of severe malaria:

“We have everything to diagnose severe malaria, we have the needed conditions [...] but we only have one lab technician sometimes for 300 slides. It is too much demand for a single lab technician so I don't trust those test results”

(E7, Cuando Cubango).

“We have the need for a medical doctor here in the health centre. We don't have a medical doctor and we know that a severe malaria case is not for any health care worker who can manage it. There are health workers who don't know how to administer drugs for severe malaria... so we really need a doctor here.”

(E20, Uíge)

7.1.2. Health workers training

7.1.2.1. Background training quality

Health workers' background training and capacity was referred to several times in interviews. It should be noted that some of the HW in Angola were integrated into the health system following the conclusion of the civil war. This means that several nurses are classified as certified but never received a complete formal training in nursing. This has an obvious impact on not only in the lack of training these professionals have, but also on their capacity to understand the content of new training. The capacity of these "adapted" HW is widely perceived as poor yet the Angolan health system still heavily relies on these workers for many healthcare services. On top of that, the overall training and capacity of HW is perceived as extremely low:

“The level of knowledge is very low. Most are middle-school technicians, they don't even have a degree. The vast majority are really bad, basic level or adapted.”
(IDI 8, Luanda).

“Many nurses and health workers don't have the basic knowledge and don't attend trainings and they are not updated on malaria case management.”
(IDI 11, Luanda)

“As they [health workers] don't have an acceptable level of training, they tend to violate the case management protocols”
(IDI12, Uíge).

“In peripheral health facilities we have many contracted workers, they don't get training in fact”
(IDI 12, Luanda)

7.1.2.2. Refresher trainings for severe malaria case management

According to 2016-2020 National Malaria Control Strategic Plan, malaria related trainings and severe malaria refresher trainings are one of the main NMCP strategies for improving the quality of malaria case management. This study aimed to quantify the proportion of HW in the health facilities that had received specific SMCM training and training on artesunate administration (rectal and injectable).

For doctors and nurses in the health facilities surveyed, only 22% reported to have received any SMCM training. While the majority of doctors had been reportedly trained on SMCM in Menongue (86%), Cazenga (90%), Kilamba Kiaxi (75%) and Sanza Pombo (100%), this proportion was lower in Uíge (60%). Figures for nurses trained in SMCM are significantly lower overall. Apart from Uíge province and Cuangar district, the proportion of trained nurses on SMCM is less than 20% (see Table 5).

Table 5. Proportion of health care workers trained on severe malaria case management

Health Staff (N, n, (% % trained)	Cuando Cubango		Luanda		Uíge		Total
	Cuangular	Menongue	Cazenga	Kilamba Kiaxi	Uíge	Sanza Pombo	
Doctors (Total)	0	7	41	16	10	3	77
Trained SMCM	0 (0%)	6 (86%)	37 (90%)	12(75%)	6 (60%)	3 (100%)	64 (83%)
Nurses (degree)	0	25	65	45	36	10	181
Trained SMCM	0 (0%)	4 (16%)	0 (0%)	5 (11%)	27 (75%)	5 (50%)	41 (23%)
Nurses (technical nursing degree)	19	45	198	292	62	25	641
Trained SMCM	10 (53%)	7 (16%)	2 (1%)	11 (4%)	37 (60%)	23 (92%)	90 (14%)
Total Doctors and Nurses	19	77	304	353	108	38	899
Trained SMCM	10 (53%)	17 (22%)	39 (13%)	28 (8%)	70 (65%)	31 (82%)	195 (22%)

An analysis of HW training on malaria case management and resuscitation (HW interviewed during the visit) demonstrates that while a good proportion were trained on malaria case management (>50%), only a small proportion had specific training in resuscitation/live saving care support (<25%, see Table 6).

It should be noted that the high proportion of trained workers in Uíge and Cuangular district can be attributed to support by NGOs and international programmes which operate in these regions. It is also worth noting that professionals in Uíge and Cuangular report being trained on these subjects in the past 2 years while, in the other districts, the majority had training more than 2 years ago. Low rates of laboratory staff trained in malaria microscopy, particularly in rural districts, is also a very concerning result.

Table 6. Proportion of health facilities with trained health workers in OPD, IPD and Laboratory

N (% by location)	Cuando Cubango		Luanda		Uíge		Total
	Cuangular	Menongue	Cazenga	Kilamba Kiaxi	Uíge	Sanza Pombo	
Total number of health facilities	4	5	3	3	4	4	23
HW trained malaria case management in OPD	4 (100%)	1 (20%)	1 (33%)	2 (67%)	4 (100%)	4 (100%)	16 (70%)
HW trained in resuscitation in OPD	0 (0%)	0 (0%)	0 (0%)	2 (67%)	1 (25%)	0 (0%)	3 (13%)
HW trained malaria case management in IPD	3 (75%)	3 (60%)	1 (33%)	0 (0%)	3 (75%)	2 (50%)	12 (52%)
HW trained in resuscitation in IPD	1 (25%)	2 (40%)	1 (33%)	0 (0%)	1 (25%)	0 (0%)	5 (22%)
Lab staff trained in malaria microscopy	1 (25%)	1 (20%)	2 (67%)	2 (67%)	3 (75%)	1 (25%)	10 (44%)

Lack of regular refresher trainings on malaria case management were also pointed out as a major bottleneck to ensure adequate level of care for uncomplicated and severe malaria. This deficiency was identified regularly by interviewed HW.

“We can have problems in providing accurate diagnosis due to lack of health workers training”
(E22, Uíge)

“To me, the first thing would be to provide a refresher training every x amount time to health workers as technical things change. As we are not updated with uncomplicated refresher trainings, it is complicated to diagnose and treat accurately”
(E22, Uíge).

“Regular training and malaria program supervision is really important so that our technicians have ample knowledge about malaria and so that we can diagnose uncomplicated and severe malaria [...] and to be sure about first line treatment for severe malaria at the right time, the right dosage and the right way of administration”
(E16, Uíge)

“It's been 7 or 8 years without training on malaria, [...] any person needs refresher training so that the health worker gets better at his job”
(E1, Cuando Cubango)

“Another problem we face are refresher trainings. We should have a refresher training every x amount of time on malaria at different levels: national, provincial, municipal and even at commune level, at health post level. But it doesn't happen.”
(IDI 1, Cuando Cubango)

When asked about key constraints for lack of training and supervision, most respondents mentioned the lack of financial, operational and technical capacity to conduct training and the fact that most trainings depend on partner support for implementation.

“I also understand that planning these trainings requires some logistics, some financial resources to do something”
(IDI 1, Cuando Cubango).

“Not all [malaria focal points] have that capacity to replicate training content because some of them have a very low level of schooling”
(IDI 5, Cuando Cubango).

“Our training program doesn't depend on us only, also depends on partners, depends on their means and plans at national level”
(IDI 12, Uíge).

“We had some help from our partners, from NGOs, all partners in the district. They end up setting some small training that is applied to our health workers”
(IDI 2, Cuando Cubango).

7.1.3. Treatment Guidelines Availability and implementation

Treatment guidelines and job aids are essential tools to help in uncomplicated and severe malaria diagnosis and treatment. This survey observed and recorded visibly available tools in OPD and IPD and identified that most health facilities did not have these tools displayed. Of particular concern, there were no job-aids or flowcharts available in either the OPD or IPD in any of the 9 HF surveyed in Cuando Cubango. Furthermore, most OPDs visited also did not have any guidelines or protocols regarding severe malaria treatment available. The scenario is even worse when analysing the availability of tools in the IPD where severe malaria patients should be treated. In all the surveyed HF in Luanda, there were no tools available at any IPD visited (Figure 3 and Figure 4).

Figure 3. Proportion of health facilities with tools available to support uncomplicated and severe malaria treatment in the OPD

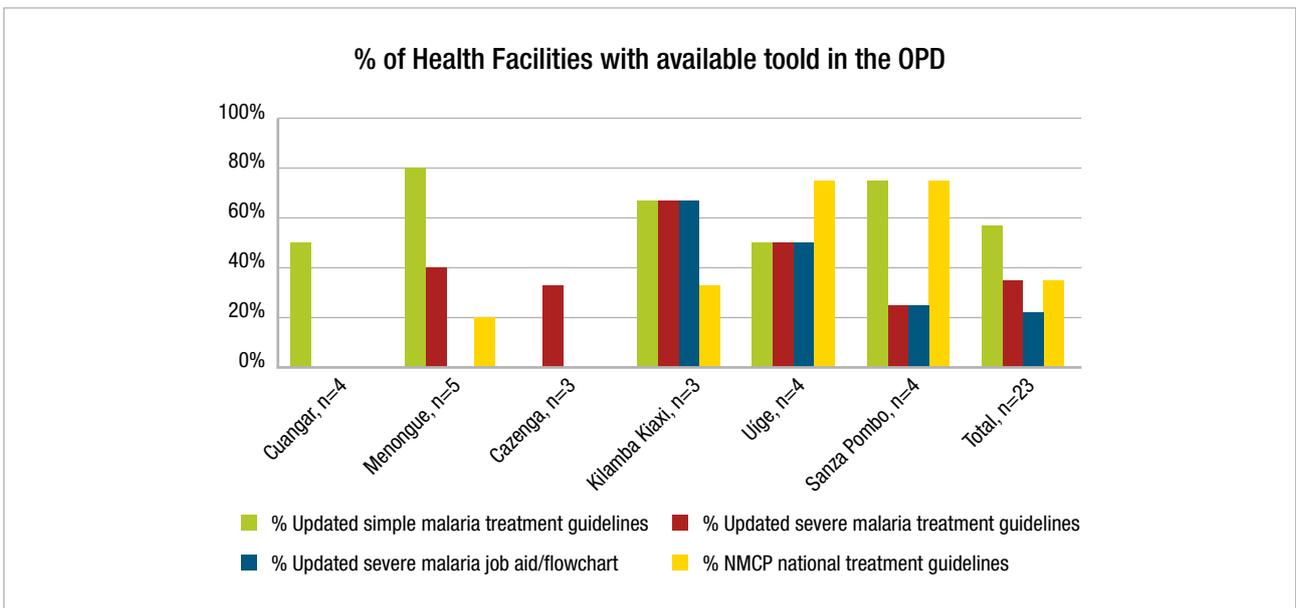
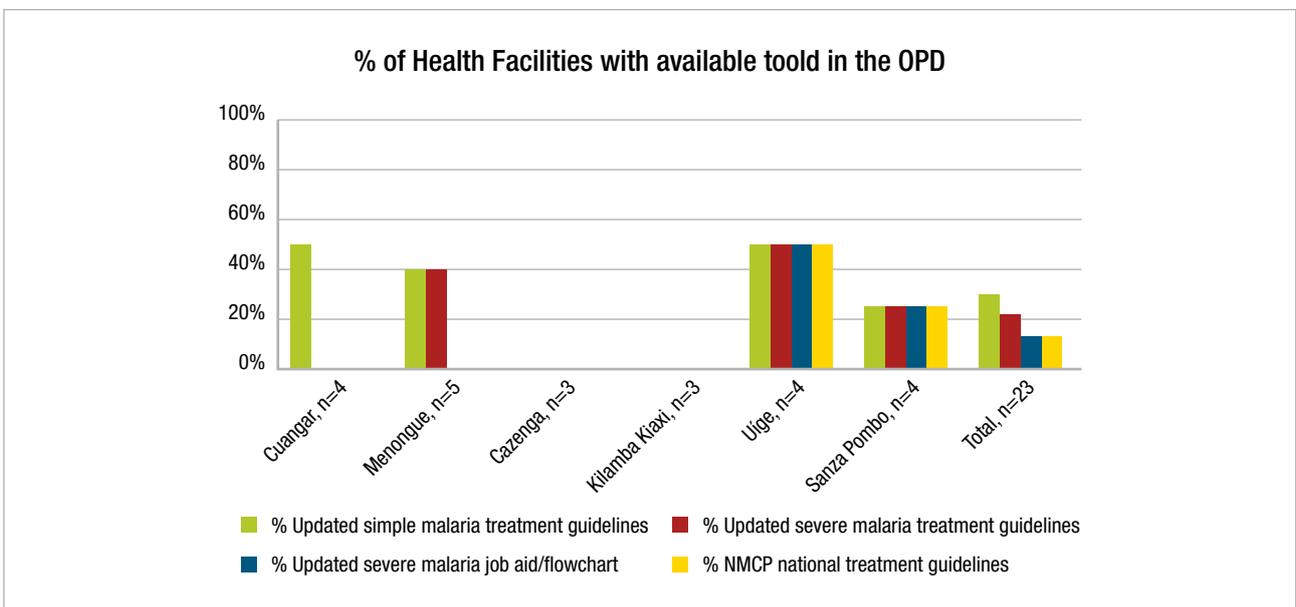


Figure 4. Proportion of health facilities with tools available to support uncomplicated and severe malaria treatment in the IPD



Whilst it was not within the scope of this study, adherence to treatment guidelines in private practice was an issue which was raised during IDI. Some interviewed HW and key informants (KI) suggested that many private practices do not follow NMCP guidelines, nor are they supervised. Furthermore, there was a concern that private providers do not report malaria data, leaving the national epidemiological situation of the country imprecise.

