

FEVER LANDSCAPE

QUALITY OF REPORTED DATA

METRICS	QUALITY	IDENTIFIED GAPS OR PROBLEMS
NUMBER OF MALARIA CASES AND DEATHS		<p>Cases of malaria appear to be under-reported, with WHO estimating that there are actually over six times more cases than reported each year:</p> <ul style="list-style-type: none"> • Even though Thailand's malaria surveillance is judged as quite comprehensive and timely, notification of cases is incomplete • This is mainly due to the malaria reporting system that is getting integrated within the public health services reporting, leading to transition issues (notably data management) <p>Malaria deaths appear to be accurately reported overall</p>
BURDEN OF OTHER INFECTIOUS DISEASES CAUSING FEVER		<p>Thailand is a relatively well-studied country regarding pathogen presence and endemicity. However, there is a lack of systematic surveillance for endemic or potentially endemic pathogens, meaning several known endemic pathogens (e.g. scrub typhus) suffer from a lack of data regarding prevalence or severity on a regional or national scale</p> <p>Diseases that have a surveillance network appear to suffer from similar difficulties in establishing an accurate number of cases and deaths as for malaria</p> <p>One of the reasons for poor accuracy is that points of care often lack appropriate tests for these diseases</p>
ANTIMICROBIAL RESISTANCE		<p>With the establishment of the National Strategic Plan on Antimicrobial Resistance 2017-2021, a surveillance system has been established at the national level. Strengthening surveillance systems to measure the burden of AMR and the effect of policies has already been identified as a priority by the Thai government</p>

Quality of reported data remains a significant challenge in Thailand, in particular for malaria where there is an estimated six-fold under-reporting in some cases

Sources: WHO, Advention



FOCUS ON MALARIA SITUATION

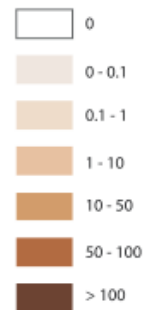
API* OF Pf (2017)



API* OF Pv (2017)



CONFIRMED CASES PER 1,000 POP



API: ANNUAL PARASITE INCIDENCE

TEST POSITIVITY IN PUBLIC HOSPITALS

	2005	2010	2017
Share of suspected cases tested (RDT or microscopy)	100%	100%	100%
Test positivity (RDT or microscopy)	2%	2%	<1%

MALARIA EPIDEMIOLOGICAL PROFILE (2016)

Parasite prevalence per 1,000	<1		
Population in area:	Malaria free	Low transmission (0-1 case per 1,000 pop)	High transmission (>1 case per 1,000 pop)
		34M (50%)	28.5M (42%)
Major <i>plasmodium</i> species	<i>P. falciparum</i> : 42% ; <i>P. vivax</i> : 58%		
Drug resistant malaria	Yes in some areas		
Estimated tested cases	1.1M		
Reported confirmed cases (health facility)	8K		
Estimated cases*	52K [16K-150K]		
Reported deaths	33		
Estimated deaths*	<50		

50% of the Thai population is living in an at-risk transmission zone

Malaria positive rate has been decreasing over the last decade

Note: (*) WHO estimates. Sources: WHO, Advention





NATIONAL MALARIA STRATEGY PLAN AND SURVEILLANCE

DECISION-MAKERS	OTHER MALARIA INFLUENCERS (LOCAL)	OTHER MALARIA INFLUENCERS (INTERNATIONAL)
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NATIONAL MALARIA STRATEGY PLAN

MoPH
Thai Malaria Control Program/ Bureau of Vector Borne Disease

APLMA
ASIA PACIFIC LEADERS MALARIA ALLIANCE

ADB
Asian Development Bank

Asian Collaborative Training Network for Malaria (ACTMalaria)

APMEN
ASIA PACIFIC MALARIA ELIMINATION NETWORK

GMS
GREAT MOUNTAIN SUMMIT

World Health Organization

The Global Fund
To Fight AIDS, Tuberculosis and Malaria

unicef

Australian Government
Department of Foreign Affairs and Trade

UNOPS

PMI
President's Malaria Initiative
Fighting Malaria and Transmission

malaria consortium
disease control, better health

BILL & MELINDA GATES foundation

Australian Government

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

RBM Partnership
To End Malaria

USAID
FROM THE AMERICAN PEOPLE

TARGET

- By 2021** – malaria elimination in more than 95% of districts and complete elimination by 2024
- To reduce malaria morbidity to no more than 0.20 per 1,000 population by 2021
 - To reduce malaria mortality to no more than 0.01 per 100,000 population by 2021
 - To eliminate malaria transmission in at least 95% of total districts by 2021
 - To prevent reintroduction of transmission in malaria-free areas

