CAMBODIA

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FEVER DIAGNOSTIC PRACTICES

PATIENT FLOW

PATIENT FLOW FOR INITIAL FEBRILE ILLNESS DIAGNOSTICS

RURAL		100 PATIENTS		URBAN
~80				~20
~25	PUBLIC		PUBLIC	~9
~18		VMWs/MMWs		~0
~2		HEALTH POSTS		~0
~4		HEALTH CENTERS		~8
~1		OUTPATIENT UNIT HOSPITALS		~1
~55	PRIVATE		PRIVATE	~11
~13		UNQUALIFIED PROVIDERS		~5
~40		PRIVATE GPs / CLINICS		~5
~2		PRIVATE HOSPITALS		~1
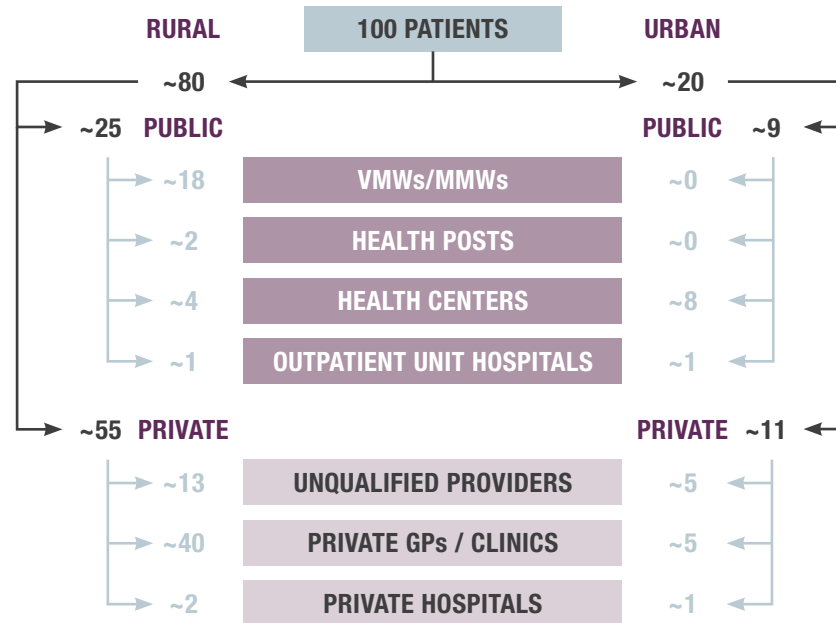
COMMENTS

We have observed many variations around the patient flow within various reports. This might be explained by:

- the age of the data, patient flow might have evolved over years
- the scope of the data (malaria services vs others)
- new regulations forbidding private sector to perform some services

We estimate that ~50% of febrile patients are going (directly or after referral) to the health centers/health posts (HC/HP) or through the Village Malaria Workers / Mobile Malaria Workers (VMWs / MMWs) to be treated.

The public sector is dominant in major communicable disease control

- In 2016, PMI reports that 57% of febrile patients were diagnosed by VMWs

- VMWs, MMWs and private providers refer to referral hospitals/ former district hospitals (RH/FDH) for severe malaria patient or suspected treatment failure and to HC/HP or RH/FDH for uncomplicated pregnant women in 1st trimester
- HC/HP refer to RH/FDH for severe malaria patient or suspected treatment

While private practitioners are the main health service provider for curative care,

- a recent World Bank study found that in rural areas 65% of patients sought primary care through the private sector, 20% in the non-medical sector and 15% in the public sector
- private outlets only provide treatment for uncomplicated malaria among people older than 5 years old and non-pregnancy, all others are referred to the MoH facilities

> Most patients with febrile symptoms would go or be referred to the public sector

Note: (*) These numbers do not take into account referrals' patient. Sources: Interviews, Advention

FEVER AND MALARIA DIAGNOSTIC ALGORITHM AND PRACTICES

DIAGNOSTIC GUIDELINES

First-line malaria diagnosis at hospitals: Microscopy preferred

First-line malaria diagnosis at lower-level facilities and at community level through village malaria workers: RDTs

Type of RDT used: Pf + Pv-specific (Combo)

TREATMENT GUIDELINES

Treatment guidelines recommend directly observed therapy (DOT) until completion of treatment and Pf case follow-up to monitor treatment response with microscopy or RDT

First-line treatment of unconfirmed malaria: No treatment

First-line treatment of Pf: Artemether-lumefantrine; Artesunate+Mefloquine (AL; AS+MQ) or DHA-Pip with single low-dose primaquine (PQ)

First-line treatment of Pv: Chloroquine + Primaquine (CQ+PQ)