“Regarding case management, private providers don't respect malaria protocol because they don't know it”
(IDI 8, Luanda)

“A lot of times, we don't know what these private providers do regarding malaria. Sometimes they do treatments that we don't know if they are within the national malaria program protocol”
(IDI 10, Luanda)

“We know that private providers make their treatments based on interest and the tendency is to make a higher volume of drugs that are not related to the cause of disease but end up worsening the situation”
(IDI 12, Uíge)



7.1.4. Severe Malaria Treatment Knowledge and practices

7.1.4.1. Severe Malaria Diagnosis

Using the definitions set in the NMCP malaria case management guidelines, interviewed HW were asked about severe malaria signs and symptoms. The national treatment guidelines define severe malaria as a malaria positive test (mRDT or Microscopy) and at least another severe-specific sign and symptom. All HW interviewed were able to identify at least one severe malaria sign and symptom but that proportion fell when we look at those able to identify two or more signs and symptoms (Table 7). Fever was the sign pointed out most frequently (73% of respondents) followed by multiple convulsions (66%) and changes in state of consciousness (39%). It is worth noting that other severe malaria signs and symptoms set out by NMCP were rarely or never identified including hyper-parasitemia, hypoglycaemia, pulmonary oedema, acidosis and intra-disseminated vascular coagulation. This may be a reflection of both the lack of training on SMCM as outlined above, as well as the need for the national criteria to be updated.

Table 7. Proportion of health workers identifying severe malaria signs and symptoms.

N (% by total HW/location)	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kiaxi	Uíge	Sanza Pombo	
Total HW	7	8	6	6	8	6	41
Changes in state of consciousness	1 (14%)	1 (13%)	2 (33%)	3 (50%)	5 (63%)	4 (67%)	16 (39%)
Cerebral dysfunction manifestations	0 (0%)	1 (13%)	2 (33%)	1 (17%)	1 (13%)	2 (25%)	7 (17%)
Multiple convulsions	3 (43%)	5 (63%)	4 (67%)	3 (50%)	8 (100%)	4 (67%)	27 (66%)
Severe anaemia	0 (0%)	1 (13%)	1 (17%)	2 (33%)	2 (25)	2 (25%)	8 (20%)
Hyper-parasitaemia	0 (0%)	0 (0%)	1 (17%)	4 (67%)	1 (13%)	0 (0%)	6 (15%)
Fever	7 (100%)	6 (75%)	5 (83%)	2 (33%)	8 (100%)	2 (25%)	30 (73%)
Hyponatremia	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (17%)	1 (2%)
Acute renal failure	0 (0%)	0 (0%)	0 (0%)	1 (17%)	0 (0%)	0 (0%)	1 (2%)
Hepatic dysfunction	2 (29%)	0 (0%)	0 (0%)	1 (17%)	0 (0%)	0 (0%)	3 (7%)
Hemoglobinuric Fever	0 (0%)	1 (13%)	2 (33%)	0 (0%)	0 (0%)	0 (0%)	3 (7%)
Shock	0 (0%)	1 (13%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)
One or more Symptoms	7 (100%)	8 (100%)	6 (100%)	6 (100%)	8 (100%)	6 (100%)	41 (100%)
Two or more symptoms	5 (71%)	5 (63%)	6 (100%)	5 (83%)	8 (100%)	5 (83%)	34 (83%)

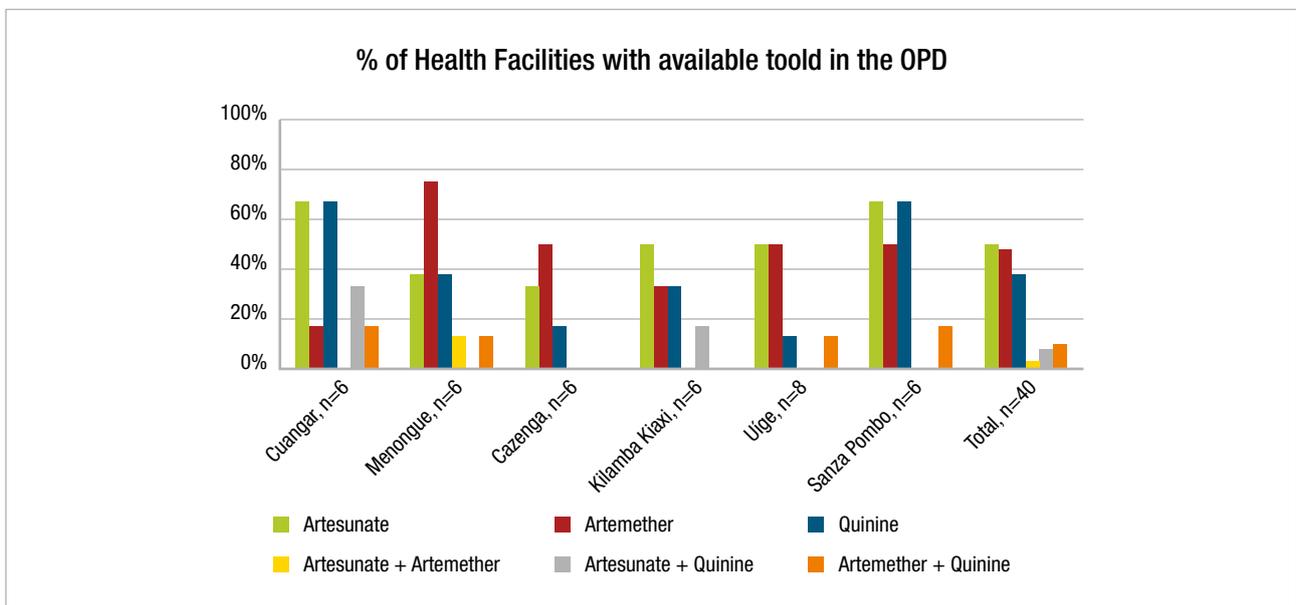
7.1.4.2. Severe Malaria Treatment

The NMCP treatment guidelines provide three different options as first line treatment for malaria in the following order:

- Intravenous/intramuscular artesunate
- Intramuscular artemether
- Intravenous quinine.

Despite being recognized as the first option for severe malaria cases, artesunate is not widely used by HW. Overall, when asked about first line treatment for severe malaria, only half of the respondents identified artesunate (either IV or IM as the preferred administration option).

Figure 5. Drugs identified by HW as first line treatment for severe malaria (more than one response allowed)



Revision of clinical processes in some health facilities also revealed some concerning treatment practices such as:

- The widespread use of artemether for severe malaria;
- The interchangeable use of drugs for severe malaria during a course of a treatment (examples of treatment plans changing from artemether to artesunate) (see Annex VIII)
- The use of artemether for a prolonged period of time even when clinical process clearly states the patient is already eating normally (clinical guidelines state these should pass to oral ACT as soon as possible) (see Annex VIII).

Such practices were also confirmed by some of the HW interviewed:

“When treatment is considered, first we treat with artemether and if we see malaria persists in patient’s body, it is time to administer quinine”
 (E4, Cuando Cubango).

“We have been treating [severe malaria] with artesunate, quinine, we can even treat with artemether, but when is really serious we treat with artesunate and quinine”
(IDI 3, Cuando Cubango)

Artesunate is recognized as an effective drug for severe malaria, but its use is still far from optimal.

“We have artesunate which is good and effective for treating severe malaria” (E7, Cuando Cubango).

“When the child gets in the health facility with high parasitaemia, we just apply a dose of injectable artesunate and in a few hours you can immediately see the results”
(IDI_8, Luanda)

The fact that there is still frequent use of artemether and a sub-standard use of Artesunate for severe malaria may be related to the historical use of quinine and artemether for SMCM and the delays in dissemination of the guidelines nationally. This is despite the fact that artesunate has been considered as first line treatment since 2014:

“[implementation of the use of injectable artesunate for severe malaria] was only implemented to 100% in 2018/2019”
(IDI 8, Luanda)

“The [National Malaria Control] Program has been updating the guidelines but there hasn't been the dissemination of updates that is required”
(IDI 11, Luanda).

Another reason that may justify the incomplete adherence to artesunate is the required calculations for artesunate dilution.

“I believe many health workers have difficulties in making the dilution of the first line treatment which is Artesunate. We have many workers facing difficulties in diluting and administering artesunate”
(IDI 10, Luanda).

“Injectable artesunate is our first line option for severe malaria treatment but there are people facing difficulties in preparing and they end up choosing artemether instead”
(IDI 12, Uíge).

“Since administering Artesunate involves calculations, requires preparation, requires learning, it has been taking longer to roll it out widely”
(IDI 11, Luanda)

Another potential reason for not having Inj AS widely disseminated may be related to HW' perceived lack of authorization to administer it. According to the HW interviewed, nurses are identified as the key person to prepare and administer artesunate (94% of respondents), whereas doctors were only identified by 9% of interviewed HW. One of the interviewees referenced that Inj AS can only be administered where doctors or certified nurses exist. This requirement is not stated in NMCP guidelines.

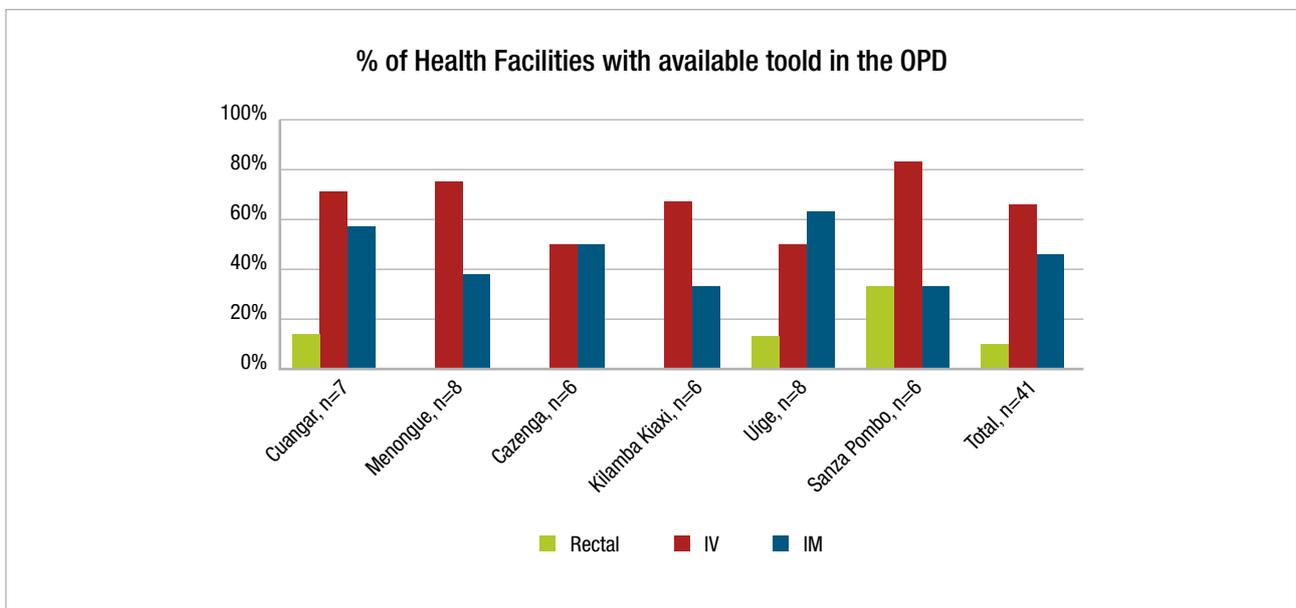
“[Injectable artesunate can be administered] only where doctors or graduated nurses exist. Only at that level, in those health facilities, where those type of human resources exist”
 (IDI 8, Luanda).

Severe malaria treatment options may be highly influenced by procurement practices and availability of drugs in health facilities. We will detail those points in the health facilities’ conditions section below.

7.1.4.3. Severe Malaria Treatment Preferred Routes of Administration

When asked about preferred routes of administration for drugs to treat severe cases (regardless of drug used), two thirds of HW identified intravenous as the preferred route, followed by IM (46%) (Figure 6). Interestingly, four HW (10%), from regional or rural areas, identified rectal route as the preferred option.

Figure 6. Preferred route of administration of severe malaria drugs



Qualitative interviews also touched on the preference for ARC. This may reflect the relative simplicity of ARC administration route in comparison to IV/IM administration.

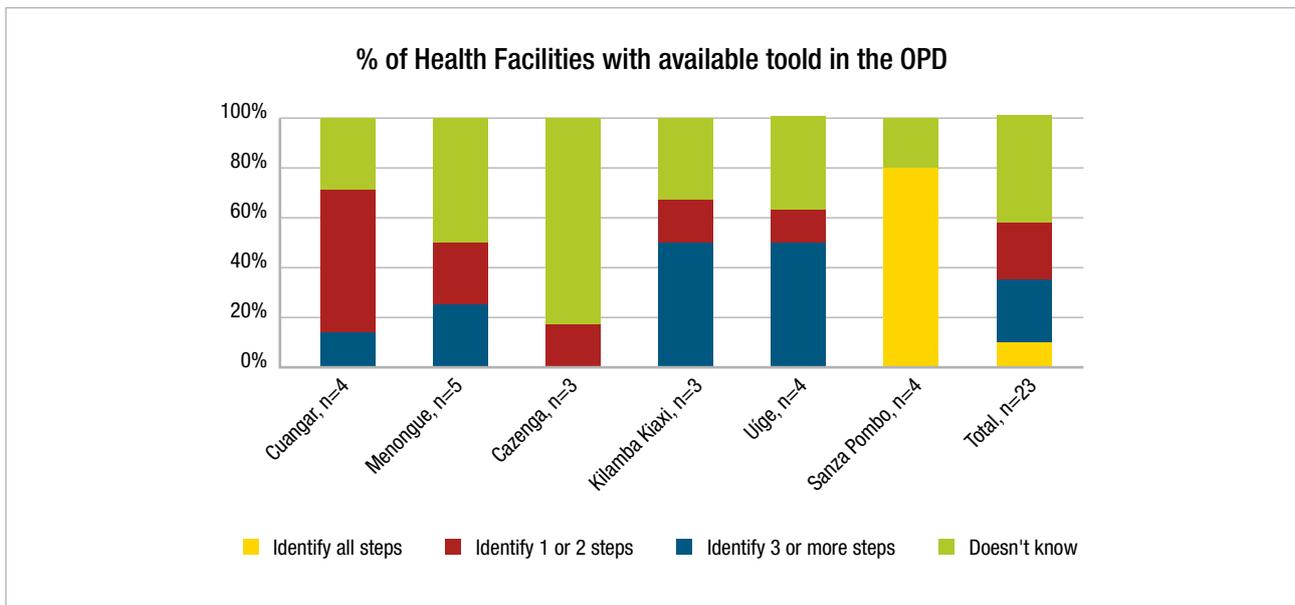
“He [the health worker] can be in a health facility, has rectal artesunate, applies first response level of care. He can insist in administering rectal artesunate until the child gets better and starts to get ACT without referring the child”
 (IDI 8, Luanda).

