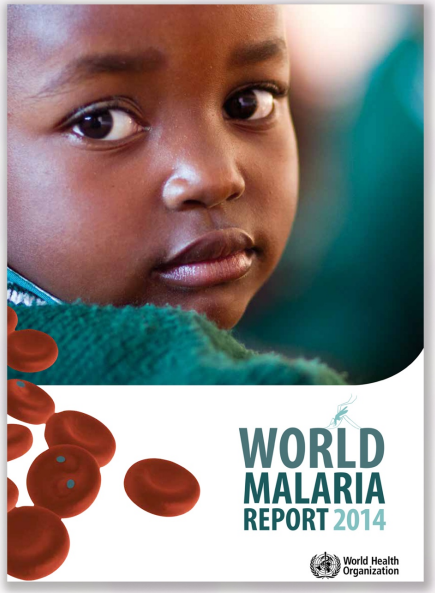
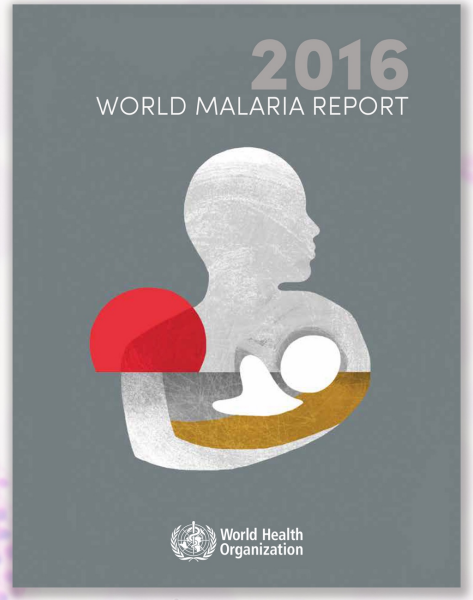
Interpretation of the World Malaria Report Country Profile





Acknowledgements

This presentation was developed to help explain the components of the World Malaria Report Country Profile. The 2017 World Malaria Report can be found at: http://www.who.int/malaria/publications/world-malaria-report-2017/en/.

The data presented in the World Malaria Report comes from data submitted by country programs as well as available national household surveys.

While the World Malaria Report can provide a helpful overview of the malaria situation in-country, decisions about implementing any program which may affect or may be affected by malaria should be done in consultation with the relevant branch of the Ministry of Health that overseas malaria, for example, the National Malaria Control Program.

Suggested Citation:

Home Fortification Technical Advisory Group. *Interpretation of the World Malaria Report Country Profile.* Home Fortification Technical Advisory Group, 2018.

Abbreviations

© UNICEF/UNI82189/Holt

Pf	*Plasmodium falciparum*
Pv	*Plasmodium vivax*
An.	*Anopheles*
ITN	Insecticide treated net
LLIN	Long lasting insecticide treated net
IRS	Indoor residual spraying
IPT	Intermittent preventive treatment
ACT	Artemisinin Combination Therapy
ACD	Active Case Detection
G6PD	Glucose-6-phosphate dehydrogenase
RDT	Rapid diagnostic test
MIS	Malaria Indicator Survey
MICS	Multiple Indicator Cluster Survey
DHS	Demographic Health Survey
ABER	Annual Blood Examination Rate

Abbreviations cont.

Treatment options - ACTs

AL	Artemether- Lumefantrine
AS+AQ	Artesunate + Amodiaquine
DHA-PPQ	Dihydroartemisinin-Piperaquine
AS+MQ	Artesunate + Mefloquine
AS+SP	Artesunate + Sulfadoxine Pyrimethamine
ART-PPQ	Artemisinin-piperaquine
ART+NQ	Artemisinin + Naphthoquinone

Treatment options - Non-ACTs

SP	Sulfadoxine Pyrimethamine
CQ	Chloroquine
MQ	Mefloquine
QN	Quinine
PQ	Primaquine
CL	Clindamycin
D	Doxycycline
T	Tetracycline
AS	Artesunate
AM	Artemether
PYR	Pyronaridine
AQ+PG	Amodiaquine + Proguanil

