



Pan American Health Organization



Regional Office of the
World Health Organization

ALTERNATIVES FOR STANDARDIZATION OF TREATMENT REGIMENS

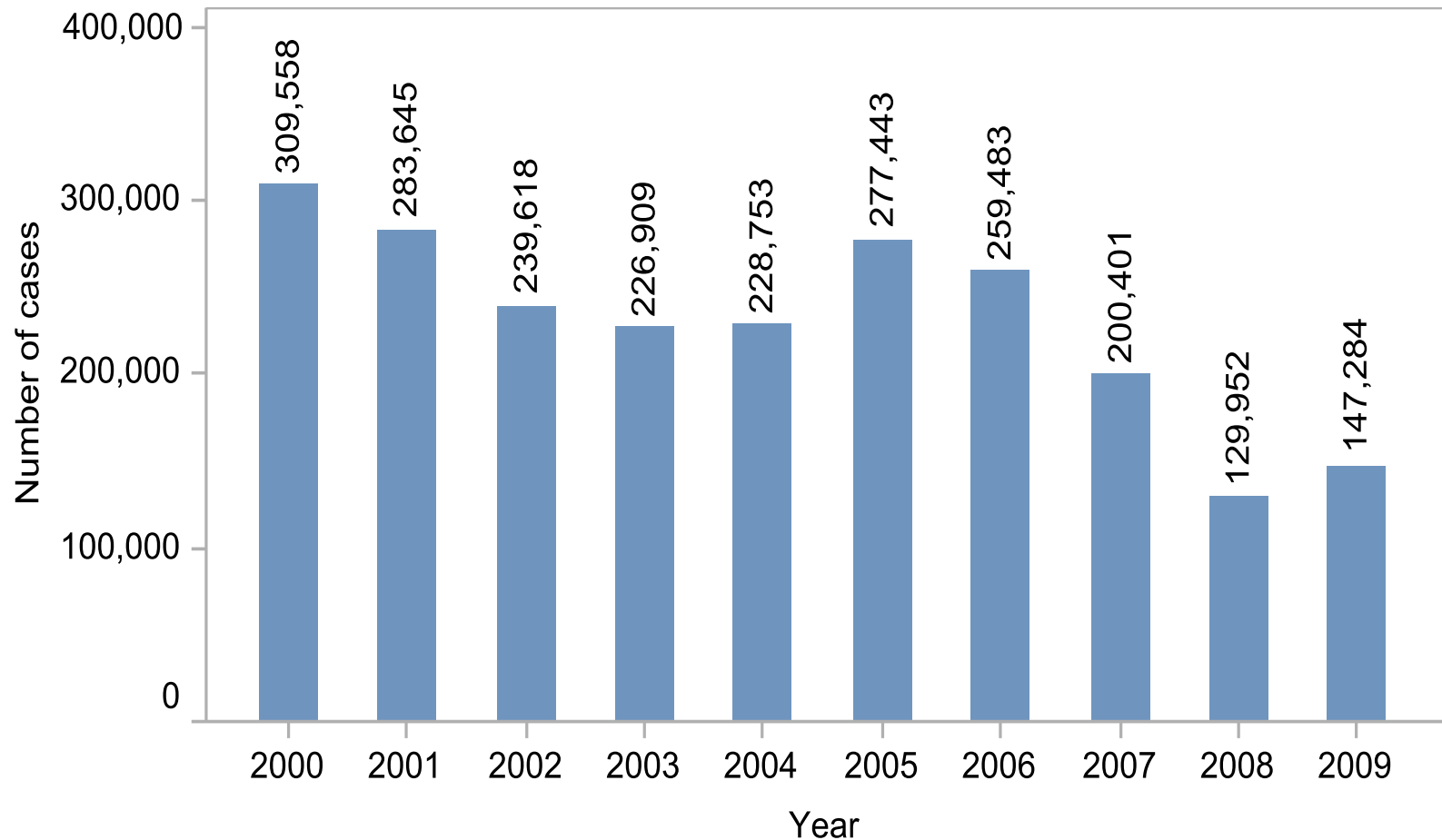
Keith H. Carter

**PAHO/WHO Regional Advisor for Malaria
AMI / RAVREDA Annual Evaluation Meeting
Panama City, Panama • 22 - 24 March 2011**