7.1.4.4. Injectable Artesunate

When looking at Inj AS only, 71% of HW identified IV artesunate as the preferred option to administer this drug. To quantify the HW knowledge about artesunate dilution and preparation, interviewed HW were asked to identify the key steps involved. Their answers were analysed utilising the six steps outlined in the artesunate job aid as reference point.¹⁵ Figure 7 shows that only 10% of HW were able to identify all steps for preparing Inj AS. Those able to correctly identify the six steps were all located in Sanza Pombo, a district that was recently targeted for Malaria Case Management Training. A quarter of interviewed personnel were able to identify three or more steps for Inj AS preparation. Once again, these are mainly located in districts that have been targeted for malaria case management training.

15. Ministério de Saúde Angola. (2012). *Plano Nacional de Desenvolvimento Sanitário*.

Figure 7. Proportion of steps required to prepare Inj AS identified by health workers



7.1.4.5. Pre-Referral Rectal artesunate

Angolan NMCP treatment guidelines state that pre-referral intervention should be done when the time to reach full supportive care is more than 6 hours away. The guidelines and job aids state the following for pre-referral intervention: rectal artesunate, artesunate IM, artemether IM and quinine IM. The guidelines do not make any reference to the minimum level of care provision where ARC can be provided. Rectal artesunate is not provided at community level (community health workers are only allowed to treat uncomplicated malaria cases) and is, supposedly, the first choice to administer in health posts or health centres before referring cases to higher levels. However, this study identified that the use of ARC appears to be hampered by lack of training on how to use this product and unavailability of this product in some health facilities. A single IDI participant raised several issues about use, storage and scale up of ARC as a strategy against severe malaria and ended up concluding that RA should be rolled down to community level.

“[Rectal artesunate] is like a first aid product that most of health workers do not use because there is a lack of knowledge and dissemination of this product is missing, starting from national program level. There is little training about how to use it... RA is used for severe malaria in general but is particularly used to refer patients. Its specific use is for health posts, where there is no doctor, there is where you use rectal artesunate. ... The health worker needs to act quickly to use rectal artesunate, we do it here. In the other provinces it doesn't exist [provinces apart from PMI supported]. ... Rectal artesunate is a product that everyone can use. It is like an mRDT. It is easy to manage ... Health posts should have rectal artesunate. [Even though] storage conditions at health facility level don't exist. They only need to be in a fresh environment to avoid it melts ... We have to advocate for this product [RA] to be used by ADECOS because as soon as they see a child and suspect of severe malaria, they can take the first action”
(IDI 8, Luanda)

“There is no culture of doing pre-referral intervention with rectal artesunate as guidelines state or even with any other treatment available before they are sent to nearby hospital.”
(IDI 12, Luanda).



7.2. Health facilities' capacity to provide the necessary services for high quality severe malaria management

In this section, key results of the assessment done at HF level are presented. The focus is on the key conditions essential to ensure adequate SMCM including HF conditions and availability of key commodities and stock. The existing referral systems is also evaluated as a key factor for effective case management throughout the continuum of care required for managing severe cases of malaria.

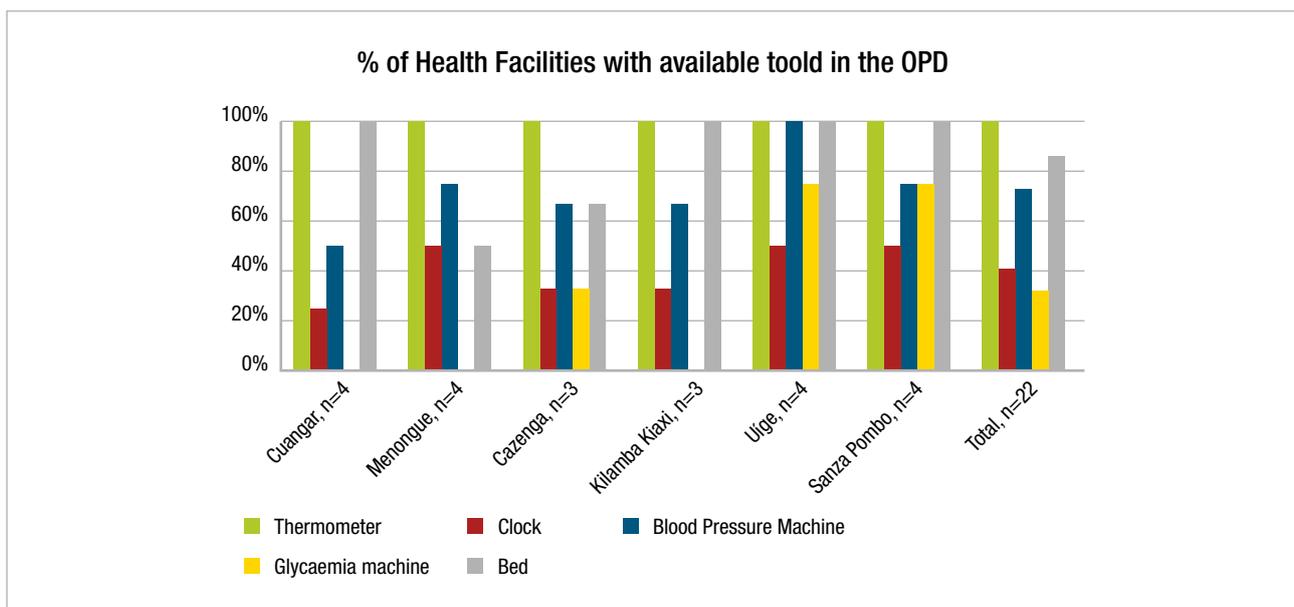
7.2.1. Key commodities availability for severe malaria management

When looking at capacity to manage a severe case of malaria, the basic conditions existing in the OPD to ensure basic care and the existence of stocks of severe malaria drugs should be considered.

7.2.1.1. OPD/IPD conditions

All health facilities visited had at least one thermometer – essential to ensure adequate management of malaria cases. However, when looking at other commodities, the proportions drop significantly. Of particular concern is the absence of blood pressure and glycaemia evaluation machines; essential elements to ensure hemodynamic balance of patients, even for those that need to be referred. These gaps in commodities are particularly felt in Cuando Cubango health facilities.

Figure 8. Availability of essential material in OPD departments



Two informants reported a lack of broader conditions and materials that would ensure adequate treatment of severe malaria patients.

“Severe malaria is really complicated and our hospitals are not well equipped as severe malaria affects all organs. We need a multidisciplinary team to manage these cases and our hospitals don't have the conditions and staff needed”.

(E7, Cuando Cubango)

“Aspirator, homodynamic control equipment, we need a room with basic conditions in terms of temperature, oxygen, ... We can't tackle severe malaria without essential medical equipment.”

(IDI 1, Cuando Cubango)

“[malaria] complications are not allowed there, there is no way out, life support capacity is low.”
(IDI 1, Cuando Cubango)

“Some health facilities don't have thermometer, don't have sphygmomanometer, there isn't... I don't even talk about oxygen... that's just words”
(IDI 1, Cuando Cubango)

“To treat a severe malaria patient, you need to control several outcomes and the person needs to be prepared in different areas to tackle these problems. Sometimes doctors are not trained to manage these complications”
(IDI 11, Luanda)

This perception of lack of basic equipment/ facilities/ commodities is also shared by community members who voiced their concerns about the poor conditions in health facilities, particularly in IPD.

“Sometimes they go on the health facility to get hospitalized but there are no conditions and they end up having to go to Namibia”. (FGD 10, Cuando Cubango)

“In the post they came and built here. There is no water tank, no power, no house for nurses. There is no water to take the pills and they have to go from house to house to find it”
(FGD 22, Uíge).

“They have to take a torch to go to health facility otherwise they can't even see each other to treat the disease”
(FGD 24, Uíge).

“There is no water, no power. We have an observation bed, there is where patients lie, which means no mattress, just like that. There is no bed”
(FGD 8, Cuando Cubango).

“Sometimes they really don't have anything, no mosquito nets, you have to take your own net to protect from all those mosquito bites”
(FGD 4, Cuando Cubango).

7.2.1.2. Service provision for severe patients

This study endeavoured to understand the service provided to severely ill patients by including questions about waiting times. The delays in health care seeking and constraints to seek care are detailed in another section of this report. In this section the length of time reported by HW and patients/caregivers for patients to be evaluated (triage) and then to be treated is showcased. There is an obvious discrepancy between the perceptions of HW and patients / caregivers in regard to time lengths. Whilst HW report, on average, that severe cases take a maximum of approximately 15 min to be treated, patients and caregivers report nearly 4 times more waiting time for severe patients.

Table 8. Average time (in minutes) to be screened and to be treated (Health workers and patients' responses)

	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kíaxi	Uíge	Sanza Pombo	
Time for first evaluation (triage): HW response	10	4	1	3	14	11	7
Time to be treated: HW response	14	40	3	6	26	7	16
Time to be treated: Patients/Care givers response	120	57	20	53	89	44	63

The discrepancies reported in table 8 above were also raised during focus groups discussions.

“The hospital is very slow. Quality of service in our hospital is bad because you go there sick and it takes a long time to be seen”
(FGD 3, Cuando Cubango)

“A person died because of delays, the person was sick but no treatment was provided”
(FGD 2, Cuando Cubango).

“A 6-year-old child died while waiting in the line. A patient goes to the hospital, 5AM, child is with high fever, it is only seen at 9 or 10AM. A person that goes to the hospital is for seeking life-saving treatment, but gets there in the hospital and waits...”
(FGD 7, Cuando Cubango)

There was one KI that related waiting times with scarcity of staff in the OPD:

“If there is only one health worker in the OPD, waiting time will aggravate and may lead to death. Therefore, the number of staff is important”
(IDI 12, Uíge).

7.2.1.3. Drug Availability

This study quantified the available drugs in each HF during the day of the visit to understand each HF capacity to provide severe malaria treatment or to provide pre-referral interventions, where applicable. In all health facilities there was always at least one severe malaria drug available in stock. However, Inj AS, listed as first line drug for severe malaria, was only available in less than half of the surveyed health facilities, with Cuando Cubango and Uíge health facilities facing shortages of this product. Fortunately, the gaps registered were mainly at lower levels (health centres and health posts, see Tables 9 and 10), which is aligned with the general understanding of not administering these drugs at this level of health care provision. Of significant concern is that ARC – the reference drug for pre-referral – was rarely available where it is needed most: in health posts (20%) and in health centres (50%).

Table 9. Proportion of health facilities with available severe malaria drugs

N (% by location)	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kixaxi	Uíge	Sanza Pombo	
Total HF	4	5	3	3	4	4	23
# HF with medicines in stock on the day of survey visit	4 (100%)	5 (100%)	3 (100%)	3 (100%)	4 (100%)	4 (100%)	23 (100%)
Injectable artesunate 60mg	2 (50%)	1 (20%)	3 (100%)	2 (67%)	2 (50%)	1 (25%)	11 (48%)
Rectal artesunate 50mg	0 (0%)	0 (0%)	1 (33%)	2 (67%)	1 (25%)	0 (0%)	4 (17%)
Rectal artesunate 100mg	2 (50%)	1 (20%)	2 (67%)	2 (67%)	2 (50%)	2 (50%)	11 (48%)
Quinine 300mg	0 (0%)	1 (20%)	2 (67%)	3 (100%)	3 (75%)	1 (25%)	10 (43%)
Injectable quinine 600mg	2 (50%)	0 (0%)	3 (100%)	2 (67%)	1 (25%)	2 (50%)	10 (43%)
Injectable artemether 20mg	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (25%)	0 (0%)	1 (4%)
Injectable artemether 40mg	0 (0%)	0 (0%)	3 (100%)	1 (33%)	1 (25%)	0 (0%)	5 (22%)
Injectable artemether 80mg	3 (75%)	1 (20%)	3 (100%)	2 (67%)	1 (25%)	2 (50%)	12 (52%)

Table 10. Proportion of health facilities with key commodities available for severe malaria management per type of HF

N (% by location)	Provincial Hospital	Municipal Hospital	Maternal Child centre	Health Centre	Health Post	Total
Total HF	1	4	5	8	5	15
Injectable artesunate 60mg	1 (100%)	4 (100%)	2 (40%)	3 (38%)*	1 (20%)*	7 (70%)**
Rectal artesunate 50mg	0 (0%)	2 (50%)	1 (20%)	1 (13%)	0 (0%)	4 (27%)
Rectal artesunate 100mg	0 (0%)	3 (75%)	3 (60%)	4 (50%)	1 (20%)	11 (73%)
Quinine 300mg	0 (0%)	3 (75%)	4 (80%)	3 (38%)	0 (0%)	10 (67%)
Injectable quinine 600mg	1 (100%)	3 (75%)	1 (20%)	4 (50%)	1 (20%)	10 (67%)
Injectable artemether 20mg	0 (0%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)	1 (7%)
Injectable artemether 40mg	1 (100%)	2 (50%)	0 (0%)	2 (25%)	0 (0%)	5 (33%)
Injectable artemether 80mg	1 (100%)	3 (75%)	2 (40%)	4 (50%)	2 (40%)	12 (80%)

* Even though Inj AS is not recommended for use at this level of health provision, we report the presence of this drug in stock in Health Centre and Health Posts visited

** The 3 health centres and 1 health post were not considered as per national treatment guidelines they should not have these drugs. Calculation is done by dividing 7 health facilities allowed to administer this drug by 10 eligible health facilities.