Treatment of severe malaria: Artemether; Artesunate; Quinine (AM; AS; QN)
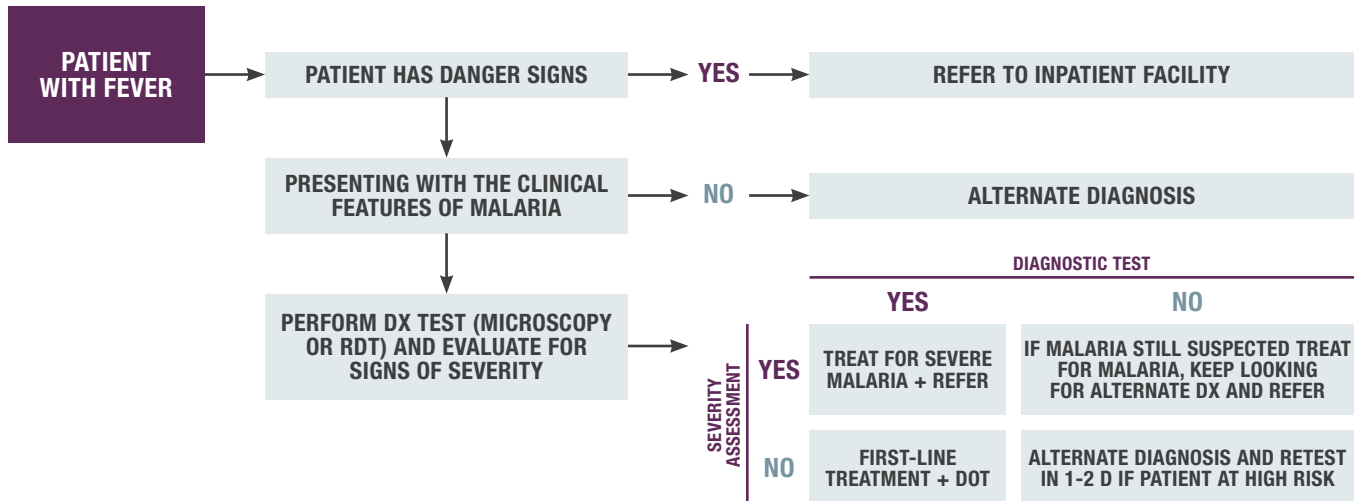
ADHERENCE TO GUIDELINES

Adherence to the national malaria treatment policy is not uniform among healthcare provider, in part due to a significant portion of suspected patients receiving treatment from the private sector without necessarily being tested

LEGEND

✓ FULLY ALIGNED

— GENERALLY ALIGNED

✗ RARELY OR NOT ALIGNED
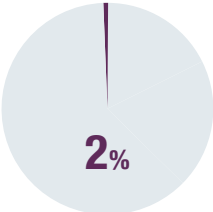
FEBRILE ILLNESS DIAGNOSTIC ALGORITHM

PATIENT WITH FEVER → PATIENT HAS DANGER SIGNS → **YES** → REFER TO INPATIENT FACILITY

PRESENTING WITH THE CLINICAL FEATURES OF MALARIA → **NO** → ALTERNATE DIAGNOSIS

PERFORM DX TEST (MICROSCOPY OR RDT) AND EVALUATE FOR SIGNS OF SEVERITY →

SEVERITY ASSESSMENT

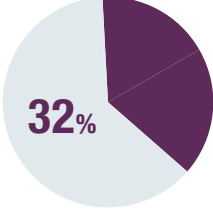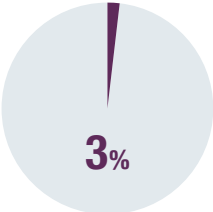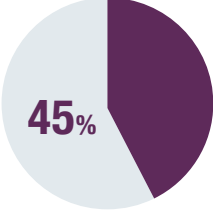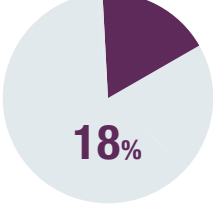|	DIAGNOSTIC TEST	
	YES	NO
YES	TREAT FOR SEVERE MALARIA + REFER	IF MALARIA STILL SUSPECTED TREAT FOR MALARIA, KEEP LOOKING FOR ALTERNATE DX AND REFER
NO	FIRST-LINE TREATMENT + DOT	ALTERNATE DIAGNOSIS AND RETEST IN 1-2 D IF PATIENT AT HIGH RISK

The treatment guideline is designed to avoid further drug resistance with no treatment recommendation for unconfirmed malaria

The diagnostic algorithm is designed to avoid missing any malaria case as malaria presumption is still present with negative malaria results