WMR Country Profile: Overview

An example WMR profile from Malawi, 2016

Transmission map

I. Epidemiological profile

II. Intervention policies and strategies

III. Financing

IV. Coverage

V. Impact

Section I: Epidemiological profile

I. Epidemiological profile

Population (UN)	2015	%
High transmission (> 1 case per 1000 population)	17,200,000	100
Low transmission (0-1 cases per 1000 population)	0	-
Malaria-free (0 cases)	0	-
Total	17,220,000	

This section details the proportion of the country with high, low, or no transmission; in this case, **100% of the country is considered high transmission**

Parasites and vectors

Plasmodium species:	*P. falciparum (100%), P.vivax (0%)*		
Major anopheles species:	*An. funestus, An. gambiae, An. arabiensis*		
Reported confirmed cases (health facility):	3,661,238	Estimated cases:	3,300,000 [2,400,000 ; 4,200,000]
Confirmed cases at community level:	197,354		
Reported deaths:	3,799	Estimated deaths:	7,200 [1,800 ; 10,000]

This section details the species breakdown (***P. falciparum*** carries highest risk of death); in this case, 100% of the malaria is due to *P. falciparum*

Depending on healthcare seeking, testing, and reporting rates, the number of reported cases may be substantially different from estimated cases.

For most of the Africa Region, the WHO measures the relationship between parasite prevalence and case incidence within a specific area to calculate estimated cases.

In this case, there were **3,661,238 reported cases**, with 197,354 cases reported from the community level. There were **3.3 million estimated cases, with an uncertainty range of 2.4-4.2 million**.

Section II: Intervention policies and strategies

II. Intervention policies and strategies

Intervention	Policies/strategies	Yes/No	Adopted
ITN	ITNs/ LLINs distributed free of charge	Yes	2006
	ITNs/ LLINs distributed to all age groups	Yes	2010
IRS	IRS is recommended	Yes	2007
	DDT is authorized for IRS	No	-
Larval control	Use of larval control recommended	No	-
IPT	IPT used to prevent malaria during pregnancy	Yes	1993
Diagnosis	Patients of all ages should receive diagnostic test	Yes	2011
	Malaria diagnosis is free of charge in the public sector	No	-
Treatment	ACT is free of charge for all ages in public sector	Yes	2007
	The sale of oral artemisinin-based monotherapies (oAMTs)	Is banned	2011
	Single dose of primaquine is used as gametocidal medicine for P. falciparum	No	-
	Primaquine is used for radical treatment of P. vivax	No	-
	G6PD test is a requirement before treatment with primaquine	No	-
	Directly observed treatment with primaquine is undertaken	No	-
	System for monitoring adverse reactions to antimalarials exists	No	2007
Surveillance	ACD for case investigation (reactive)	No	-
	ACD of febrile cases at community level (pro-active)	No	-
	Mass screening is undertaken	No	-
	Uncomplicated P. falciparum cases routinely admitted	No	-
	Uncomplicated P. vivax cases routinely admitted	No	-
	Foci and case investigation undertaken	-	-
	Case reporting from private sector is mandatory	No	-

This section details the **policy in the country**, but does not contain information related to coverage or implementation. For example, a strategy can be recommended but not currently implemented in a country. It is advised to consult with the Ministry of Health and malaria focal person to determine the coverage of interventions.

ACTs are the WHO recommended treatment. WHO recommends against oral artemisinin monotherapies.[1]

Note that the section on **surveillance** highlights specific potential surveillance interventions, and does not include information on the routine systems for collecting data. For example, "**No**" may be listed for surveillance options, there may be routine collection of data at both the facility and community levels. It is advised to consult with the Ministry of Health and malaria focal person to confirm here.

Section II: Intervention policies and strategies, cont.