Despite the availability of severe malaria drugs in all health facilities surveyed, drug stock outs have been an issue frequently raised by a large proportion of the interviewed and focus groups participants. Stock outs apply to drugs used for severe and uncomplicated malaria treatment.

“Main constraint has been the antimalarial drugs stock out, sometimes the drugs just run out”
(IDI2, Cuando Cubango)

“The stock has been empty [of artesunate and quinine]”
(IDI 3, Cuando Cubango)

“We frequently don't have anti-malarial drugs. We receive it but it is not enough to cover the whole month. We may have artemether, a second line drug, for 15/20 days but in the other days we are in stock out”
(E8, Luanda)

“Lack of drugs to respond to those patients in that condition, has been hard... despite receiving it, the needed quantity does not always arrive on time or, at the right time.”
(E22, Uíge)

“Sometimes the health centre is 3 months without drugs. The nurse is there, but there is no way... without drugs, there is no way he can work. Sometimes 3, 4 months without drugs” (FGD 10, Cuando Cubango)

“The drugs supplied to the health post don't even last a month. Before the month ends... the nurse must assist 600 patients. So, that small quantity the nurse got is not enough... not enough”
(FGD 23, Uíge)

Stock outs have been related to deficient supply mechanisms. Local procurement of drugs done by provincial or district health authorities is common practice in some places using local government budgets, but some drugs procured locally are not considered to be quality-assured.

“Yes, the district through the health budget of the district health department, buys drugs from suppliers”
(IDI 3, Cuando Cubando).

“At local level hospital also buy their own stocks and also from provincial offices that try to reinforce the procurement to ensure stocks availability”
(IDI 12, Uíge)

“The client takes it at the health facility without even caring about quality, the origin of that product. That’s what happens with artemether and others and may affect therapeutic efficacy”
(IDI 12, Uíge)

“We are used to buying drugs for managing severe malaria. We are used to that. We don’t even complain. We have two main drugs, artesunate and artemether. It is a routine having these drugs. The big problem is not on severe malaria, but uncomplicated malaria, Coartem® (artemether-lumefantrine). That is the drug of choice” (E10, Luanda).

“But artesunate is a very effective drug. But with artemether we have some problems because artesunate comes from the program but artemether has many sources. Dependent on the sources where artemether is bought, results also vary”
(E 23, Uíge)

The historical procurement patterns and high dependency of partners to change practices has also been identified as a challenge to ensure adequate stocks of artesunate.

“The Government was used to buy the same thing for many years. The availability of injectable artesunate started to increase now with support from donors like PMI, Global Fund that started to direct funding towards that and the market started to have more injectable artesunate”
(IDI 11, Luanda)

One of the key reasons pointed out to justify the lack of drugs is related to deficient quantification of the needs. This is – according to informants – partially justified by problems related to the surveillance and monitoring and evaluation system.

“For example, I am responsible for 8 health facilities but in a month, I only receive the monthly report of 1 of them. For example, in January, I only received Savate. And then Luanda sent only drugs for 1 health facility” (IDI 4, Cuando Cubango)

“It was a small quantity. That is what I was saying, I believe national level is making the plans according to malaria cases but here we have problems in getting reports. Some districts only provide the report from the health facility in district headquarters”
(IDI 5, Cuando Cubango)

“Making the distribution plan of these areas depends on the health facilities that report because the plan needs to cover the whole province and all health facilities [but only some report] and that is why there is a drug stockout, of ACTs in particular”

(IDI 5, Cuando Cubango)

“The quantity of drugs we get is really lower than the cases we have and that is why we have frequent stock outs. Today, for example, we don't have anti-malarial drugs [ACT for uncomplicated malaria]”

(E2, Luanda)

Another key challenge to ensure availability of drugs in health facilities is logistical: the distribution strategies and mechanisms implemented. Moreover, specific geographical and access characteristics were identified as a challenge to ensure adequate supply of drugs.

“There is no problem. mRDT always come. I call the district chiefs “There are mRDT missing” and they say “Come and Get it”. But to get it, it is really complicated. If I get there, they give it to me but I need to get there” *(E18, Uíge)*

“What is complicating supply chain is products transportation. From national level [to provincial level] it is done quite frequently. But from provincial to municipal level depends... what is also very difficult is from district to health facility level. There are little resources at district level to transport supplies to all health facilities. What do they do? The health workers leave the health facilities to go to district and pick up. They go on bikes, by foot... that is really complicated”

(IDI 8, Luanda)

“When it rains, access... Our vehicles don't have 4x4 traction so when it rains there is no [way of reaching remote health facilities]”

(IDI 2, Cuando Cubango)

“Stock outs are frequent. We have drug suppliers and in Menongue there are drugs, but transport... the road... that has been the problem”

(IDI 3, Cuando Cubango)

“There has been drug stock out in the Health facilities, due to delays in health facilities and re supply”

(IDI 5, Cuando Cubango)

Malaria Rapid Diagnostic Test and drug stock outs have been recurrently identified by a vast majority of interviewees and FGD participants. Below we resume some of the identified consequences of these interruptions in supply, such as rationing drugs and drug seeking in private sector, and how it affects unequally different strata of the population.

“They have to make drugs available because stock outs are a strong enemy to malaria control”
(IDI 8, Luanda).

“When drugs are not available in the health facilities, a prescription is given and they need to buy in the closest pharmacy”
(IDI 11, Luanda)

“In many areas, the distant and harder to access, is where drugs availability is smaller and stock outs higher. It is a cycle... they are already far; they need to spend money to get on time to health facilities and then need to spend money buying the drugs.”
(Luanda, IDI 11)

“Sometimes the disease is detected but the drug is not available, they give you a paper where consultation is made... and then he returns here in the community”
(FGD 1, Cuando Cubango).

“Sometimes drugs run out, you go there, and they give you only two pills... now if the person is sick, there is nothing they can do”
(FGD 2, Cuando Cubango).

“The hospital saves in drugs; they have been cutting pills [in half]. One pill... will be given to two people. This is what is happening to most of the drugs”
(FGD 2, Cuando Cubango).

“For example, when drugs arrive, no Coartem, only 2 or three packs for a month. Two packs of Paracetamol with all this people here... it's nothing, nothing”
(FGD 22, Uíge).

“You come here to the hospital and they give you a prescription and you need to find a solution on your own”
(FGD 18, Cuando Cubango).

“Sometimes I get in the pharmacy, sometimes I get some of the pills but the others I don't”
(FGD 12, Cuando Cubango).

“That's why some people end up dying. They go to the health post, they make the consultation, they give you the prescription and end up without drugs and without money to buy the drugs and some people end up dying because of that. There is no other way. They just stay at home... they have many needs”
(FGD 12, Cuando Cubango).

“To me, every time I go to provincial hospital, when I have a sick child, I never got any drug, because of crowding, the pharmacy, the line is from here until that tree over there. Seeing all that people in the line. Seriously, when they say there are free drugs, sometimes on the prescription they have three drugs, but you get in the [hospital] pharmacy and they give you one only. The most expensive is never available. . . you always have to go to the [private] pharmacies”
(FGD 15, Uíge)

“Forest Roots. In the hospital there is no drugs, they give a prescription but there is no money to buy the drugs. You just go into the forest and take the roots to treat”
(FGD 9, Cuando Cubango).



7.2.2. Health care seeking behaviours and Referral systems

7.2.2.1. Health seeking behaviours

Interviews with patients and caregivers revealed some of the main challenges in accessing health care and in ensuring referral. Most respondents (71%) stated that they would walk to the nearest HF when seeking care (see Table 11). The health facilities seem to be the preferential place to seek for care (97%). However, 6% of respondents also identified ADECOSs as a potential source of treatment for children with malaria symptoms. This low proportion is associated with the gradual disruption of ADECOS programs in Angola. Until mid-2019, ADECOS were active in Cuando Cubango and in Uíge but, unfortunately, these have stopped receiving funding, training and supervision. Some ADECOS are still active in Uíge which explains the reference to ADECOS only in this province. A concerning 21% of respondents stated that they wait more than 1 day before seeking treatment when they suspect a child has malaria. This was mostly reported in rural areas of Uíge, Sanza Pombo and Menongue.

When asked about key challenges when seeking care, the main issue raised was the lack of money to pay for the drugs (46%). Even though drugs are free in public health services, as discussed in the section above, stock outs and high demand may end up pushing people to buy drugs in the private sector. The distance to HF (27%) and lack of transportation to reach the HF (32%) were also commonly pointed out as barriers for seeking healthcare.

Table 11. Health seeking behaviour from patients and caregivers

N -total number of responses for each question (%)	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kiaxi	Uíge	Sanza Pombo	
How do you go to the nearest health facility	4	7	6	6	8	7	38
On foot	3 (75%)	5 (71%)	4 (67%)	3 (50%)	7 (88%)	5 (71%)	27 (71%)
Taxi	0 (0%)	0 (0%)	2 (33%)	3 (50%)	3 (38%)	2 (29%)	10 (26%)
Motorcycle	1 (25%)	2 (29%)	1 (17%)	0 (0%)	0 (0%)	2 (29%)	6 (16%)
What do you do when you or your child has malaria symptoms?	4	6	6	6	8	6	36
Seek care with ADECOS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (13%)	1 (17%)	2 (6%)
Seek care at HF	4 (100%)	6 (100%)	6 (100%)	6 (100%)	8 (100%)	5 (83%)	35 (97%)
Seek care with traditional healer	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (33%)	2 (6%)
Wait at home	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (17%)	1 (3%)
How long do you wait until you seek care when you suspect you or your child has malaria?	4 (100%)	7 (100%)	6 (100%)	6 (100%)	8 (100%)	7 (100%)	38 (100%)
Don't wait	2 (50%)	5 (71%)	6 (100%)	2 (33%)	4 (50%)	3 (43%)	22 (58%)
Less than 12h	2 (50%)	0 (0%)	0 (0%)	2 (33%)	0 (0%)	1 (14%)	5 (13%)
Between 12-24h	0 (0%)	0 (0%)	0 (0%)	2 (33%)	1 (13%)	1 (14%)	4 (11%)
1-3 days	0 (0%)	1 (14%)	0 (0%)	0 (0%)	4 (50%)	2 (29%)	7 (18%)
More than 3 days	0 (0%)	1 (14%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
Constrains when seeking care	4 (100%)	6 (86%)	2 (33%)	3 (50%)	4 (50%)	3 (43%)	22 (58%)
Distant health facility	0 (0%)	0 (0%)	0 (0%)	3 (100%)	1 (25%)	2 (67%)	6 (27%)
Lack of transport	1 (25%)	1 (17%)	1 (50%)	0 (0%)	4 (100%)	0 (0%)	7 (32%)
Lack of money for the transport	0 (0%)	1 (17%)	0 (0%)	0 (0%)	0 (0%)	1 (33%)	2 (9%)
Lack of money for medicines	3 (75%)	6 (100%)	0 (0%)	1 (33%)	0 (0%)	1 (33%)	10 (46%)
Lack of money for the appointment	0 (0%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	1 (5%)

The vast majority of the factors pointed out above were also identified during interviews and focus groups discussions. Delays in seeking care are common which is in line with the data collected through individual interviews:

“Patients get here very late, they never come in the day when a person feels sick or when the child complains with fever or headache”
(E23, Uíge).

“When the child is sick, they don't bother taking her to the hospital. Only when the child can't stand anymore, then the family cares in bringing the child to the health centre, and the child, when observed, we can see the child has malaria... severe malaria.”
(E 17, Uíge).

“Regarding severe malaria, due to mothers lack of knowledge, they end up seeking care very late in the health facilities which ends up as severe malaria”
(IDI 5, Cuando Cubango)

“Many of them have the habit of saying that simple fever is not worth seeking care for. So, they only go in an advanced state”
(IDI7, Luanda).

During FGD, some mothers reported to immediately seek care when their children are feverish. However, this data should be carefully analysed as some level of social acceptability may have been biasing these answers.

“I just need the child to complain, when he wakes up and is feverish, in that moment I give paracetamol and go to the hospital”
(FGD 7, Cuando Cubango)

“He has to go immediately. My son has to go immediately, he can't wait. If he has a fever, he needs to go immediately to the hospital.”
(FGD 7, Cuando Cubango)

Distance to health facilities may be one of the reasons that justify the delays in prompt health care seeking. Some of the respondents mentioned that the HF network is scarce, some health facilities are far and some are closed.

“Reason is distance, where I came from is 5 kms, plus 5 kms... a person can't stand this distance”
(FGD 10, Cuando Cubango)

“... we are suffering a lot... the distance, 22 kms and we don't have ambulance”
(FGD 10, Uíge).

“We can treat people here in the headquarters but those down there? Those areas are very far and for public health, you need some transportation”
(E5, Cuando Cubango).

