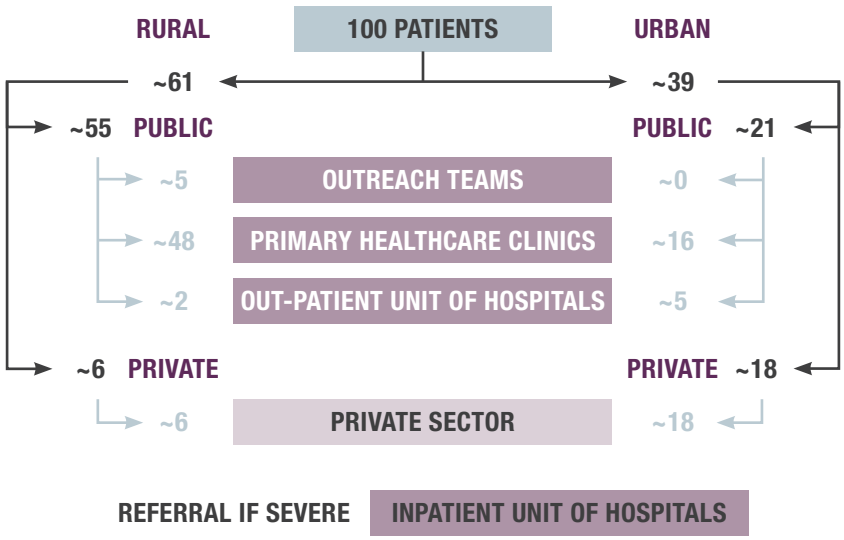
SOUTH AFRICA

FIND
Because diagnosis matters

FEVER DIAGNOSTIC PRACTICES

PATIENT FLOW

PATIENT FLOW FOR INITIAL FEBRILE ILLNESS DIAGNOSTICS



COMMENTS

In 2016 64.3% of patients reported to public PHC (Primary Healthcare) clinics as their first point of care, followed by private doctors (23.8%) and public hospitals (7.1%)

- Quality of care within the public sector, which varied in the past, is improving thanks to the ideal clinic framework." NICD, Medical Scientist
- "Even those who are served by the public sector, might go to the private sector. Poor working people might prefer to go to a private GP rather than waiting in the public sector." FIND, Head of South Africa

Malaria endemic areas are usually rural areas where private sector facilities are rare

- "In rural areas most people are going to the public sector when they have fever. At the opposite the private sector share could be up to 50% in Johannesburg even though people might also go at the hospital's outpatient units. But in malaria endemic areas most people would go to the PHC." CHAI, Southern Africa, Malaria Regional Manager
- "In rural urban areas it is not so easy to say that 50% go to the private sector. It would be mainly based on their income." NICD, Medical Scientist

Most patients with febrile symptoms living in malaria endemic areas would go to Primary Healthcare clinics as their first point of care

Sources: Interviews, Advention

FEVER AND MALARIA DIAGNOSTIC ALGORITHM AND PRACTICES

DIAGNOSTIC GUIDELINES

First-line malaria diagnosis at hospitals and malaria clinics: Microscopy

First-line malaria diagnosis at PHC clinics and for outreach teams: RDTs

Type of RDT used: Pf or Pf/Pan

TREATMENT GUIDELINES

First-line treatment of unconfirmed malaria:

First-line treatment of Pf: Artemether-lumefantrine; Quinine + Clindamycin (AL; QN+CL) or Quinine + Doxycycline (QN+D)

First-line treatment of Pv: Artemether-lumefantrine + Primaquine (AL+PQ) or Chloroquine + Primaquine (CQ+PQ)

Treatment of severe malaria: Quinine (QN)