Antimalarial treatment policy	Medicine	Year adopted
First-line treatment of unconfirmed malaria	AL	2007
First-line treatment of P. falciparum	AL	2007
Treatment failure of P. falciparum	AS+AQ	2007
Treatment of severe malaria	AS; QN	2007
Treatment of P. vivax	-	-
Dosage of Primaquine for radical treatment of P. vivax		-
Type pf RDT used		P.f only

These lines highlight the **recommended treatment for malaria**; in most cases, treatment for unconfirmed malaria will be the same as for P. falciparum

Therapeutic efficacy tests (clinical and parasitological failure, %)

Medicine	Year	Min	Median	Max	Follow-up	No of studies	Species
AL	2005-2014	0	4.3	19.5	28 days	11	*P. falciparum*
AS+AQ	2005-2014	0	1.5	3.6	28 days	4	*P. falciparum*

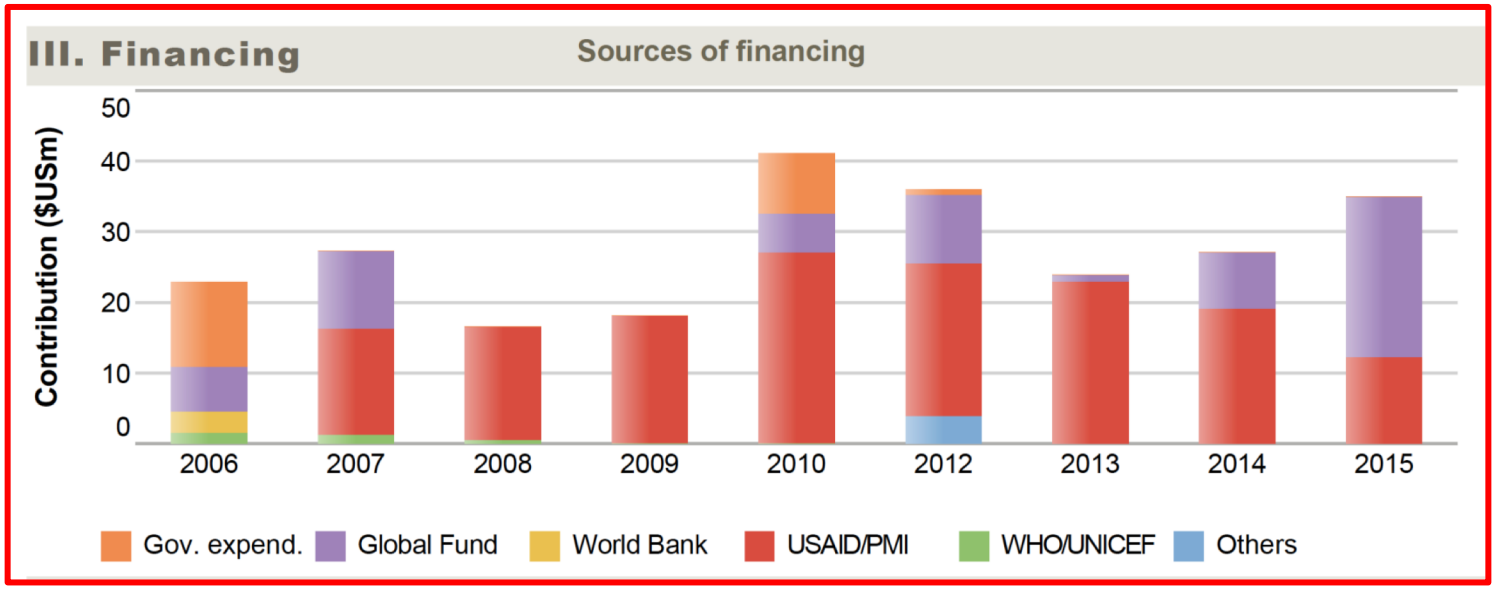
This **section highlights the efficacy of various ACTs**; WHO recommends changing ACT when the failure rate (recrudescence) with a given ACT exceeds 10% as measured by in vivo therapeutic efficacy studies.[2] Recrudescence is the reappearance of the same parasite strain, rather than reinfection with a new strain of parasite, and is indicative of drug failure. Molecular testing needs to be done to differentiate recrudescence from reinfection. The malaria focal person should be aware of results from studies to assess drug efficacy.