“Now you can imagine those with children in those villages many kms from here. Some take a chariot, but those who don't have one.. you can imagine leaving a place and walking all this distance to the health centre or a health post. It is hard. Sometimes the child dies on the way and it doesn't get in the health facility because distance is really far”
(E5, Cuando Cubango)

“I believe the influx of patients is big and the number of health facilities is scarce”
(IDI 2, Cuando Cubango)

“Many kms to reach the health facility and that patient doesn't have the money to take a taxi which makes them seek care later”
(IDI 10, Luanda)

“Many health facilities are far, there are no transports and in some places health facilities are inaccessible”
(IDI 11, Luanda)

Distance and lack of means of transportation or lack of financial capacity to pay for transportation were identified as major barriers to ensure prompt healthcare seeking and referral (quantitative data presented below). This conclusion is in line with the reported high proportion of people that said they would walk to the nearest HF. The poor road network, lack of available transportation and inaccessibility to some health facilities push some populations in the border region of Cuando Cubango to seek care abroad in Namibia.

“They have to find a solution or have to pay a candongueiro (local transport) to get into a health facility”
(IDI 2, Cuando Cubango)

“It's the lack of transport, we don't have ambulance, we don't have motorcycle, the treatment of patient in the hospital is delayed by the patient”
(E3, Cuando Cubango)

“They walk. To obtain treatments they walk. There is no transport. They really walk”
(FGD 2, Cuando Cubango)

“Transport is a real problem, on a motorcycle you can't put three people or they will have an accident”
(FGD 2, Cuando Cubango).

“If there is no chariot, nor a motorcycle, they break some sticks, they tie up a cloth like a stretcher and they carry. The men, four men”
(FGD 3, Cuando Cubango)

“Transportation to Cuangar is really hard. When in need, they go to Namibia. Now the river is full. We don't have boats, we take canoes. With hippos it is very dangerous. Sometimes malaria attacks at night, they must wait the whole night to cross the river. They are bound to die.”
(E3, Cuando Cubango)

“Access and lack of transportation [are the main challenges for health care seeking]”
(E8, Luanda).

As identified in Table 11, and further corroborated during FGD and IDI, some people seek care through traditional means. Seeking care through traditional healers appears to be caused by a mix of behaviours: on one side, this is seen by the population as the tradition, the typical behaviour to take when people feel sick. On the other hand, seeking health care from traditional healers may be a consequence of the lack of formal health system capacity to meet health care demands of the population.

“These people still use those ancient treatments, first with leaves and roots”
(FGD 4, Cuando Cubango)

“[when there are no drugs] we use roots and traditional leaves as told by our ancestors”
(FGD 1, Cuando Cubango)

“The cultural question is also an issue, they go to healers to see if it improves there”
(IDI 12, Cuando Cubango)

Seeking care from traditional healers, other providers or even self-medication has also been associated with delays in health care seeking and aggravation of health care conditions.

“Sometimes, it is not a root that will solve the problem even if running from the hospital. Good or bad, they will return with a child in a severe state”
(IDI 5, Cuando Cubango)

“Our population lives with taboos and socio-cultural problems and sometimes only after going to private centres, self-medication, and when things do not improve, they go to the health facility and when they arrive they have high parasitaemia”
(IDI 6, Luanda).

“We have patients that within the first symptoms of uncomplicated malaria they don't go to the hospital, they go to quimbondeiros (a traditional healer). Or they don't go... they go to a health post where they are not well treated and then the case gets complicated”
(E7, Cuando Cubango).

“Apart from one case or another, when children are sick parents believe that is something that can be treated in the church. When things get complicated, then they go to hospitals”
(E 11, Luanda)

“I believe it is a culture that people have of self-medication, to treat first with traditional medicines”
(E2, Luanda).

Finally, as pointed out, the lack of financial means poses a significant restriction to accessing drugs but also to transportation to seek care on time.

“Some live far from here, they don't have money to pay a taxi to get into the health facility”
(E20, Uíge)

“Our people cannot pay for the drugs. Sometimes they have 2/3/4 children and they all have malaria. So, giving a prescription for the mother to buy drugs is a crisis”
(E6, Cuando Cubango).

7.2.2.2. Referral systems

Referral systems are essential to guarantee a continuum of care for severe patients where first level of care can't ensure sufficient treatment. In Angola, community health workers are trained to refer all severe patients immediately, without providing any drug. Both ADECOSs and health facilities have referral sheets where basic information is supposed to be registered: a brief description of symptoms and vital signs and the reason for referring (see Annex VIII).

“You go to ADECOS [the CWH], if he can't [treat], he writes down a referral letter to give you and you go to the municipal hospital”
(FGD 14, Uíge)

When asked about referral practices, ADECOS interviewed confirmed that all severe malaria patients were referred to the nearest HF (see Table 12). The health posts were the main choice as these are usually the nearest health facilities to ADECOS, who tend to live in remote areas. The vast majority of ADECOS reported to treat children when they have malaria, and almost all said they would refer pregnant women. While this represents full compliance with guidelines, it has been a source of problems to ADECOS as communities require their scope of work to be extended.

“If we have ADECOS but they only treat that age [0-5 years old], when you are old, you need to get a transport. If you don't have money you just stay there... suffering”
(FGD 25, Uíge)

“We, the adults, would like to be tested as well because it is not only children who get sick or die. Adults also die”
(FGD 24, Uíge)

Table 12. Community health workers (ADECOS) treatment and referral practices

N -total number of responses for each question (%)	Cuando Cubango		Uíge		Total
	Cuangoar	Uíge	Sanza Pombo		
Malaria case in children	5	4	3	12	
Referral to an HF	2 (40%)	0 (0%)	0 (0%)	2 (17%)	
Treat with medicine	5 (100%)	3 (75%)	3 (100%)	11 (92%)	
Malaria case in pregnant women	5	4	3	12	
Referral to an HF	4 (80%)	4 (100%)	3 (100%)	11 (92%)	
Treat with medicine	3 (60%)	0 (0%)	0 (0%)	3 (25%)	
Severe Malaria case	5	4	3	12	
Referral to an HF	5 (100%)	4 (100%)	3 (100%)	12 (100%)	
Referred to	5	4	3	12	
Health Post	2 (40%)	1 (25%)	3 (100%)	6 (50%)	
Health Centre	3 (60%)	1 (25%)	0 (0%)	4 (33%)	
District Hospital	0 (0%)	1 (25%)	0 (0%)	1 (8%)	
Provincial Hospital	0 (0%)	2 (50%)	0 (0%)	2 (17%)	

As for health facilities, HW referring or receiving referrals from health facilities reported that the main reason for referral was the lack of resources available to manage severe malaria (Tables 13 and 14). District hospitals are the main facility where severe cases are referred to. This may be easily explained by the fact that these facilities have more differentiated care, with higher number of doctors and certified nurses and better conditions for severe malaria management that, in theory, can therefore better provide a better level of health care.

Table 13. Reasons and conditions for severe malaria referrals made at Health Facility level

N -total number of responses for each question (%)	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kixaxi	Uíge	Sanza Pombo	
Total HW	11	13	9	9	12	10	64
# HW who referred a severe malaria patient to other HF	9 (82%)	12 (93%)	5 (55%)	9 (100%)	6 (50%)	6 (60%)	47 (73%)
Reasons for referring	9	11	4	4	5	6	39
No material conditions	6 (67%)	9 (82%)	4 (100%)	4 (100%)	3 (60%)	5 (83%)	31 (80%)
No drugs	4 (44%)	4 (36%)	0 (0%)	2 (50%)	2 (40%)	3 (50%)	15 (39%)
No health workers	0 (0%)	1 (9%)	0 (0%)	3 (75%)	1 (20%)	0 (0%)	5 (13%)
Where were they referred to	9	13	5	9	11	8	55
Health Centre	2 (22%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (25%)	4 (7%)
District Hospital	5 (56%)	8 (62%)	3 (60%)	4 (44%)	4 (36%)	4 (50%)	28 (51%)
Provincial Hospital	1 (11%)	5 (39%)	1 (20%)	5 (56%)	7 (64%)	2 (25%)	21 (38%)
National Hospital	0 (0%)	0 (0%)	2 (40%)	2 (22%)	0 (0%)	0 (0%)	4 (7%)
Private clinic	1 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)
Transportation used for referral	9 (82%)	13 (100%)	5 (55%)	9 (100%)	11 (92b%)	8 (80%)	55 (86%)
Ambulance	1 (11%)	9 (69%)	1 (20%)	9 (100%)	6 (55%)	1 (13%)	27 (49%)
Taxi	6 (67%)	7 (54%)	0 (0%)	0 (0%)	6 (55%)	2 (25%)	21 (38%)
Personal vehicle	0 (0%)	0 (0%)	4 (80%)	4 (44%)	3 (27%)	5 (63%)	16 (29%)
Motorcycle	3 (33%)	1 (8%)	0 (0%)	0 (0%)	2 (18%)	0 (0%)	6 (11%)

Table 14. Reasons and transport mechanisms of severe malaria referrals received at Health Facility level

N -total number of responses for each question (%)	Cuando Cubango		Luanda		Uíge		Total
	Cuangar	Menongue	Cazenga	Kilamba Kixaxi	Uíge	Sanza Pombo	
Total HW	11	13	9	9	12	10	64
# HW who received a severe malaria patient referred from another HF	6 (55%)	6 (46%)	3 (33%)	5 (56%)	1 (8%)	6 (60%)	27 (42%)
Reasons for referring	7	6	1	3	1	6	24
No material conditions	4 (57%)	5 (83%)	1 (100%)	2 (67%)	1 (100%)	6 (100%)	19 (79%)
No drugs	2 (29%)	1 (17%)	0 (0%)	0 (0%)	0 (0%)	3 (50%)	6 (25%)
No health workers	2 (29%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (17%)	3 (13%)
Transportation used to get to HF	6	6	3	5	1	6	27
On foot	4 (67%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (50%)	7 (26%)
Ambulance	1 (17%)	1 (17%)	2 (67%)	3 (60%)	1 (100%)	2 (33%)	10 (37%)
Taxi	2 (33%)	3 (50%)	1 (33%)	3 (60%)	1 (100%)	2 (33%)	12 (44%)
Personal vehicle	2 (33%)	2 (33%)	2 (67%)	4 (80%)	1 (100%)	0 (0%)	11 (41%)
Motorcycle	3 (50%)	1 (17%)	0 (0%)	0 (0%)	1 (100%)	3 (33%)	8 (30%)

As these referrals are done between health facilities, it would be expected that some sort of ambulance or medical transport is provided. However, less than half of the HW referred to the use of ambulances to make these transfers of patients. This finding is in line with some of the main challenges presented by staff who stated that distance and lack of transportation are the main challenges to secure effective transfers of severe malaria cases. As data shows, many severe cases end up using private taxis or motorcycles to ensure transfer, which certainly is not an adequate mode of transport for a severe malaria case.

“That is another problem. . . we don’t have ambulances to take people with severe malaria there in Jambacoio or in Catindo, in several distant and hard to reach places”
(IDI 1, Cuando Cubango)

“Another constraint is the evacuation of severe cases. It could be possible to evacuate to Menongue but the road is a problem, the lack of transportation. . .”
(IDI 2, Cuando Cubango)

“Another challenge is transportation. There is no transportation at community level”
(IDI 8, Luanda)

“For severe malaria in peripheral areas there is also a problem of road access that affects timely case management of a severe case”
(IDI 12, Uíge)

“The health post helps us. There is only a problem when there is a need to transfer patients from the post to communal level. That is the main problem. To stand the transfer from health post to commune as they need to take a taxi and if they don’t have that amount, the person dies. The motorcycle drivers here. . . they charge 2000 Kwanza (\$2.67 USD, April 2020) for that transport”
(FGD 23, Uíge)

“we don’t have an ambulance to facilitate transport of severe patients. The patient himself needs to find a way to rent a means of transportation”
(FGD 25, Uíge)

“For severe malaria, we need to refer, and the major concern is the transportation in fact. We don’t have an ambulance and patients need to go by their own means. Sometimes we call other health facilities and they are not available. We provide first aid but the patient has severe malaria and we need to refer to bigger health facilities”
(E11, Luanda)

Official policy regarding standardized practice for pre-referral drug administration was not found during the scope of this survey. While NMCP guidelines refer to the need of providing pre-referral treatment if the patient is further than 6 hours from sufficient severe malaria treatment, it was not possible to collect solid information of this practice as referral sheets were not kept on file.

7.3. Data collection and reporting

Accuracy of data reporting is essential to assess epidemiological trends but also has a major impact on how resources are managed and particularly on how procurement of supplies like drugs is conducted. This study assessed 6 months of reporting in the health facilities visited and identified key problems with data and the burden of severe malaria recorded in those facilities.

