

**IMPROVING SUSTAINABILITY  
OF POST-ELIMINATION  
SURVEILLANCE FOR MALARIA  
AND NTDS**

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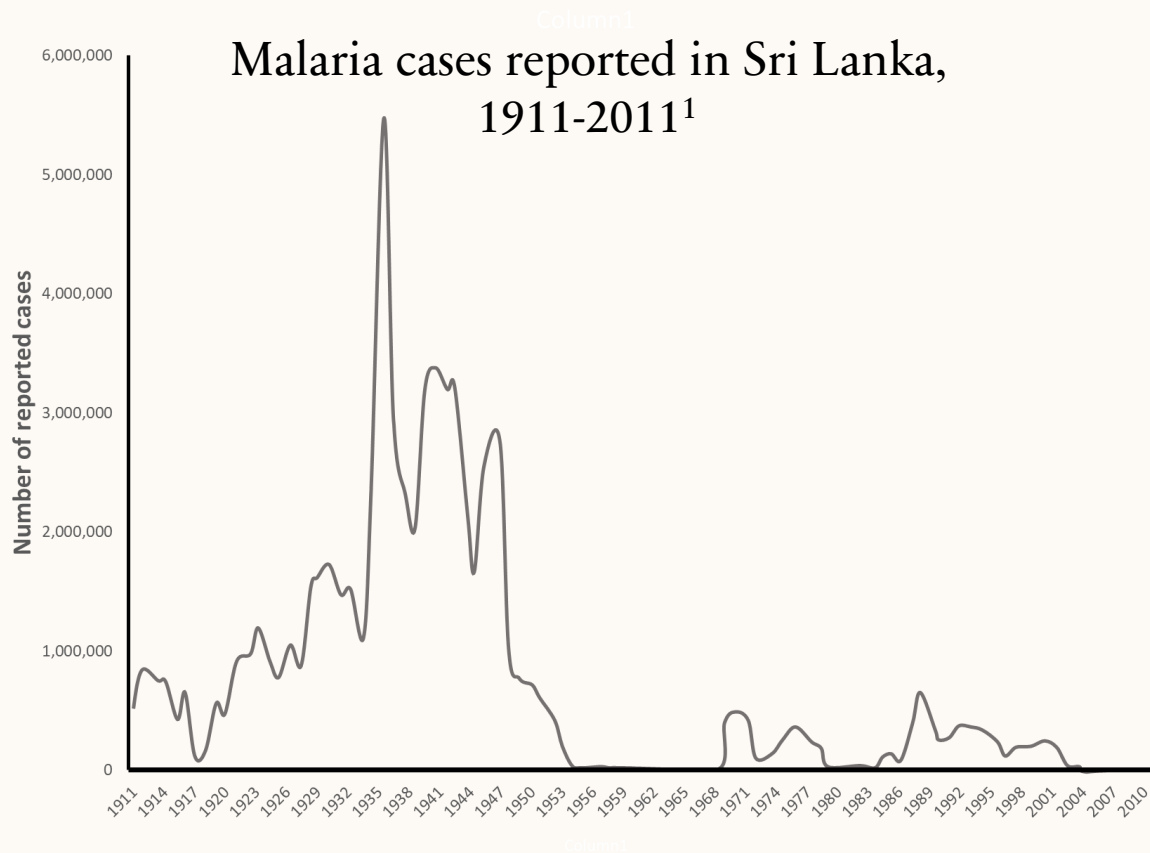
Malaria and NTDS Program

**PATH**

4 April 2023

APMEN Webinar

# MALARIA RESURGES QUICKLY



## Criteria for WHO Certification of Malaria Elimination



Local malaria transmission has been fully interrupted, resulting in zero indigenous human malaria cases for at least the past three consecutive years (36 months)



An adequate programme for preventing re-establishment of indigenous transmission is functional throughout the country

Global Malaria Programme



<sup>1</sup>Adapted from Abeyasinghe et al. PLoS One 2012.