Insecticide susceptibility bioassays (reported resistance to at least one insecticide for any vector at any locality)

Year	Pyrethroid	DDT	Carbamate	Organophosphate	Species/complex tested
2010–2014	Yes	No	Yes	No	*An. funestus s.l., An. funestus s.s., An. gambiae s.l.*

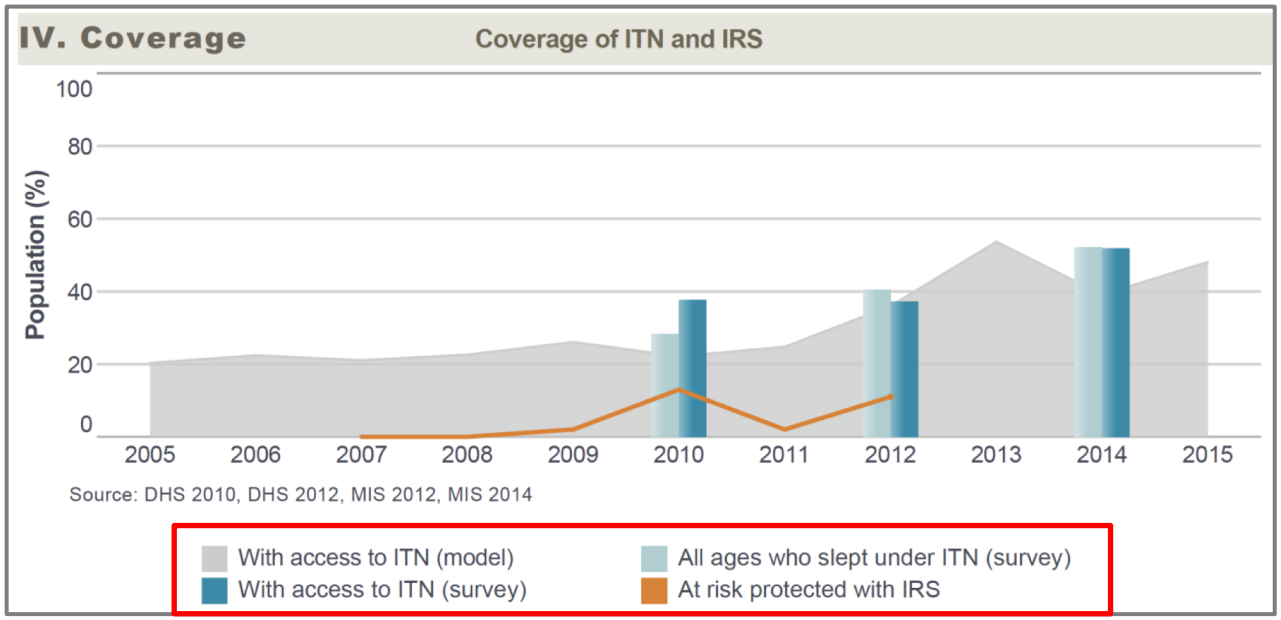
This section highlights information on **insecticide resistance**. ITNs contain pyrethroids; although in the presence of resistance there may be a reduced benefit of ITNs, epidemiological studies show that they continue to provide benefit despite resistance.[3]

Section III: Financing



This section highlights the **sources of financing**; fluctuation in the total annual funding could represent true reductions, or could represent fluctuations – for example, ITN mass campaigns are typically conducted every 3 years, so one would expect to see a spike in funding (usually Global Fund) in those years (or in the preceding year) as this requires procuring a huge number of nets.