7.3.1. Accuracy of data reported on severe malaria

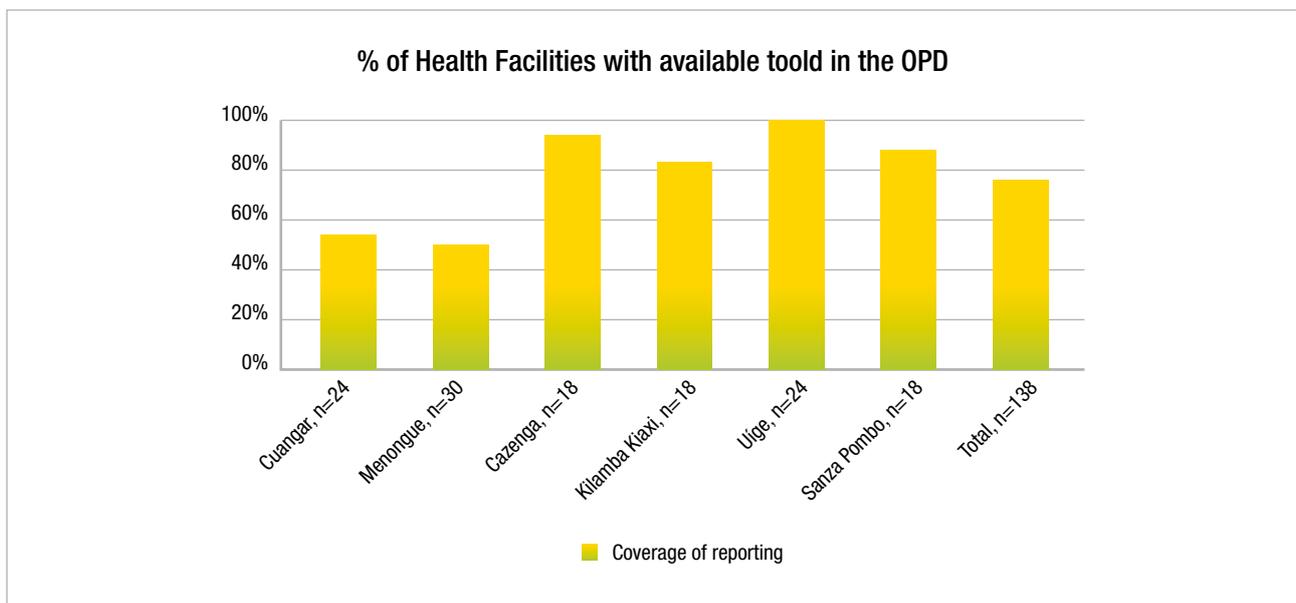
Malaria in Angola is reported through the HMIS system with forms completed at HF level. Those forms are aggregated at district level and sent to provincial and national levels. In parallel, NMCP implemented a malaria specific report form that compiles malaria related information only. The number of cases, number of hospitalizations due to malaria and deaths attributed per gender and age group are recorded in this form allowing data to be extracted from health facilities and register books. Extra data relative to anti-malarial stocks and malaria in pregnancy activities are also reported. The official number of malaria cases, hospitalizations and deaths attributed to malaria are those collected by NMCP and reported internationally. The NMCP report data is also the basis for quantification of drugs and other malaria supplies.

A critical finding from reviewing reporting systems for malaria is the absence of a specific severe malaria classification. NMCP assumes hospitalizations and deaths attributable to malaria as severe malaria but it is unclear how double counting is accounted for. For example, if a severe malaria patient is hospitalized and then ends up dying, the same case is theoretically counted twice as a severe case. The same may be happening with cases transferred between health facilities.

While reviewing reported data, it was possible to notice some calculation mistakes in reports produced. An example of this is attached as Annex VIII. While a formal Data Quality review exercise was not performed, it was clear that several mistakes occurred in data reporting.

Besides inaccuracies in the reporting, there are also reporting gaps. Using the same sample of health facilities surveyed, it was noted that only three quarters of all required reports were submitted in the past 6 months (see Figure 9). Health facilities from Cuangar and Menongue were the ones providing fewer reports, which again, as discussed above, may be related to distance and inaccessibility of these rural health facilities. High reporting rates in Uíge are likely to be tied to the partner support for Malaria programs in this province.

Figure 9. Proportion of monthly malaria reports submitted



The figures presented raise several concerns about the real severe malaria figures reported in Angola. While the duplication problem reported above may account for some bias, the lack of reporting may result in an underestimation of the real severe malaria problem in Angola. This concern was reported by some of the interviewees.

“They don’t send the reports. Because of the distance. They only send it two or three months later. You only get the malaria cases from the headquarters because in the other health facilities... there is no transport to get those”
(IDI 4, Cuando Cubango)

“At least half deliver the reports. I have major problems with Rivungo. I can’t receive their reports except the health facility in Rivungo headquarters”
(IDI 5, Cuando Cubango)

Mistakes in reporting are also attributed to other factors like inaccuracy in malaria death classification (overreporting of cases), inaccessibility to health care (underreporting), lack of means for reporting (underreporting) and non-reporting of malaria cases and severe cases from private facilities (underreporting).

“Only 50% of people have access to health care. So those who don’t have access also have malaria and end up dying from it. It is underestimated. There must be more.”
(IDI 11, Luanda)

“We had some problems with diagnosis that were confused with malaria and all deaths were attributed to malaria”
(IDI 5, Cuando Cubango)

“There are no death audits. A lot of cases of severe malaria are not severe malaria but something else that is not reported as something else”
(IDI 11, Luanda)

“It is the data. There is little information as they report only measures intra hospital lethality attributed to malaria. There are many deaths that you don’t even know that happen because they don’t happen at health facility level”
(IDI 11, Luanda)

“Because they may want to do the report but they don’t have the template. Some of them pay themselves to [make photocopies of] the report”
(IDI 5, Cuando Cubango)

“There are private clinics that receive severe malaria cases. That data goes unnoticed and are not in the reports. We don’t know how many die there”
(IDI 5, Cuando Cubango)

Finally, a recommendation is made to try to improve malaria reporting in order to overcome some of these problems:

“I believe we could possibly study the possibility, without increasing the report too much, of getting more data on severe malaria and its treatment”
(IDI 11, Luanda)

7.3.2. Burden of severe malaria

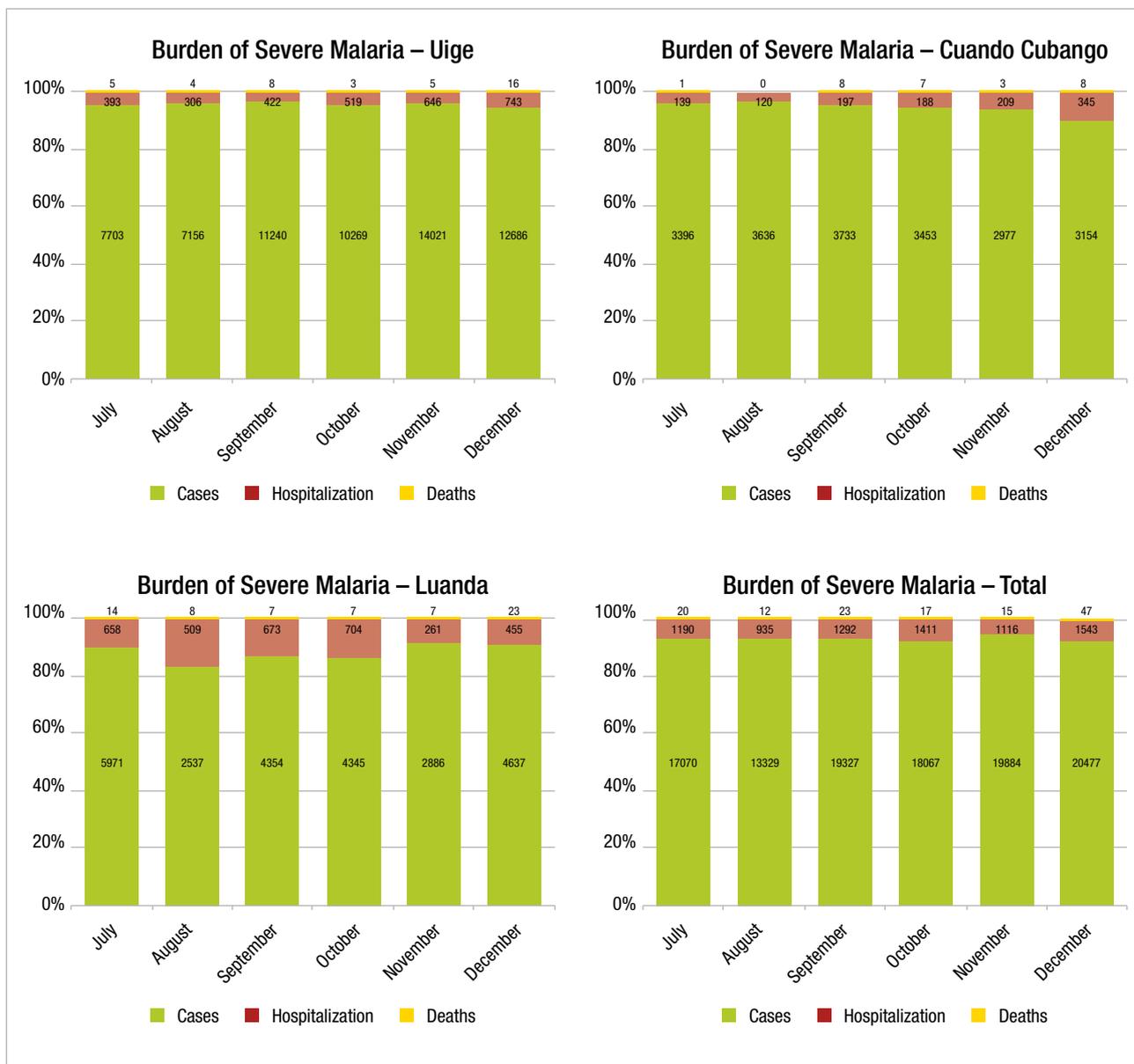
This study collected data on uncomplicated and severe malaria cases to try to provide a picture of severe malaria case burden in the health facilities visited. Data presented below should be seen carefully as it represents a convenience sample and may not be representative of the real burden in each of the provinces. As per NMCP guidance, severe malaria cases are represented by the sum of hospitalizations and deaths attributed to malaria. The proportion of severe malaria cases is then calculated by dividing the deaths and hospitalizations attributed to malaria by the total number of malaria cases reported in each month.

16. Programa Nacional de Controlo de Malária. (2019). *Dados Epidemiológicos anuais de Malária em 2018*.

When looking at data, Luanda appears to have a greater proportion of severe malaria cases (average 12%) throughout the six months in analysis (Figures 10 to 11). In Uíge and Cuando Cubango, the proportion of severe cases were lower at 7% and closer to the national average in 2018).¹⁶

This difference may be accurate, or it may be a result of the data quality issues abovementioned, including gaps in reporting coverage and malaria misclassification.

Figure 10 to Figure 11. Proportion of severe malaria cases in the past 6 months in the health facilities visited during the survey



7.4. Community level health care seeking

Case management of severe malaria cases at community level is done by CHWs also known as ADECOS. The ADECOS program is managed by Ministry of Land Administration and integrates several components of which health is also part. Therefore, in theory, ADECOS are not health workers but community workers who also provide health care. In practice, most of the active ADECOS (past and present) exist because health programs support them. Malaria related programs have been the main source of funding for these programs. Due to the end of some funding cycles, some ADECOS stopped working formally even if some are still providing health care to their communities.

In this section, we present data from interviews done with ADECOS and community members (mainly FGD with women) to better understand the key bottlenecks at community level for access to health care.

7.4.1. Community level case identification constraints

ADECOSs are recognized by communities and program managers as a key “tool” in malaria control. The fact that ADECOS can test and treat malaria at community level is seen as a major advantage to ensure quick treatment and avoid progression of disease. At community level, when supported, ADECOS are trained to test and treat for malaria in children under 5 only.

The main finding regarding case identification of malaria at community level is that it has been compromised by the breakdown of the ADECOS programs in Angola. Most focus groups participants complained about the lack of support provided to ADECOS in their communities reiterating the importance of the ADECOS for the health of their communities. The main complaint was about the lack of drugs, the age restrictions imposed to ADECOS work and the insufficient number of ADECOS for the population served.

“What they should really do is to increase the number and the support to ADECOS”
(FGD 15, Uíge)

“ADECOS spend long period of time without drugs. They have to save people, when someone is sick, goes to ADECO house and he doesn't have the drugs”
(FGD 1, Cuando Cubango)

“ADECOS are insufficient because the neighbourhood here is very big, with a lot of population. When you have 50 or 60 children sick, existing ADECOS are not enough”
(FGD 16, Uíge)

Similar constraints were reported by KIs who regret the end of ADECOS program in their areas of work.

“After the end of the contract, we went to misery again. ADECOS became demotivated”
(IDI 2, Cuando Cubango)

“Since 2019 cases started to increase because ADECOS are no longer working”
(IDI 3, Cuando Cubango).

At community level ADECOS are only able to test and refer severe cases. They are not entitled to provide ARC as pre-referral intervention. Referral of these patients faces the same barriers reported above regarding distance and inaccessible roads (see Referrals section).

7.4.1.1. Community perception of malaria as a health problem

Despite the almost non-existent support to community health workers to ensure prompt malaria testing and treatment, this disease is still perceived as one of the main causes of morbidity and mortality.

“The disease that is killing a lot here is malaria”
(FGD 12, Cuando Cubango)

“Children are really overwhelmed with malaria. As we are talking, we have one there lying on the bed. He is not making it. He is in the health post, but is not improving”
(FGD 23, Uíge)

7.4.2. Community level health care constraints

Several community level factors were identified as constraints to health care seeking. Some were previously raised in other sections and can be grouped into two main themes:

a. Financial Constraints:

- Financial incapacity to buy drugs externally when stock outs are frequent in public health facilities;
- Lack of financial capacity to pay for transport either to seek care or to ensure transfer for severe cases;

b. Logistical constraints:

- Long distances to health facilities.
- Inexistence of transportation and/or poor road network

The analysis also revealed other potential factors that may be hampering quick and effective health care seeking for malaria cases. A clear association between inefficient management of uncomplicated malaria cases and the progression to severe malaria cases was identified several times:

“We need to start at the basis, we can't let uncomplicated cases become severe because all severe cases were once uncomplicated”
(IDI 8, Luanda)

“Malaria death doesn't happen suddenly. You only get there if the uncomplicated case is poorly managed. This requires a lot of attention from family and community members”
(IDI 11, Uíge)

It is important then to identify the key factors that may be intrinsic to communities and may be hampering adequate and quick care seeking. We grouped some potential factors below

c. Lack of knowledge/schooling level

“The population doesn't know how to read, they don't get information, don't understand Portuguese. Population is limited in understanding and solving problems”
(IDI 1, Cuando Cubango)

“We have a great number of illiterate people, unemployed which contribute for people lack of knowledge to have a healthy life”
(E9, Luanda)

d. Negative perception of health care provided in public health services

Several complaints were presented in regard to the services provided in public health facilities. Complaints referred to delays in getting a consultation, staff absenteeism, limited HF working hours, lack of care/humanization in services provided, drug stock outs, overall perception of health care being of poor quality/ineffective and demand for patients to pay for services provided. Below we present some of the statements made by interviewees on these subjects.