KEY INTERVENTIONS TO ACHIEVE TARGET

- Develop technology, innovation, measures, and models that are appropriate for malaria elimination
- Establish collaboration with stakeholders at national and international networks or malaria elimination
- Promote and empower communities as part of the decentralization effort
- Integrate malaria services within the general health system
- Strengthen malaria surveillance and response to move toward elimination

MALARIA SURVEILLANCE

Compared to the other countries in the GMS, Thailand's malaria surveillance data is the most comprehensive and timely, which allows the NMCP to update village-level malaria risk on an annual basis. Using such malaria risk stratification, the Bureau of Vector-Borne Diseases (BVBD) is able to identify indigenous transmission

The NMCP is undergoing decentralization and reducing the funding and number of specialized field malaria officials, leading to an integration of the vertical malaria programme within the public health services

As of January 2017, the malaria information system has been transitioned to the MoPH Data Center; issues regarding data management capacities of the data center have been identified and will be addressed

Thailand aims at malaria elimination by 2024 and is transitioning in malaria surveillance system to the MoH

Sources: WHO, PMI, PATH MACEPA, Adventicon

MALARIA EPIDEMIOLOGY AND AMR LANDSCAPE IN PRIORITY COUNTRIES

PRIORITY COUNTRIES*



	VIET NAM	CAMBODIA	S. AFRICA	INDIA	PAKISTAN	MYANMAR	THAILAND	
MALARIA EPIDEMIOLOGICAL PROFILE	Parasite prevalence per 1,000 population	<1	–	<1	<1	1.7	<1	
	Population living in malaria free area	25.1M (26%)	4.7M (29%)	51M (90%)	87.9M (7%)	3.3M (2%)	21.8M (40%)	34M (50%)
	Population living in low transmission area	63.9M (67%)	3.6M (23%)	3.4M (6%)	1,100M (81%)	136.7M (69%)	23.6M (44%)	28.5M (42%)
	Population living in high transmission area	25.1M (7%)	7.7M (48%)	2.3M (4%)	162.5M (12%)	57M (29%)	8.5M (16%)	5.4M (8%)
	Proportion of <i>P. falciparum</i>	64%	58%	90%	62%	21%	66%	42%
	Proportion of <i>P. vivax</i>	35%	41%	5%	37%	78%	34%	58%
	MALARIA CASES AND DEATH	Country's reported tested cases	2.6M	168K	56K	125M	6.5M	664K
Country's reported confirmed cases		4.5K	36K	22K	0.8M	351K	78K	8K
WHO's estimated cases		5.5K	208K	22.5K	9.6M	956K	240K	52K
Country's reported deaths		6	1	301	0.2K	113	37	33
WHO's estimated deaths		9	345	274	16.7K	805	490	<50
AMR LANDSCAPE	Average DDD**/person in 2015 (Avg in LMICs is 4.9)	11.5	–	9.2	4.9	7.1	–	6.7
	Endorsement of the AMR National Plan	2013	2014	2014	2017	2017	2017	2016

Notes: (*) Last available year; (**) Defined Daily Dose allowing for cross-country comparison. Sources: WHO, World Bank, GF, interviews, Advention