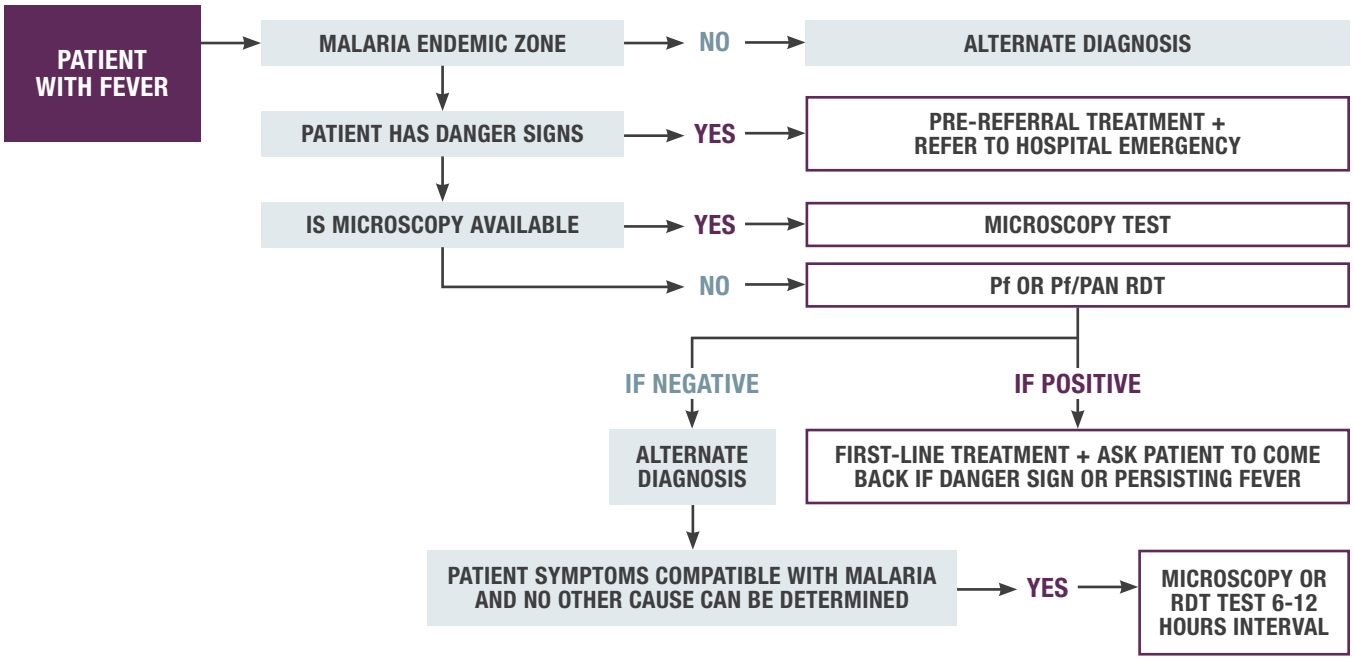
Treatment failure of Pf: Artesunate (AS) or Quinine (QN)

COMPLIANT WITH INTERNATIONAL GUIDELINES ✓

LEGEND

- ✓ FULLY ALIGNED
- − GENERALLY ALIGNED
- ✗ RARELY OR NOT ALIGNED

FEBRILE ILLNESS DIAGNOSTIC ALGORITHM

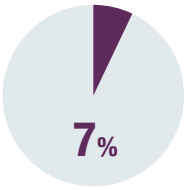
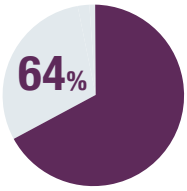
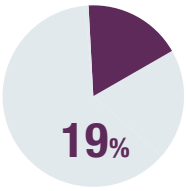
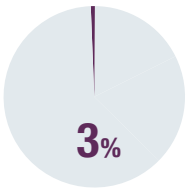
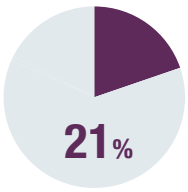


South African treatment guidelines are designed to limit further drug resistance development with no treatment recommendation for unconfirmed malaria