“The nurses in this health post. their behaviours... they should behave. Some days they work but sometimes nothing, nothing, nothing, really nothing. They stay in their wives houses only”
(FGD 14, Uíge)

“if there were regular inspections, [the nurses] would not leave at 10/11AM. At that time of the day they are closing the health post already”
(FGD 6, Cuando Cubango)

“But regarding the service, people should be more human. About the nurses, I don't know if they should make psychological tests to assess the human capacities you should have to take this job”
(FGD 15, Uíge)

“After giving you treatment, you don't get better. Either the product is not good, or disease is knocking at your door again... we don't know how to explain”
(FGD 25, Uíge)

“There, when you want drugs you need to bring cash. To see you, even for test... money. This is inside the hospital!”
(FGD 20, Uíge)



e. Late health care seeking behaviour

- Seeking of care from other providers first (private providers and traditional healers);
- Sociocultural and related financial constraints: identified as cultural and social practices that are related to daily processes that end up affecting prompt health care seeking. This includes the need to work to ensure income; leaving children in charge of other children, financial “options”: investing in food instead of health care.

“People need to go to work in the fields everyday to have food at home and delay seeking health care, [...] so sometimes they get late, they get too late at health facility”
(IDI 11, Luanda)”

“Another issue... the social problems... Mother went to work, father went to work, they leave the child alone at home. If the child has fever, they give paracetamol, go to work and when they are back the child is already 40° of temperature and is much more serious than it was in the morning”
(E23, Uíge)

“We have seen children as patients’ company. When we ask where the mother is, went to earn money. Father... same. But when it gets worse, they call them, they run back home and arrive to our services late”
(E22, Uíge)

“Sometimes children are left abandoned with other children. The mother works for a week in the fields and when she arrives it is already too late”
(IDI 12, Uíge)

“So the mother is given the prescription... it is a problem. They prefer to buy some fish to eat in that moment because they can’t afford to buy the drugs. The money is not enough” (E6, Cuando Cubango).



8. Discussion and Recommendations

The following discussion and recommendations are separated according to the key aspects of this study, with specific recommendations for each area.

8.1. HW Distribution, Knowledge and Practices

Results from this assessment confirm the unequal distribution of human resources in Angola, with the highest number of staff and most qualified staff more likely to be placed in Luanda. In the national health strategic plan (2012-2021), the MOH in Angola acknowledged this problem by stating that “the nation’s primary healthcare network consists of 674 GPs, 108 senior nurses, 5367 technicians and 15933 basic staff. To be noted is the great lack of GPs and technicians”.⁵ In a report from 2019, an assessment also stated that most medical doctors (nearly 85%) were based in Luanda.¹⁷ This unequal distribution places constraints on health care provision and is particularly concerning when ensuring provision of adequate severe malaria care which requires qualified and trained staff. The lack of sufficient staff was referred to several times as a constraint to ensure care provision but also highlighted as a potential factor undermining the quality of care.

17. Partnership, Q. (2019). *Targeting Sources of Malaria Infection in Southern Angola*.

18. Initiative, P. M. (2019). *Malaria Operational Plan FY 2019*.

In regard to staff training and capacity, the first problem identified is the poor quality of nurses. There are many nurses with only technical level training (middle-school), and many nurses classified as adapted nurses, which in practice means that they are health professionals who have never received formal medical training. This poses clear challenges for malaria case management, particularly for preparing and administering Inj AS. Specific training content may be designed for this particular level of workers – or those facing problems in understanding artesunate dosing - to ensure severe malaria cases are properly handled.

Secondly, and more specifically, the data demonstrates that specific severe malaria training is scarce and not reaching many front-line HW. Furthermore, even refresher trainings on uncomplicated malaria management, which can help prevent the development of severe malaria, are not commonly conducted. Malaria-specific health trainings are highly dependent on partners and their program and funding priorities, which explains the higher proportion of doctors and nurses trained in Uíge which has been targeted for case management trainings since 2011.¹⁸ Current curriculum used for training in Uíge includes a 3-day training for nurses on overall malaria case management, with a specific module for severe malaria and a 1-day refresher training for Doctors with specifics on severe malaria treatment; regular on-the-job supervision of trained HW and HF is also conducted. The results of this study showcase the importance of training and post-training supervision as the HW who were able to correctly identify the 6 steps for artesunate preparation had received SMCM training within the last 2 years.

8.2. Case Management Guidelines Display and Use

The assessment of health facilities demonstrated that job aids and treatment charts at HF level were frequently not available. These tools are not distributed *en masse* by the NMCP but are provided once only during training. This partially explains the better results seen in Uíge health facilities – a province targeted for trainings in the past 2 years (2018-2019). Another reason for the lack of tools available and displayed may be related to a common practice reported during interviews: the trainees that attend the training tend to keep materials with them and not share them with the HF; lack of “cascade training” by staff who participated in the training was also identified. Job aids such as the artesunate preparation chart are accessible, and extremely helpful to frontline staff, especially those without specialised or recent training. Therefore, it is urgent to ensure a massive scale up of these tools across all health facilities in Angola. Pathways for tool distribution could be during routine supervisions or as part of a drug distribution package.

Furthermore, this study confirmed that HW in public sector health facilities were not fully compliant with severe malaria treatment guidelines. Through patient file review, it was possible to check several treatment practices that require urgent change. Mass training of HW on severe malaria treatment should be planned using different tools and approaches to allow continuous access to training content. Online training platforms for example may not be useful in remote settings but may constitute a good resource to ensure continuous availability of training tools to a vast majority of HW in urban places. Digital training platforms on tablets, which do not require telephone or internet signal, may be a potential option for rural areas.

Although public health facilities formed the focus of this study, adherence to treatment guidelines was identified by interviewees as a problem in private facilities. Concerns have been previously raised about practices in private sector regarding antimalarial treatment.¹⁹ In fact, there is no national policy on private sector case management for malaria. Antimalarials of all kinds—including monotherapies and drugs for severe malaria—are available in private outlets.¹⁸ This poses a clear constraint to guaranteeing adherence to guidelines; in addition, as there is no data on severe malaria cases reported by private providers the complete understanding of severe malaria epidemiology in Angola is lacking. Previous projects have attempted to integrate and work alongside private providers to ensure adequate diagnosis and treatment of malaria.²⁰ A clear private provider engagement strategy should be established to ensure compliance of these providers with NMCP guidelines for the treatment and reporting of uncomplicated and severe malaria.

Case management guidelines exist in Angola and are updated to current WHO standards. While reviewing one of the job aids (Portuguese version of artesunate job aid), an omission was identified in the translation. While the English version recommends dividing the IM doses of more than 2 ml over different sites for babies and over 5 ml for adults, the Portuguese version states “Divide doses superior to 5 ml in different sites”. While guidance on the translated job aid may not be precise, workers on the ground consistently stated they would always distribute the dose to two injection sites, in babies as well as in adults. It is recommended to review and align the Portuguese version with the English original version.

19. Mula, M., Gazin, P. (2017). Les médicaments antipaludiques disponibles dans la ville de Cabinda (Angola) en 2016. *Bull. Soc. Pathol.*, 110, 260–264.

20. Cristina Lussiana, Marco Floridia, Joana Martinho do Rosário, Filomeno Fortes, R. A. (2016). Impact of introducing subsidized combination treatment with artemether-lumefantrine on sales of anti-malarial monotherapies: a survey of private sector pharmacies in Huambo, Angola. *Transactions of The Royal Society of Tropical Medicine and Hygiene*, 110(10), 588–596.

8.3. Severe Malaria Diagnosis and Treatment

National treatment guidelines clearly state which criteria should be used for diagnosis of severe malaria. The presence of a positive malaria test plus one danger sign of severe febrile illness should be enough to classify a case as severe malaria. This study demonstrated that the additional signs identified by interviewed HW were based on physical observation and not on laboratory findings. This is likely to be related to the observed reduced laboratory capacity, particularly at lower levels of the system. In a positive conclusion, the vast majority of interviewed HW were able to identify the most common danger signs of severe malaria. However, improved training on severe malaria would help to improve HW knowledge and ability to more effectively and accurately diagnose patients with severe malaria, especially those with less common additional signs.

Regarding treatment, the most important finding was the sub-standard use of artesunate for severe malaria. While the recommendation to use Inj AS for severe malaria started in 2014, reasonable scale up of its distribution and use appears to only have begun in 2018. The use of artemether is stated by HW and verified through clinical process review to be the most frequently used drug for severe malaria

treatment. This may be related to the understood – but not written – recommendation that IV artesunate is recommended in facilities able to administer IV medications but in lower level facilities, IM artemether should be used.¹⁸ Such recommendations should be discussed and written to be shared with HW to clarify the use of each drug in each scenario. This assessment also found significant knowledge gaps related to the preparation of Inj AS. The calculations required to ensure correct dosage was a factor for reduced adherence to this drug as reported by some KIs. Besides training, it may be useful to design/produce some tools like “cardboard dosage calculators” to help in calculations and reduce the errors. A functional example observed in the field that could be considered as a model for distribution is available in Annex VIII, Image 9.

Several mistakes were found in drug administration when reviewing clinical processes. Double severe malaria therapy (artemether and artesunate), intermittent severe malaria treatment (see Annex VIII, Images 1,2 and 3), continuing parenteral treatment and not using ACT even when the patient is able to eat were found in some clinical registers. These practices clearly reflect the need of adequate training on SMCM. New training approaches should be discussed to ensure massive scale up of training while at the same time ensuring adequacy of content to staff learning capacity. In particular, specific content for referrals should be developed and provided. As only doctors and graduated nurses can administer injectable drugs, a good proportion of front-line HW need to be aware of what to do prior to referral. These are, generally, those with lower qualifications and in greater need of adapted training content.

There are no clear guidelines as to when and why HW should use ARC. While some workers reported ARC use as a pre-referral intervention, some also mentioned the use of ARC as a treatment option due to the impossibility of refer patients. The lack of training provided to HW on the use of this product has been recognized.¹⁸ Therefore, clarification of ARC guidelines and scale up of training on ARC should be planned, particularly for HW in remote areas. However, this study also revealed that the use of ARC at community level is not allowed. This was a controversial subject as some interviewees recognized that the availability of ARC could be a lifesaving last resource in remote settings. The same issue was also raised during the inception meeting. Whilst recognizing the need to ensure the ADECOS network is functional for uncomplicated malaria cases before considering further interventions, a discussion about the use of ARC at community level should be held based on existing evidence. This discussion should take place in a technical working group where feasibility aspects like supervision, storage of ARC and referral pathways should also be agreed. Any conclusions should also feed into official guidelines and protocols for ARC.

Another conclusion to be drawn from the results of this study is that delays to be seen by a health worker may impact on disease prognosis. Average waiting times were quantified according to the health worker perception and the patient perception and it was obvious that these perceptions are quite different; the average wait time, if considered as the median point between HW and patient perceptions, was 39.5 minutes. In the case of severe malaria, particularly if there was a delay in healthcare seeking behaviour from the patient, this wait time is dangerously long. During the study, wait time was associated with staff scarcity and incapacity to cope with the volume of patients. This is particularly important in facilities with high volume of consultations done. While some informants associated these delays with the unprofessional behaviour of HW, including unreported absenteeism, and participants in FGD claimed there was no treatment priority for severe cases it should be noted that most health facilities have some sort of triage system in place. Nevertheless, improvement in HF triage systems would likely improve the outcomes for SMCM. This could include **some specific solutions for the immediate testing and treatment of malaria cases, particularly in under 5s, where disease may progress faster, and pregnant women.** Pilot projects such as “malaria green ways” where feverish children are tested upon arrival to the health centre could be adapted and tested as a potential solution.

8.4. Drug Supply Chain and Availability

Drug availability was one of the most recurrent issues raised by almost all participants in this study. PMI also identified the recurring delay in the distribution of malaria commodities and frequent stockouts in health facilities as the most likely factors contributing to the increase in the number of severe malaria cases and deaths in Angola.¹⁸

This study identified that drug quantification for distribution may be one of the root causes of stock outs reported for both uncomplicated and severe malaria drugs. Quantification is conducted based on the number of reported cases. If cases are not reported from a specific HF/district/province, then drugs are not quantified for those unreported areas. This method of drug quantification and distribution disproportionately affects those HF/districts with less capacity to send their reports on time, which are naturally those in more remote areas and, consequently those who *need more* regular supplies (as they cannot easily access alternative supplies from private sources or other health units). It is urgent to review the drug quantification system and develop a mechanism that accounts for gaps in reporting and adds a correction factor according to historical data, population data, and the submitted coverage of reports of each district/province.

