This document was prepared as a pre-read for the meeting of the PAHO Malaria Technical Advisory Group and is not an official document of PAHO/WHO

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MALARIA TECHNICAL ADVISORY GROUP MEETING

7-8 June, 2017. Washington DC, USA

REPORT ON ANTIMALARIAL DRUG EFFICACY AND RESISTANCE SURVEILLANCE

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FIRST PART

BACKGROUND

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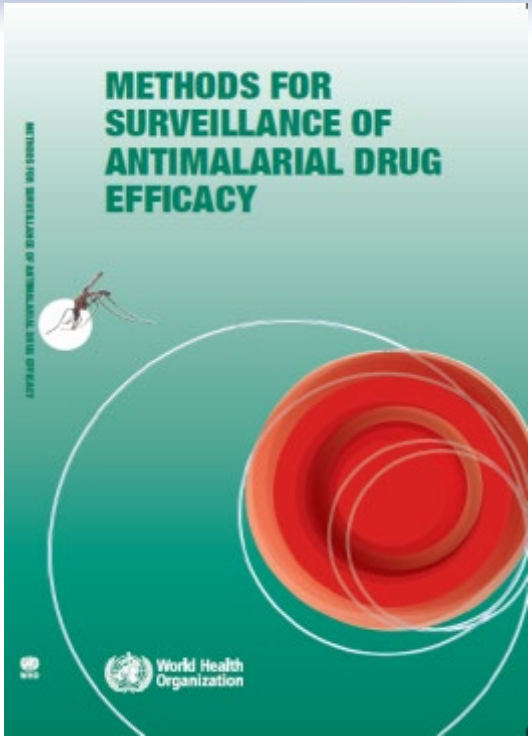
Why to monitor antimalarial treatments

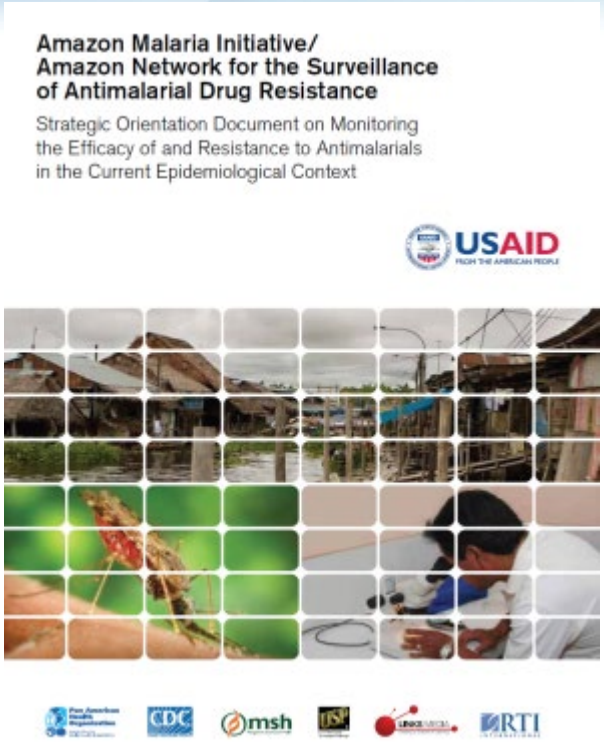
Principal pillar: **prompt diagnosis and treatment**

Surveillance of therapeutic efficacy (also called in vivo test) over time is an essential component of malaria control and provides:

- important information for determining whether first- and second-line drugs are still effective: and
- the evidence-base to ministries of health to update their national malaria treatment policies;

Available tools





Generic tools
http://www.paho.org/hq/index.php?option=com_content&view=article&id=2405&Itemid=3624

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SECOND PART

CURRENT STATUS

MEETING ON THE ELIMINATION OF *P. FALCIPARUM* MALARIA: DETECTION, TREATMENT, AND SURVEILLANCE OF CASES.