# ELIMINATION OF NEGLECTED TROPICAL DISEASES

- 2030 road map identifies 2 diseases targeted for **eradication**, 3 for **interruption of transmission**, and 8 for elimination as a **public health problem**.<sup>1</sup>
- As of 2022, 47 countries have eliminated **at least one** NTD – largely achieved through mass chemoprevention or intensified disease management (generally external to primary care).
- Reductions in prevalence and incidence result in greater heterogeneity in spatial and temporal distribution of disease cases while high-risk groups become more prominent.
- Elimination dossiers do not require a plan to prevent recrudescence or resurgence
- Guidance on post-validation/verification surveillance is limited

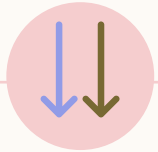


# NTDS TARGETED FOR ELIMINATION IN APMEN COUNTRIES<sup>1</sup>

	Yaws	Leprosy	Leishmaniasis (visceral)	Lymphatic filariasis	Rabies	Schistosomiasis	Soil-transmitted helminths	Trachoma
Afghanistan		X	X		X		X	X
Bangladesh		X	X	S	X		X	
Bhutan		X	X		x		X	
Cambodia	U	X		- V -	X	X	X	- V -
China		X	X		X			- V -
DPR Korea							X	
India	X	X	X	X	X	x	X	X
Indonesia	X	X		X	X	X	X	
Lao PDR	U	X		S	X	X	X	- V -
Malaysia	U	X		X	x	x		
Myanmar	U	X		X	X		X	- V -
Nepal		X	X	X	X		X	- V -
Pakistan		X	X		X		X	X
Papua New Guinea	X	X		X			X	X
Philippines	X	X		X	X	X	X	
Rep. of Korea		X						
Solomon Islands	X	X					X	X
Sri Lanka	U	X	X	- V -	X			
Thailand	U	X	X	- V -	X	x		
Timor-Leste	X	X		S			X	
Vanuatu	X	X		- V -			X	- V -
Vietnam	U	X		- V -	X		X	X

<sup>1</sup>Data from the WHO's Global Health Observatory. U – unknown status; X, x – Present in the country; -V- Verified as eliminated as a public health problem; S – under surveillance

# CHALLENGES OF POST-VALIDATION/VERIFICATION SURVEILLANCE (PVS) FOR NTDS



## VERTICAL PROGRAMS

Many NTD programs run as parallel interventions through a range of partners and stakeholders



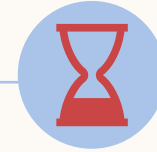
## DISEASE PROGRESSION

Early infection for many NTDS does not show visible signs/symptoms



## LOSS OF FUNDING

Several countries have noted a loss of funding following elimination



## LENGTHY TIME PERIOD

PVS may be needed for up to 10 years

# POSSIBLE PLATFORMS FOR INTEGRATED PVS FOR NTDS

Surveillance platforms	Population/Age range	Periodicity	Spatial sampling	Examples
Passive surveillance	Symptomatic individuals All ages	Continuous	Widespread but depends on access	Malaria cases identified through fever screening
<b>Active surveillance</b>	<b>Asymptomatic individuals, high-risk</b>	<b>As designed</b>	<b>As designed</b>	<b>Leprosy case detection campaigns including dermal leishmaniasis</b>
<b>Entomological surveillance</b>	<b>Hematophagous insects</b>	<b>Seasonal</b>	<b>Usually areas with greatest vectorial capacity</b>	<b>Xenomonitoring for LF through malaria entomological surveillance</b>
Nationally representative surveys	Depends	Every 3-5 years	DHS-style: national, urban/rural and regional	Nigeria HIV prevalence survey with malaria testing; serology for trachoma?
School surveys	School-going children	Depends	Depends	Stool/urine collections for schistosomiasis, STH and malaria
Blood banks	Adults	Continuous	Widespread but depends on access	Screen for antigens/antibodies for LF, dengue and chikungunya in Kenya
<b>Easy access groups</b>	<b>Pregnant women, children</b>	<b>Continuous</b>	<b>Widespread but depends on access</b>	<b>LF antigen in women screened for antenatal visits</b>
<b>NTD chemotherapy or assessment platforms</b>	<b>Depends</b>	<b>Usually 1+ per year</b>	<b>Depends</b>	<b>Collect blood for malaria and stool for STH during LF TAS in Haiti</b>
<b>Migrant worker screening</b>	<b>Work visa applicants</b>	<b>Continuous or seasonal</b>	<b>Not applicable</b>	<b>HIV, malaria and TB in Bhutan</b>