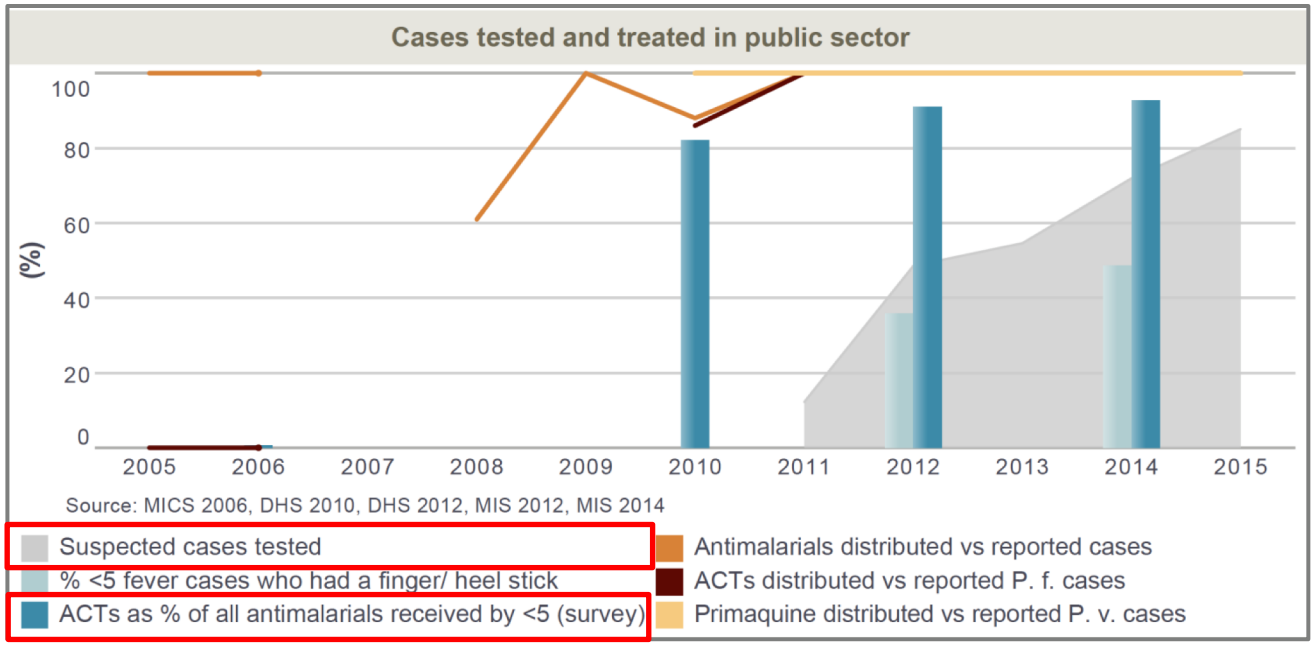
Section IV. Coverage



This section highlights **coverage of ITNs** (**light blue bars for access** and **dark blue bars for utilization**) **and IRS** (**orange line**) for the overall population, using both national household survey data (collected during DHS and MIS surveys, on average every 2-5 years depending on the country) and modelled information (**light grey shaded area**).

While the above chart may provide for good estimates for the overall population, DHS and MIS surveys will likely have data on the proportion of children under 5 who slept under an ITN on the night before the survey. As children under 5 historically have been targeted to sleep under an ITN, this figure will likely be higher than for the overall population; thus, this data may be more relevant for decision making with respect to MNP programs. The Ministry of Health and malaria focal person should be consulted to see whether data for children under 5 is available.

Section IV. Coverage, cont.