Diagnostic algorithm favors microscopy over RDTs wherever available

Sources: WHO, interviews, Advention

MALARIA TESTING PRACTICES AT DIFFERENT HEALTH FACILITY LEVELS

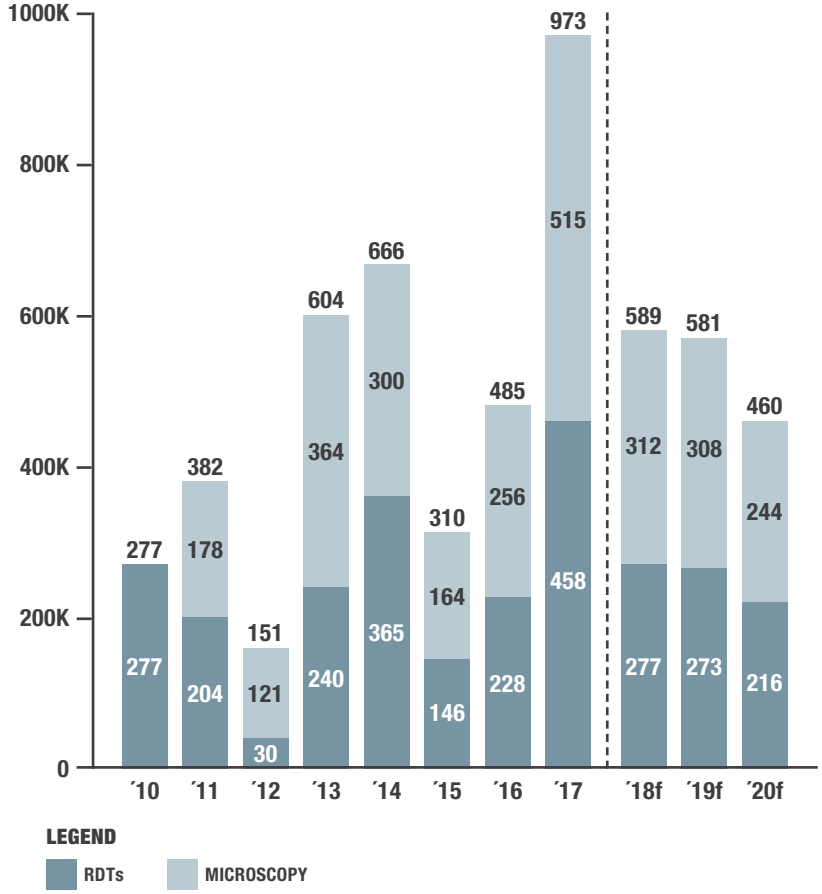
	HEALTH FACILITY*	NUMBER OF FACILITIES	SHARE OF FEVER PATIENTS (EST.)	PREFERRED MALARIA DIAGNOSTIC TOOL	LEVEL OF RDT USE (MALARIA DIAGNOSTIC)
PUBLIC	District Hospitals	~257		RDTs and confirmation with microscopy	Medium / High
PUBLIC	PHC Clinics	~3,800		RDTs	High
PUBLIC	Outreach teams	~3,323		RDTs	High
PRIVATE	Private Hospitals	>200		Microscopy and RDTs	Medium / Limited
PRIVATE	Private Clinics	>600		Microscopy and RDTs	Medium

RDTs are commonly used in South Africa even though microscopy is preferred when available

Sources: interviews, MoH, Advention

MALARIA TESTING PRACTICES

MALARIA TESTS PERFORMED*



IDENTIFIED MALARIA RDTs USED**

First Response Malaria (HRP2) Antigen detection Card Test

Pf-HRP2

Volumes unknown

ICT Diagnostics

Pf-HRP2

Pf/Pv-HRP2 and pLDH

Volumes unknown

DIAGNOSTICS

In South Africa the use of *P. falciparum* specific kits is recommended as they are more sensitive than PAN-kits and *P. falciparum* infections are the most common type of malaria in the country

PAN-kits may be kept by reference laboratories and larger testing sites

> "Quality of RDTs within the private sector can be quite variable. Private sector is poorly regulated and they might purchase poor quality RDTs that are not WHO PQ." CHAI, Southern Africa, Malaria Regional Manager

The number of reported malaria cases has drastically dropped since 2014

Notes: (*) RDT and microscopy tests performed seemed underestimated and were corrected after 2014; (**) Limited information was publicly available regarding the tests used in South Africa. The tests presented are not market leaders. Sources: WHO, USAID-PMI, Global Fund, Advention

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

MALARIA RDT STAKEHOLDERS MAP

		VIET NAM	CAMBODIA	S. AFRICA	INDIA	PAKISTAN	MYANMAR	THAILAND
WHO IS PAYING FOR MALARIA RDTs?	Ministry of Health							
	Donors							
	Patients / Private insurances							
WHO IS SELECTING MALARIA RDTs?	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 key decision makers regarding RDT selection in all countries

Source: Advention

OTHER FEBRILE ILLNESSES TESTING PRACTICES

ARBOVIRUSES	Dengue	The Special Viral Pathogens Laboratory of the Center for Emerging and Zoonotic Diseases (CEZD), National Institute for Communicable Diseases (NICD), is the national reference laboratory for the investigation of human arbovirus infections, including dengue, Chikungunya and Zika in South Africa. All arboviruses tests are concentrated in this laboratory
	Chikungunya	
	Zika	The testing protocol includes PCR and ELISA testing
BACTERIAL FEVER-INDUCING PATHOGENS	Melioidosis	No active detection of these pathogens
	Leptospira	
	Scrub typhus	
	Murine typhus	

Suspected patients of arbovirus are tested at the NICD laboratory

Sources: interviews, Advention