# INTEGRATION IS IN THE DETAILS

EU number #	TAS- type	Number of Schools in EU	Number of Targeted Schools	Estimated number of Children Aged 6 & 7 Years in the EU	Target Sample Size	Critical Cutoff of LF positives	Survey Design	Sampling by Age or Grade	Assumed Absentee Rate
							C = Cluster; S = Systematic (Sampling Fraction, Interval)		
1	TAS	721	36	35,357	1,556	18	C (1.0, 1.0)	Grade	10%
2	TAS-STH-malaria	367	43	14,813	1,548	18	C (1.0, 1.0)	Grade	10%
3	TAS-malaria	67	38	2,442	1,228	14	C (1.0, 1.0)	Age	10%
4	TAS-malaria	120	30	6,821	1,524	18	C (1.0, 1.0)	Age	10%
5	TAS-malaria	17	17	707	365	4	S (0.57, 1.74)	Age	10%
6	TAS-malaria	333	31	18,977	1,552	18	C (1.0, 1.0)	Age	10%
7	TAS-malaria	25	25	1,597	530	6	S (0.39, 2.56)	Age	15%
8	TAS-malaria	441	39	20,883	1,552	18	C (1.0, 1.0)	Age	15%
9	TAS-malaria	26	29	754	365	4	S (0.57, 1.76)	Age	15%
10	TAS-malaria	34	34	1,679	594	7	S (0.42, 2.4)	Age	15%
11	TAS-malaria	42	42	1,336	780	9	C (0.96, 1.04)	Age	15%
12	TAS-malaria	48	31	1,634	891	11	C (1.0, 1.0)	Age	15%
13	TAS-malaria	199	39	9,299	1,532	18	C (1.0, 1.0)	Age	15%
14	TAS-malaria	74	30	4,038	1,380	16	C (1.0, 1.0)	Age	15%

- Added malaria and STH to LF TAS surveys in Haiti
- Survey was modified to select subsample for STH
- Successful implementation
- Addition of malaria added 15% and STH added 49% to cost of LF-only survey
- Less intrusive than 3 independent surveys

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# USE CASE FOR AN INTEGRATED NTD PVS PLANNING TOOLKIT – PATH PROJECT WITH WHO, FUNDED BY BMGF



Support national program decision-making on how to best leverage platforms and resources that are currently available in country to monitor for resurgence or recrudescence of NTDs that have been eliminated



# POTENTIAL MODULES/SECTIONS TO PLANNING TOOLKIT FOR INTEGRATED PVS FOR NTDS



## GATHER

- Past/present NTD distribution by person, place and time (risk factors)
- Vector profiles, distribution and vectorial capacity
- Other surveillance systems (passive/active, human/animal/entomologic)
- Planned or periodic surveys
- Laboratory capacity



## INTEGRATE

- Simple overlays of disease and vector distributions
- Comparison of at-risk populations
- Specimen types and diagnostic approaches
- Vector species/collection methods
- Identify opportunities for novel approaches (i.e. serosurveillance)



## PLAN

- Identify potential sympatric surveillance systems
- Assess compatibility, efficiency and suitability
- Outline process/requirements for integrating NTD surveillance
- Develop response plan
- Stakeholder consensus building



## IMPLEMENT

- Develop implementation SOPs
- Test and evaluate integrated system in pilot site
- Scale up
- Ensure decision-makers are accessing and using data

## TIMELINE 2023-2024



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Technical working group

Draft design

Begin pilots in three countries

Peer review

Published tool



**THANK YOU!**