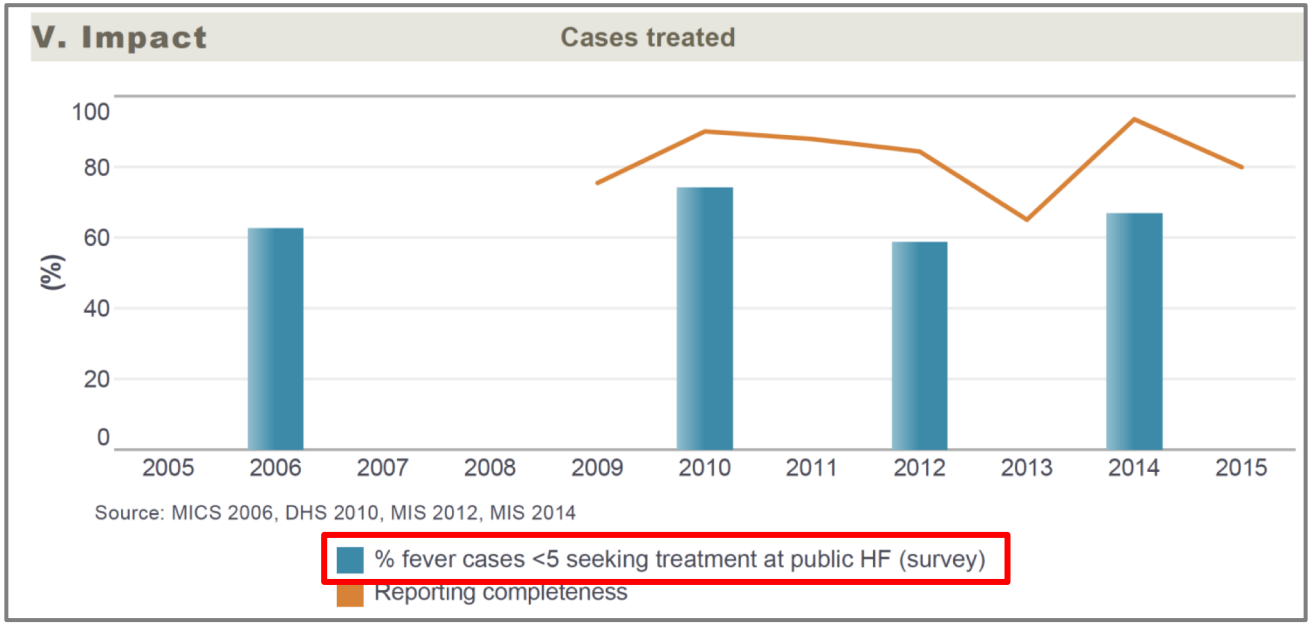


Note that these data are for the public sector and depending on the country, the private sector plays a variable role in terms of the proportion of the population it serves.

This section highlights the **percentage of suspected cases tested and treated in the public sector** (**light grey shaded area**). Ideally, 100% of suspected cases should be tested, and 100% of confirmed cases treated with an ACT.

If ACTs comprise a large percentage of antimalarials distributed among children under 5 (**dark blue bars**), it indicates that children are being given effective therapy.

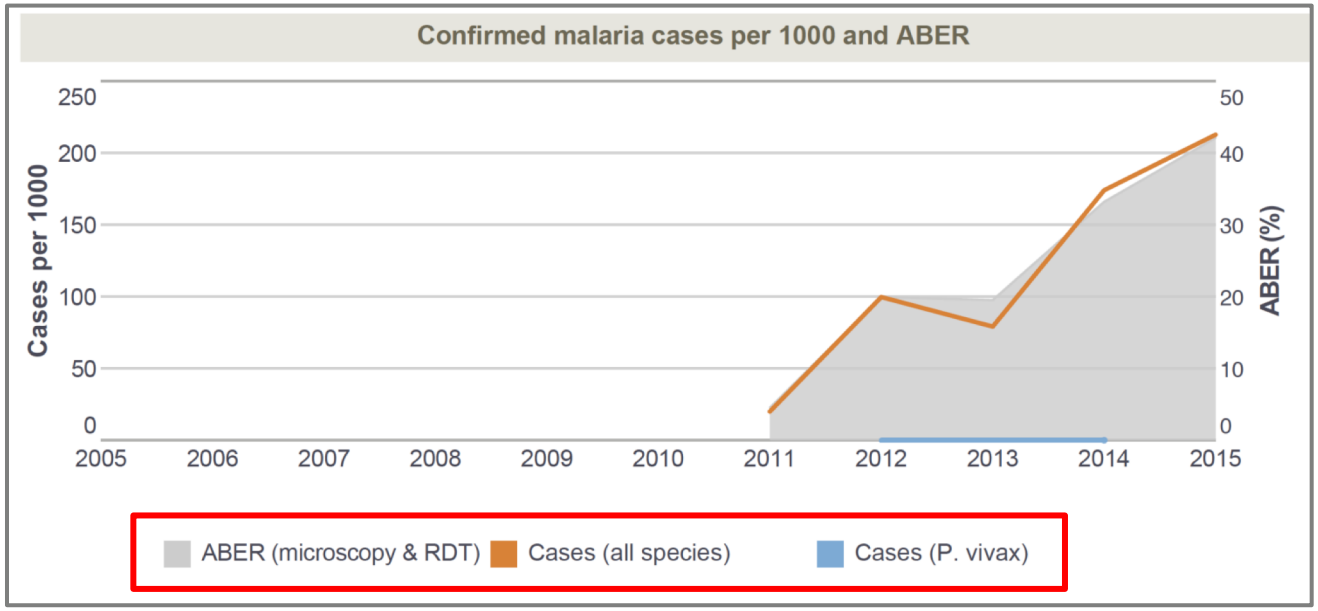
Section V. Impact



The **blue bars** in this figure derive from national survey data (DHS, MIS, MICS) and show the **proportion of children under 5 who had fever in the 2 weeks preceding the survey whose parents reported that they were taken to a public health facility for treatment.**

This provides an indication of facility attendance and when low, can help explain differences in reported and estimated cases. Children who were not taken to a public health facility might have been seen at a private facility, or the parents might not have taken the child for treatment.