OTHER INFECTIOUS DISEASES CAUSING FEVER

	ENDEMICITY	+ SURVEILLANCE SYSTEMS	+ CASES PER YEAR*	INTEREST FOR AN RDT
Dengue <i>Dengue virus</i>	Endemic in all regions	National detection programme with referent laboratories in each regions	>50K	Strong demand for an RDT targeting a common pathogen
Chikungunya <i>Chikungunya virus</i>	Endemic in all states, most cases are in the Southern and Central region	National detection programme with referent laboratories in each regions	~4K	Moderate for an RDT as not on the notifiable disease's list but case load is high
Zika <i>Zika virus</i>	Endemic in all regions	No formal surveillance system, referral of clinical diagnoses to regions authorities	>0.2K	Moderate demand for an RDT as reported case load is low
Melioidosis <i>Burkholderia pseudomallei bacteria</i>	Endemic in all states, most cases are in the Northern region	No formal surveillance system, referral of clinical diagnoses to regions authorities	~3K	Moderate for an RDT as not on the notifiable disease's list but case load is high
Leptospirosis <i>Leptospira genus bacteria</i>	Endemic in all states, most cases are in the Southern and Northeastern region	No formal surveillance system, referral of clinical diagnoses to regions authorities	~3K	Moderate for an RDT as not on the notifiable disease's list but case load is high
Scrub typhus <i>Orientia tsutsugamushi bacteria</i>	Endemic in all regions	National detection programme with referent laboratories in each regions	>9K	Strong demand for an RDT targeting a proven endemic pathogen
Murine typhus <i>Rickettsia typhi bacteria</i>	Local transmission confirmed, possibly endemic, lack of data	No formal surveillance system	n.a.	Low demand for an RDT as the pathogen's endemicity is uncertain

>
A wide range of infectious pathogens causing febrile illnesses are endemic in Thailand
5 out of 8 pathogens listed would make good use of an RDT

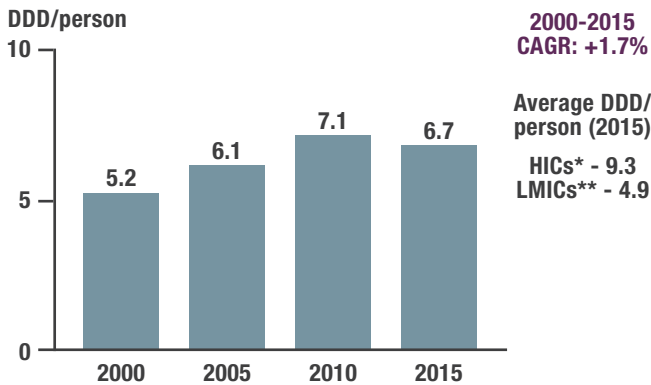
Note: (*) Best data available, reported data. Sources: MoPH, CDC, Advention



ANTIMICROBIAL RESISTANCE (AMR)

AWARENESS OF AMR AS A PROBLEM IS RISING...

Although per capita consumption of antibiotics is higher than average in LMICs, it has been decreasing since 2015:



Therapeutic use of antibiotics places a high burden on health and the economy of Thailand:

2015 WHO AMR SURVEY

88,000 infections were attributed to AMR leading to:

- >3.24M additional days in hospitals
- 38,000 deaths
- \$70-170M direct costs of antibiotics to treat AMR infection
- \$1,100M indirect costs of morbidity and premature deaths related to AMR

Awareness and desire to tackle AMR amongst policy-makers has grown over the past decade, culminating in the launch of the National AMR Programme in 2017.

...AND THE GOVERNMENT HAS TAKEN ACTIONS TO TACKLE IT

1998	Establishment of the National AMR Surveillance Center
2007	Start of the antibiotics smart use programme
2011	Signature of the Jaipur Declaration on AMR
2012	Establishment of the AMRCP (containment and prevention) programme
2014	Multi-sectoral meeting to map roles of agencies and develop an integrated framework on AMR
2016	Endorsement of the NSP-AMR (2017-2021)*** by the Cabinet of Thailand using a one-health approach (policy, public and research driven)

Two of six strategies of the NSP-AMR are related to monitoring and surveillance of AMR and antimicrobial consumption in humans and animals.

Two other strategies aim to improve antibiotic stewardship and control the spread of AMR in both clinical and farm settings.

The remaining two strategies aim to increase knowledge and public awareness on AMR and establish national governance for intersectoral actions.

AMR places a high burden on health and the economy in Thailand, and the government has shown strong political commitment to tackle AMR over the past decade, resulting in a DDD/person decline in 2015

Notes: (*) High-Income Countries; (**) Low- and Middle-Income Countries; (***) The National Strategic Plan on Antimicrobial Resistance (2017-2021).
Sources: Pumart P, Health and economic impacts of antimicrobial resistance in Thailand, National Center for Disease Control, IQVIA, Advention