In conjunction with the drug quantification issue abovementioned, there are also distribution gaps in ensuring uncomplicated and severe malaria drugs reach health facilities on time to avoid stock outs. In particular, the stock outs of uncomplicated malaria drugs reported by participants in this study are likely to be a sign of one of the root cause of severe malaria cases: patients unable to receive free uncomplicated malaria medications and without financial means to purchase the drugs privately will not be given any treatment, and the uncomplicated malaria will develop into severe malaria. Whilst the national to provincial distribution mechanism is relatively robust, the reverse is true in regard to provincial to district and district to HF distribution mechanisms. Distribution fails more routinely in remote and difficult-to-access health facilities; this was particularly evident in Cuando Cubango. Therefore, **the drug quantification mechanism suggested above should also consider supply-chain factors; it is recommended that revised distribution schemes are considered which would permit greater quantities of malaria drugs to be distributed less often to remote and difficult-to-access HF.** This is particularly important during the rainy season when many health facilities, and even entire districts, can become completely inaccessible by land routes during the peak of malaria transmission.

Finally, another aspect of drug procurement and distribution complicating the effective management of severe malaria cases is related to local procurement practices. Municipal governments are authorized to procure their own medical supplies which may be leading to procurement of sub-standard drugs for uncomplicated and severe malaria. The medical drug market is highly unsupervised in Angola, with the availability of unregulated brands and incorrect storage which compromises the integrity and quality of drugs. It is urgent to review local procurement processes and discuss and design two essential processes: creating a **list of credible suppliers and products/brands and increasing supervision and quality control of locally procured drugs.** The creation of specific guidelines for malaria drug procurement could also be an extra support for municipal governments procurement of quality drugs.

8.5. Data Quality

Malaria surveillance and monitoring and evaluation system and practices in Angola have significant issues which compromise the quality and timeliness of malaria data, with flow-on effects for drug quantification and supply (as discussed in section 8.4). In an assessment conducted in 2018, E8 found that nearly 35% of malaria reports had calculation mistakes, only 25 % of health units had sent their 12 monthly reports in the previous year and that up to 70% of HF surveyed faced report template stock outs.²¹ These findings are in line with the results of this assessment and reinforce the need to strengthen the surveillance system to ensure accurate and timely data reaches main decision makers, especially in order to permit improved drug quantification and distribution. The lack of accurate data has a distinct impact on uncomplicated and severe malaria drugs supply chain and therefore treatment. Regarding the epidemiological situation in the country, inclusion of private sector data is also essential to have a better understanding of the true malaria burden and understand the real share of malaria cases (uncomplicated and severe) that are treated in private facilities.

21. E8. (2018). *Avaliação da Capacidade de Vigilância das US no sul de Angola Resultados preliminares.*

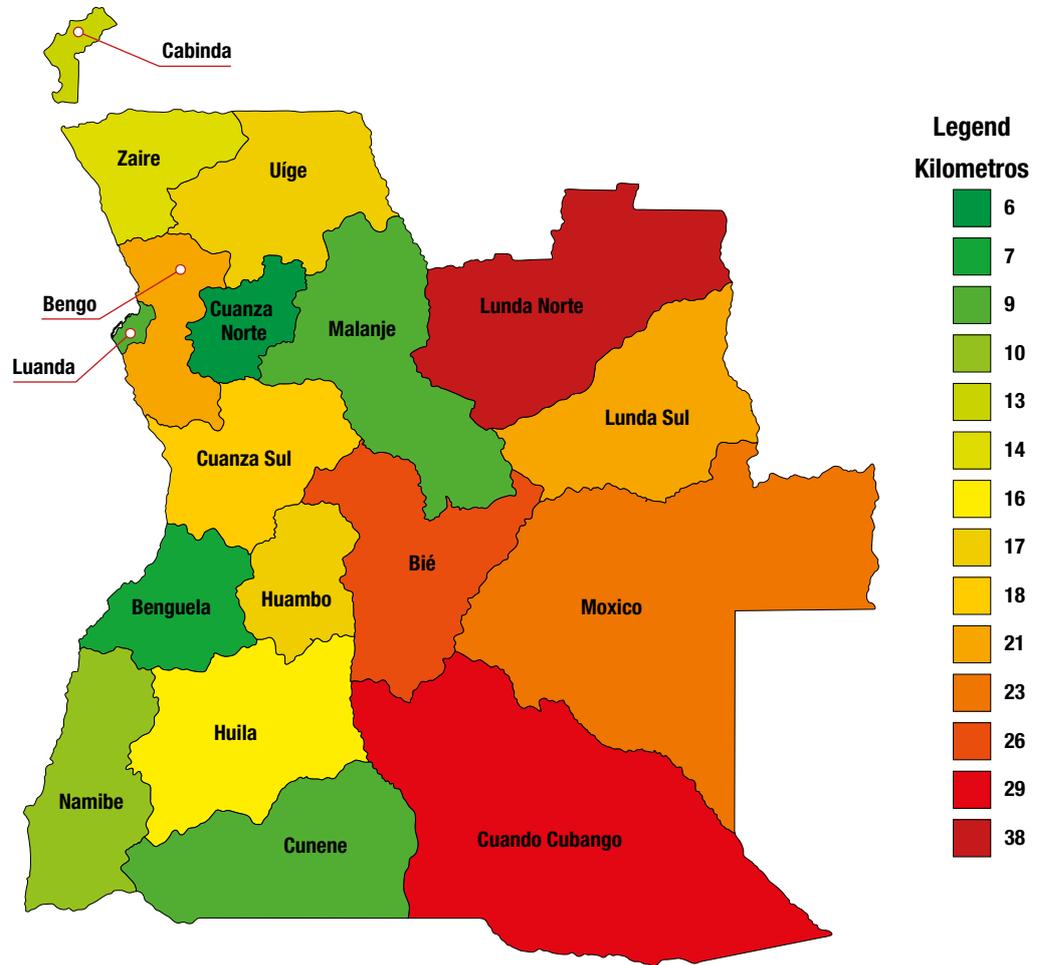
Furthermore, the current design of the malaria reporting form has the potential for users to duplicate, miscalculate or omit relevant information. Most importantly, there is no specific severe malaria classification – severe malaria cases are calculated by using the proxy indicators of hospitalization and death figures, creating the possibility of duplication of cases as well as incorrect classification. The field review of malaria reports submitted by HF also identified calculation errors in the number of cases (many users added positive cases and negative cases to calculate total cases). The E8 assessment abovementioned also found that up to 60% of HW surveys considered the malaria reporting form to be too long.¹⁵ Based on these findings, it is important to revise reporting templates and reporting flows to improve data quality, availability and improve drug quantification calculations.

8.6. Community Practices, Perceptions and Behaviours

This study demonstrated that many health seekers demonstrated delayed care-seeking behaviour and had a poor perception of HF and HW quality. It has elsewhere been reported that delayed care-seeking behaviour and stockouts of severe malaria treatments may have contributed to the increase in reported malaria-related deaths in Angola.¹⁸ Delayed care-seeking behaviour has more than one root cause, those identified in this study by interviewed subjects and focus groups include: logistical constraints (distance to HF), financial constraints (for payment of transport, medications during stock-outs, and bribes to HW), and negative perceptions of HF and HW quality. In-depth interviews also identified lack of education/illiteracy as a potential factor in delayed care-seeking behaviour.

The distance to health facilities and possibility of stock-outs may be the most pivotal factors identified for delayed care-seeking. In Angola, it is estimated that nearly 50% of the population does not live within 5km distance of the nearest HF¹⁵, and the majority of respondents in this study confirmed that they walk to the HF for treatment. Data from the Government of Angola demonstrates that populations in Uíge live an average of 17km from the nearest HF, and in Cuando Cubango this figure increases to an average of 38km (Figure 11). Respondents also frequently referred to the lack of free medications at the HF as a reason not to make the effort to travel there, as they cannot afford to purchase retail medications. With a scarce HF network, identified gaps in transport and stock outs, particularly in rural areas, it is essential to plan for other mechanisms to ensure health care availability to these communities which would permit a change in care-seeking behaviour. Community health workers may offer a remedial solution; however, careful planning and implementation is required to ensure that practices are aligned with ADECOS programs and healthcare safety and quality is assured. Within this analysis, it may be worthwhile to consider how traditional healers can be integrated into community-based solutions. Respondents identified that health care seeking with traditional healers and using traditional remedies is common. An assessment should be conducted to evaluate the possibility of utilising tradition healers as ADECOS, to understand if they would be willing to adopt formal standards of care for treating malaria.

Figure 12. Average distance to access a health facility. Source: GEPE/MINSA (2013)



At community level, it was also verified that some of the constraints to prompt health-seeking at health facilities are related to a perception that services provided are of poor quality. Aside from the lack of free drugs at HF due to stockouts, addressed above, respondents also referred to the absence of HW during work hours, lack of humanity (kindness) of HW toward patients, and the need to pay bribes to be seen by HW. Similar findings were also found in a survey conducted in Angola in 2011, which found that a significant proportion of the population in Luanda and Uíge were not using the nearest HF due to drug stock outs (35%), absent HW (29%), and reported poor quality of service (27%).²² An important point raised by several KIs in this study was that the overall low level of schooling/illiteracy of many Angolans may be another key factor in health care seeking behaviours. While information campaigns are a method to overcome these challenges, messaging should be designed and tailored to local languages and contexts to ensure the message reaches the target audience. However, effective messaging will not change behaviours if the key issues affecting delayed care-seeking behaviour, distance to HF and lack of free medications, are not addressed.

As stated above, community health workers may be a potential solution to increase the reach of malaria testing and treatment and thereby reduce deaths from severe malaria. Their acceptance by communities is well documented and is mostly justified by the proximity they have to their end users.¹¹ The nature of support provided to these workers and their scope of work needs to be clearly defined to avoid problems such as those identified at HF level during this assessment, including program disruptions, drug stock outs, lack of training and lack of supervision.

22. Mona Froystad, Ottar Maestad, N. V. (2011). *Health services in Angola: Availability, quality and utilisation.*

8.7. Recommendations

As a result of this study, 10 specific recommendations have been made, namely:

- I. Clarify, formalise and share to all HF drug use recommendations by different level health workers and different level health facilities
 - a. Reinforce the use of Inj AS as first-line severe malaria treatment
 - b. Clarify rectal artesunate protocols (who can administer and where)
- II. Provide malaria case management training, including a module on SMCM, to all HW every 2 to 3 years
 - a. Include a module on referrals, stipulating precisely what lower level health professionals should do in case of severe malaria case
 - b. Plan for the scale up of training on rectal artesunate, particularly for health workers in remote areas.
 - c. Develop specific training packages for “lower level” health professionals (adapted nurses, nurse assistants, technical nurses) to improve the ability of front-line health staff to identify and provide pre-referral intervention of severe malaria cases
 - d. Develop digital training packages (online and offline) to support continuous training of urban and rural HW
- III. Conduct regular on-the-job supervision of HW malaria case management in all HF, to ensure the correct application of training
- IV. Distribute malaria guidelines and job-aids to every HF
 - a. Develop a visual aid/assistant for Inj AS dosage calculation
 - b. Align all protocols and tools with the original non-translated versions
- V. Review HF triage systems and produce triage guidelines including specific advice and protocols for malaria testing and treatment
- VI. Develop a private provider engagement strategy to ensure adherence to guidelines and reporting of cases
- VII. Review the drug quantification system
 - a. Develop and implement a mechanism that accounts for gaps in reporting and adds a correction factor according to historical data, population data, and the submitted coverage of reports of each district/province
 - b. Review the drug distribution scheme, adapting protocols to provide greater quantity of drugs at key periods for remote/hard-to-access areas HF/districts
- VIII. Develop formal protocols for local drug procurement
 - a. Include national guidelines for supervision and quality control, list of credible suppliers, acceptable brands etc
- IX. Review and improve malaria data systems
 - a. Revise reporting templates to include severe malaria indicator, reduce calculation errors
 - b. Develop mechanisms to improve reporting timeliness
 - c. Develop mechanism to incorporate private sector data
- X. Strengthen community level health services and transport mechanisms to facilitate referrals
 - a. Develop guidelines to permit that ADECOS are able to treat severe malaria in specific regions
 - b. Assess possibilities for the integration of traditional healers into ADECOS program
 - c. Assess the viability of training on severe and uncomplicated malaria for private pharmacies in rural areas
 - d. Ensure that health information campaign messaging is conducted in local languages and adapted to local contexts, include information about signs and symptoms of uncomplicated and severe malaria
 - e. Discuss and design transportation solutions to support referrals adjusted to country road network and distances

9. Assessment Limitations

This assessment design has intrinsic limitations. The use of convenience sampling method limits the extrapolation of results to the entire country. Angola is quite diverse, and conditions change significantly from one province to another. However, the study was designed with the use of mixed methods to bring robustness to the results presented, given that data triangulation showed similar results obtained through quantitative and qualitative methods.

Information bias or subjectivity may have been present during the application of interviews, focus group discussions and questionnaires. A prime example is the difference in reported waiting times as perceived by different stakeholders. By collecting data from different sources and through different methods it was possible to minimize this bias through the comparison of results and perspectives of different players involved.

The research teams faced some logistical constraints to access certain areas. Some initially planned health facilities were simply not accessible by road at the time of the survey and had to be replaced by others, resulting in a slight difference in the selection criteria used (originally number of reported severe cases of malaria).

To minimize information bias (from the data collectors), a training was held, practical exercises were also performed, and a pilot survey of one HF was conducted. Data collectors were supervised in the field to ensure consistency in methods used, however, data collection bias cannot be fully excluded as several teams were conducting collection at the same time.



10. Annexes

- Annex I  Health Facility Tool
- Annex II  Community Health Worker Tool
- Annex III  Focus Group Discussion Tool
- Annex IV  In-dept Interview Tool
- Annex V  Study Information and Informed Consent
- Annex VI  Ministry of Health endorsement letter
- Annex VII  Inception meeting participants
- Annex VIII  Images
- Annex IX  NMCP Malaria Guidelines