Section V. Impact, cont.

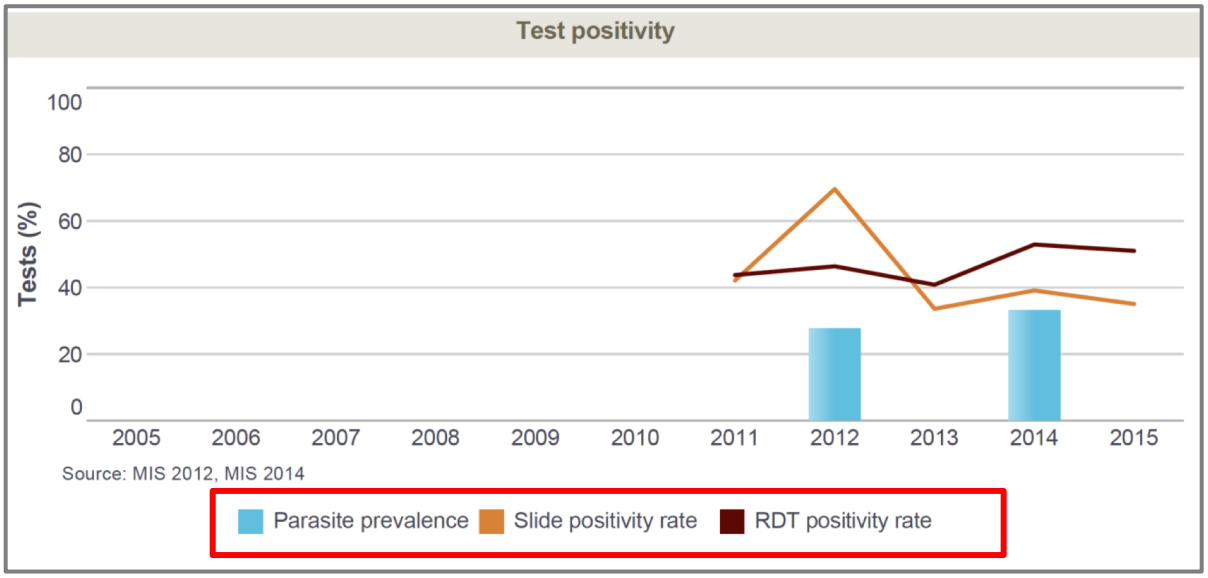


This section highlights the number of **confirmed cases (among the whole population)** reported by routine health facility data, as well as highlighting which species are responsible.

The use of **malaria rapid diagnostic tests (RDTs)** in most African countries was rolled out widely starting 2015, thus increases over time, particularly prior to 2015, likely reflect increased testing rates rather than true increases in prevalence. Many countries continue to roll-out increasing numbers of RDTs as programs allowing community health workers to perform RDTs and provide treatment to those with positive tests are being increasingly rolled-out.

ABER - Annual Blood Examination Rate. Calculated as (number of slides examined/population) x 100

Section V. Impact, cont.