LIMA, PERU 16-18 MAY, 2017

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P. Falciparum malaria

CENTRAL AMERICA

- In vivo studies demonstrated 100% efficacy of CQ following WHO protocols

HND 2008-2009 (n=69), NIC 2005-2006 (n=30)

- Molecular marker: studies of mutated alleles *Pfcrt* K76T – no presence of falciparum strains resistance to CQ (HND, NIC, GTM,PAN, DOR, HAI) routine surveillance

SOUTH AMERICA

- SUR ACT (2005-2006 & 2011) gold miners increase D3 positivity rate w/high cure rate at D28. Confirmatory study AS+MQ (2013-2014) N= 0/41,no D3 high + confirmation & only wild type K13
- GUY AL (2011-2012) high D3 positive rate reported quality problems. Confirmatory study with 7 day AS (2014) 100% efficacy at D28 only 2% D3 +, n=47 k13 wild type. (2026-2017). MM N=13/678, 1.9% C580Y, 9.4% R9.
- FGUI (2009 & 2016) N= 541Cayenne hosp. n=1 M671I

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pfK13 FOLLOW-UP IN GUYANA*

1.9% of pfK13 mutant C580Y in Guyana [CI95: 0.9-2.9]
Mainly in Region 1: 9.4% [CI95: 3.6-15.2], then 8 and 7

	pfK13 sequence (aa 438 to 704)		%
	C580	580Y	
Region 1	87	9	**9.4%**
Region 2	2	0	**0%**
Region 3	8	0	**0%**
Region 7	474	3	**0.6%**
Region 8	94	1	**1%**
Region 9	2	0	**0%**
Venezuela	11	0	**0%**
Total	**678**	**13**	**1.9%**

* Preliminary report: WHO CC, Pasteur Institute, 2017

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P. Vivax malaria

Clinical follow up

COLOMBIA 2001: CQ 11.1% (n=3/27) – Soto et al.

PERU 2003: CQ 1.1% (n=2/177) – Ruebush et al, AJTMH

FRENCH GUIANA 2009-2015: 1.1% (n=2/178), no *pvmdr1* mutations

BRAZIL

Oiapoque 2015: 1.1% (n=1/95) - Gomes Malar J

Manaus

2007: CQ 10.1% (n=11/130) - de Santana Filho, JID

2014: CQ + PQ 5.2% (n=7/135) - Marques, AAC

Bolivia 2015 CQ: 2.6% (n=10/96)

Include monitoring of efficacy against *P. vivax*.

THIRD PART

GAPS AND OPERATIONAL CHALLENGES

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For TES….

- Capacity of NMP to institutionalize surveillance of resistance as a long-term action
- Operational aspects of surveillance (financing, sentinel sites structure, HR)
- Alliances within the countries to operationalize the surveillance (Ministry of Health - Academy- NIH – Reference Laboratories)
- Low number of cases for in vivo studies
- Interfase between routine malaria surveillance and resistance surveillance

FOR TAG MEMBERS INFORMATION

KEY PRIORITIES FOR MEMBER COUNTRIES

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Key priorities

- **TES** needs to be conducted **every 2-3 years**
  - To evaluate the efficacy of 1 and 2 line treatment
  - Capacities needs to be strength at national level
  - Tools to be updated with new information (ea. K13)
- Surveillance with **molecular markers** should continue to be conducted systematically:
  - specifically in very low transmission areas – low number for in vivo
  - high and moderate transmission areas – high pressure of selection
- **Quality**: External evaluation of TES, and WHO CC for molecular markers
- Implementation of the ***Framework for artemisinin resistance containment and elimination in South America*** **–Guyana Shield**

Next steps

- TES
  - Guyana: Region 1 & 7
  - Colombia: Choco
  - Venezuela: Bolivar state
- Molecular Markers - DBS
  - CA: Routine surveillance of P. falciparum
  - Same time as the TES
  - Ecuador, Peru, Dominican Republic, Haiti among other countries

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