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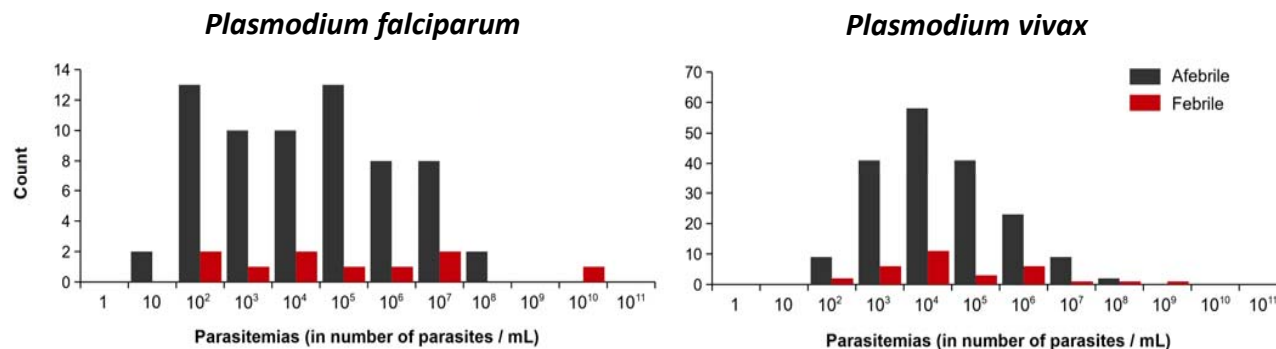


# The contribution of submicroscopic infections to malaria transmission in Southeast Asia.

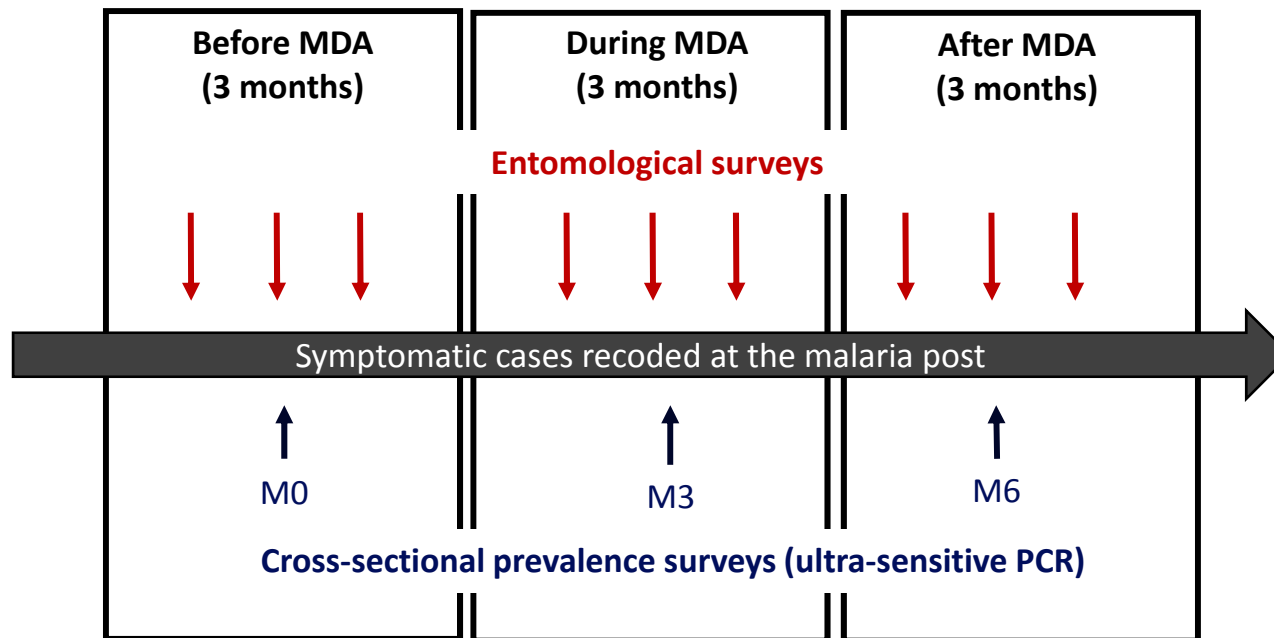
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## Do submicroscopic reservoirs contribute to malaria transmission ?

- ❖ >85% of infected individuals do not have any symptoms.
- ❖ >70% of the infection are below the detection threshold of microscopy and RDTs.



# Study design



## Entomological indices at baseline

Indice	n/N	Estimate	95%CI
HBR (b/p/m)	3508/16.67	210	[204; 218]
Pf-SI (%)	0/3435	0	[0; 0.11]
Pf-EIR (ib/p/m)	0/16.32	0	[0; 0.23]
Pv-SI (%)	10/3435	0.29	[0.14; 0.53]
Pv-EIR (ib/p/m)	10/16.32	0.61	[0.29; 1.13]

**Entomological indices of falciparum malaria were nil at baseline**, therefore we used Pv-EIR as a proxy to assess the contribution of submicroscopic reservoir to the transmission on the impact of MDA on the entomological indices.

# Submicroscopic malaria and vectors infectivity

- ❖ High correlation between vectors infectivity and the prevalence of submicroscopic malaria;
- ❖ No correlation between the incidence of symptomatic malaria and vectors infectivity.

## *Plasmodium vivax*

Variable	Category	IRR	95%CI	p-value
Prevalence (in %)	0 – 2.5	1	reference	-
	2.5 – 10	20.45	2.6 - 160.51	0.004
	10 – 15	19.11	4.4 - 82.95	<0.001
	≥ 15	33.15	4.86 - 226.19	<0.001
Incidence (cases / 1000 person / month)	0 - 1	1	reference	-
	1 - 10	1.02	0.1 - 10.18	0.99
	>10	1.29	0.24 - 6.91	0.767

# Impact of MDA on the entomological indices

## *Plasmodium vivax*

Variable	Category	IRR	95%CI	p-value
MDA	before	1	reference	-
	during	0.08	0.01 - 0.63	0.016
	after	0.42	0.06 - 3.01	0.389

- ❖ **Pv-EIR was divided by 12.5** after the submicroscopic reservoir has been cleared by MDA.
- ❖ Pv-EIR rose back to baseline values within three months after MDA because of **relapsing hypnozoites** that are not cleared by MDA regimen.
- ❖ Falciparum malaria is not expected to raise back because there is no hypnozoite reservoir
- ❖ **Early diagnosis and treatment** are important to prevent the transmission to re-establish itself from imported cases.

# Conclusion

- ❖ Submicroscopic infections are a major source of transmission in low transmission settings of Southeast Asia.
- ❖ MDA is an effective intervention which interrupts the transmission cycle of malaria rapidly.

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## Thank you.



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