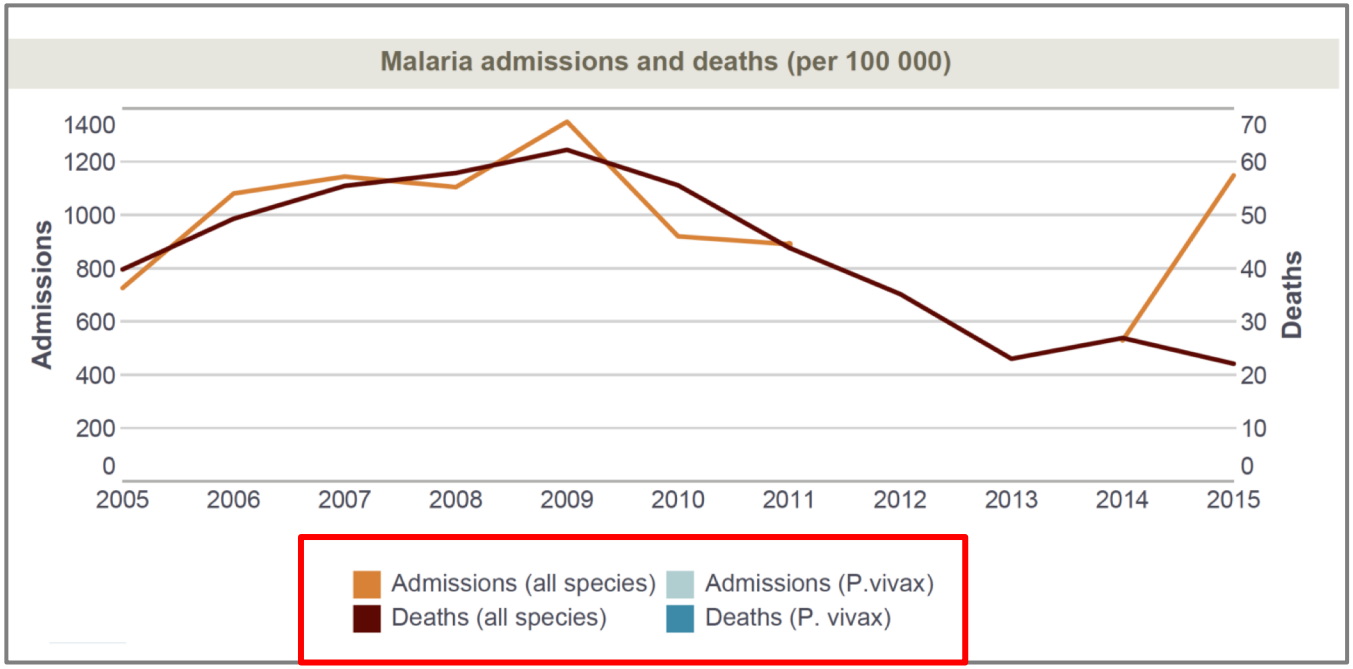
These data come from routine malaria surveillance systems. Slide positivity rate (**orange line**) reflects both malaria prevalence and prevalence of other febrile illnesses, as during an epidemic of anther febrile illness, the numbers tested may go up, artificially decreasing the test positivity rate. A country is considered pre-elimination when the slide positivity rate during the peak malaria season is <5%.

This section shows a number of measures of prevalence. The parasite prevalence data (**light blue bars**) come from nationwide cross sectional surveys (i.e., DHS, MIS, MICS), so reflects the overall population at a specific point in time. Parasite prevalence >10% is considered to reflect moderate to high transmission.

The slide positivity rate (**orange line**) is calculated as the number of positive blood smears divided by the total number of blood smears and then multiplied by 100 to obtain a percent.

RDT positivity rate (**brown line**) is similar, though may be higher as RDTs detect antigens which may persist for several weeks after clearance of parasites.

Section V. Impact, cont.



This section highlights the **numbers of malaria-related hospital admissions and deaths** per 100,000 population (all ages) as reported through routine health facility data reported to WHO by the country program.

References

1. World Health Organization. *Emergence and spread of artemisinin resistance calls for intensified efforts to withdraw oral artemisinin-based monotherapy from the market.* World Health Organization, 2014. Available at: http://www.who.int/malaria/publications/atoz/oral-artemisinin-based-monotherapies-1may2014.pdf?ua=1

2. World Health Organization. *Artemisinin and artemisinin-based combination therapy resistance. April 2017 Status Report.* World Health Organization, 2017. Available at: http://apps.who.int/iris/bitstream/10665/255213/1/WHO-HTM-GMP-2017.9-eng.pdf?ua=1

3. World Health Organization. *Q&A on the Global plan for insecticide resistance management in malaria vectors.* World Health Organization, October 2016. Available at: http://www.who.int/malaria/media/insecticide_resistance_management_qa/en/

4. For a description of the methods used in the estimations, please refer to Annex 1 of the World Malaria Report (pages 65-75): http://apps.who.int/iris/bitstream/handle/10665/259492/9789241565523-eng.pdf;jsessionid=BA6CC357D224B6C75B14968521CB6025?sequence=1