Sources: WHO, interviews, Advention

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## MALARIA TESTING PRACTICES AT DIFFERENT HEALTH FACILITY LEVELS

HEALTH FACILITY		NUMBER OF FACILITIES	SHARE OF FEVER PATIENTS (EST.)*	PREFERRED MALARIA DIAGNOSTIC TOOL	LEVEL OF RDT USE (MALARIA DIAGNOSTIC)
PUBLIC	Referral hospitals (RH) / Former district hospitals (FDH)	~62	2%	Microscopy and RDTs	Medium / Low
	Health Centers (HC) / posts (HP)	~1,050	32%	Microscopy and RDTs	High
	VMWs / MMWs	~2,957		RDTs	High
PRIVATE	Private hospitals	~5	3%	Microscopy and RDTs	Medium / Low
	Formal private clinics, GPs and pharmacies	>2,824	45%	Microscopy and RDTs	High / Medium
	Unlicensed outlets and drug vendors	>1,700	18%	RDTs	Medium / Low

In both public and private settings microscopy is preferred when available, but it is not available in all facilities. RDTs are commonly used in Cambodia at the community level

Note: (*) Patients tend to consult first the private sector, and then the public sector if the patient condition deteriorates. Sources: interviews, MoH, Advention

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MALARIA TESTING PRACTICES

MALARIA TESTS PERFORMED
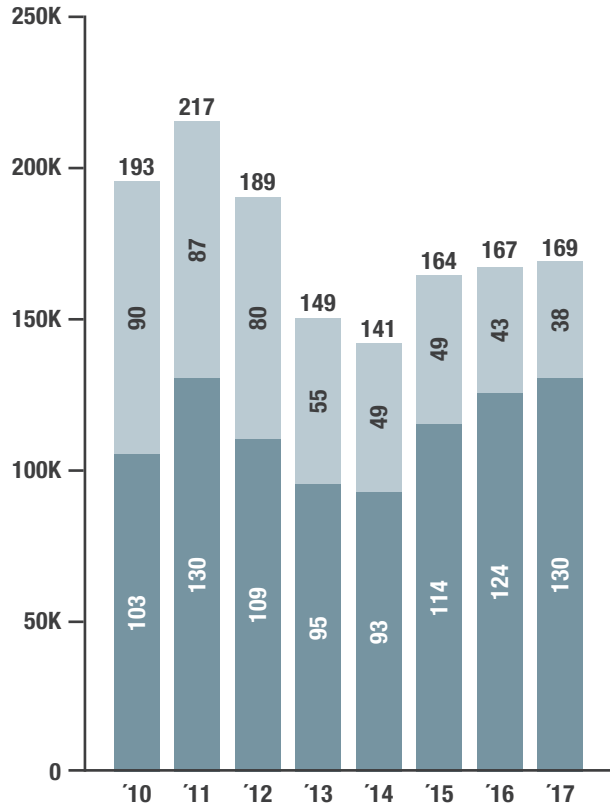
LEGEND
- RDTs
- MICROSCOPY

MOST RECENT IDENTIFIED MALARIA RDTs USED

SD Bioline Malaria Ag P.f. / P.v. POCT		
Pf-HRP2	$0.39 / test	Abbott
Any malaria with pLDH-pan	2.9M RDTs since 2013	

SD Bioline Malaria Ag P.f. / P.v.		
Pf-HRP2	~$0.35 / test	Abbott
Any malaria with pLDH-pan	~0.3M RDTs since 2013	

AccessBio CareStart™ Malaria HRP2/pLDH (Pf/Pv) Combo		
Pf-HRP2	$0.58 / test	ACCESSBIO
Pv-pLDH	0.4M RDTs since 2010	

Other products encountered in the public sector: First Response and Malacheck

Other products encountered in the private sector: Advanced Quality, Biotracer, First Response, Malacheck and One Step
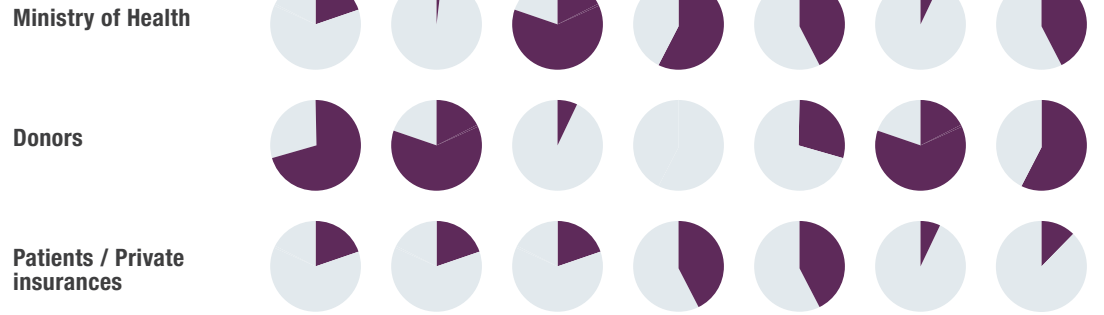
> Currently, malaria is mainly detected through RDTs

Sources: ACTWatch, WHO, USAID-PMI, Global Fund, Advention
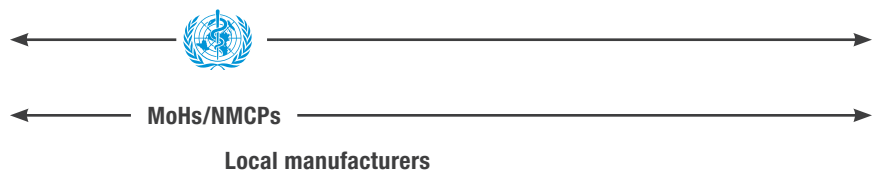
MALARIA RDT STAKEHOLDERS MAP

	VIET NAM	CAMBODIA	S. AFRICA	INDIA	PAKISTAN	MYANMAR	THAILAND

WHO IS PAYING FOR MALARIA RDTs?

	VIET NAM	CAMBODIA	S. AFRICA	INDIA	PAKISTAN	MYANMAR	THAILAND
Ministry of Health							
Donors							
Patients / Private insurances							

WHO IS SELECTING MALARIA RDTs?

	VIET NAM	CAMBODIA	S. AFRICA	INDIA	PAKISTAN	MYANMAR	THAILAND
Ministry of Health / NMCP	++ ★	++ ★	++	++	++ ★	++ ★	++ ★
Donors	+	++			++	++	++
Private sector	+	+	+	++		+	+

WHO ARE THE MAIN INFLUENCERS REGARDING MALARIA RDT SELECTION?

←──────────────────────────────→
MoHs/NMCPs
←──────────────────────────────→
Local manufacturers

LEGEND

★ HEAVY USE OF DONOR'S PROCUREMENT POOLING SYSTEM   ☆ USE OF DONOR'S PROCUREMENT POOLING SYSTEM

> Malaria RDTs are mostly financed by international donors, except in India, Pakistan and South Africa
>
> NMCPs are the key decision makers regarding RDT selection in all countries

Source: Advention

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MALARIA TESTING LANDSCAPE

		PRIORITY COUNTRIES*						
		VIET NAM	CAMBODIA	S. AFRICA	INDIA	PAKISTAN	MYANMAR	THAILAND
HEALTHCARE INFRASTRUCTURE	Population (M)	95	16	56	1,324	193	53	69
	Healthcare expenditures per capita ($)	115-120	65-70	84	60-70	35-40	55-59	217-225
	Health insurance coverage	~70%	–	~16% => NHI	~5-10%	~19%	Negligible	~98%
	Universal health coverage index	73	55	67	56	40	60	75
	Patients with fever being tested (%)**	80%	69%	82%	71%	68%	55%	83%
	Main distribution network	NIMPE	CNM	NDOH	State MoHs	Mix public/ private	NVBDCP/ CMSD	BVBD
MALARIA DIAGNOSTIC FUNDING & PROCUREMENT	Last year total malaria funding ($M)	16	20	24	226	38	78	21
	Share of government funding (%)	~18%	~3%	~100%	~73%	~58%	~8%	~40%
	Main procurement decision maker	NMCP	CNM/ UNOPS	NDOH / Malaria programme	National and state MoHs	GF / NMCP	NMCP/ PMI	NMCP
	Procurement concentration level	High	High	High	Low	Medium	Medium	High
MALARIA DIAGNOSTIC PRACTICES	Health facilities performing RDTs	Health posts	Lower level facilities	Lower level facilities	Sub-Health/ Primary HC	GPs, clinics	Lower level facilities, clinics	Lower level facilities
	Share of RDT in malaria diagnostic (% of patients)	~19%	~74%	~63%	~13%	~20%	~96%	~5%
	Community HCW RDT knowledge	Yes	Yes	Yes	No	Yes	Yes	Yes
	Quality management system performance	High	Medium	High	Medium	Medium	Low	High

NIMPE: National Institute of Malaria, Parasitology, and Entomology (also CNM); **NDOH**: National Department of Health; **MoH**: Ministry of Health; **NVBDCP**: National Vector Borne Disease Control Programme; **CMSD**: Central Medical Store Depot; **BVBD**: Bureau of Vector-Borne Disease; **NMCP**: National Malaria Control Programme; **UNOPS**: United Nations Office for Project Services; **GF**: The Global Fund; **PMI**: Project Management Institute

Notes: (*) Last available year; (**) As per Advention's assumption based on interviews (base case scenario). Sources: WHO, World Bank, GF, interviews, Advention