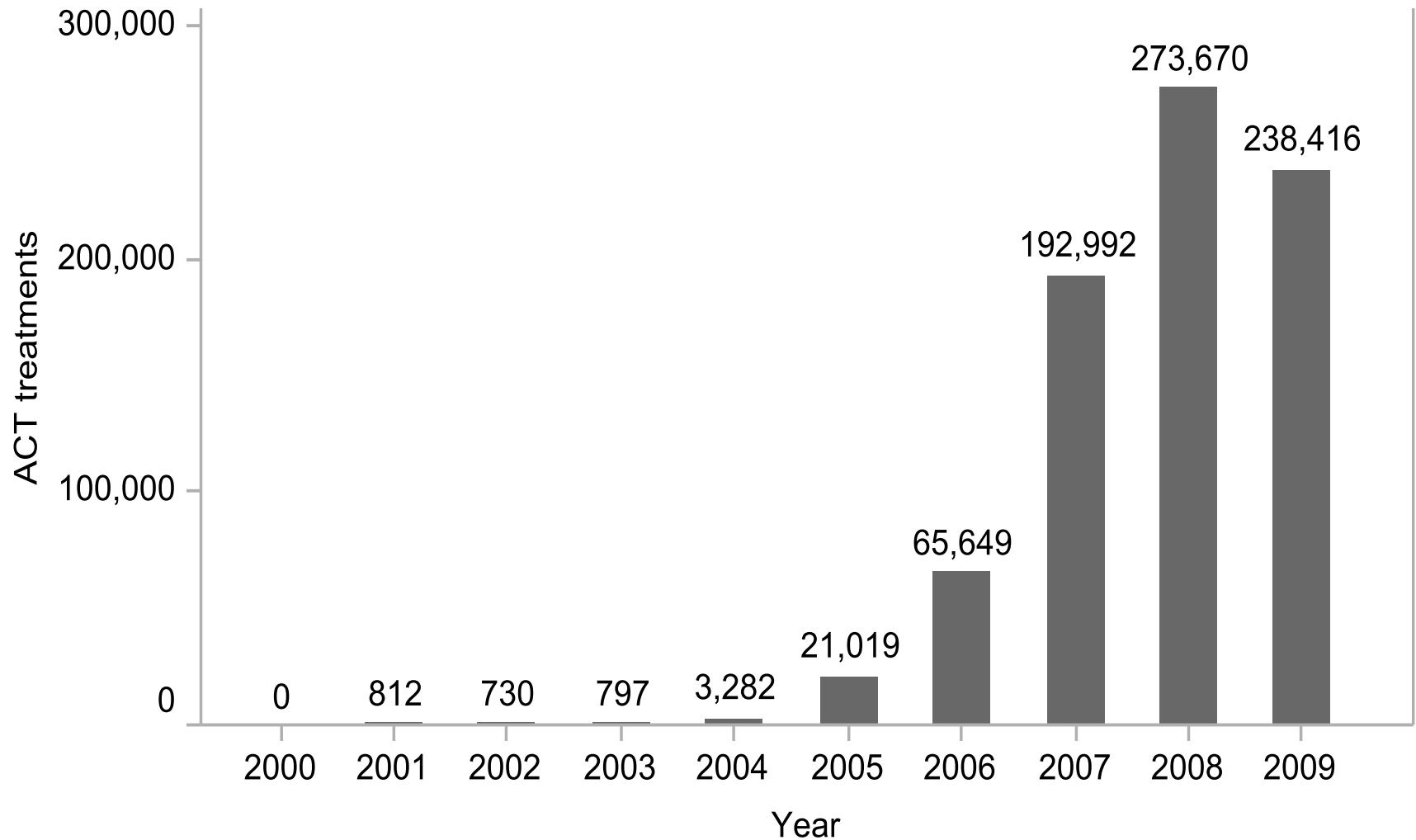
TREATMENT Guidelines

- *P. vivax* : Chloroquine 25mg/kg over three days
Amodiaquine 30mg/kg over three days
+ Primaquine 0.25-0.5mg/kg daily 14 days
- *P. falciparum*: Chloroquine, if sensitive
Artemisinin based combination
therapy where resistance detected
- Severe or complicated malaria : clinical care and
monitoring
- National treatment guidelines

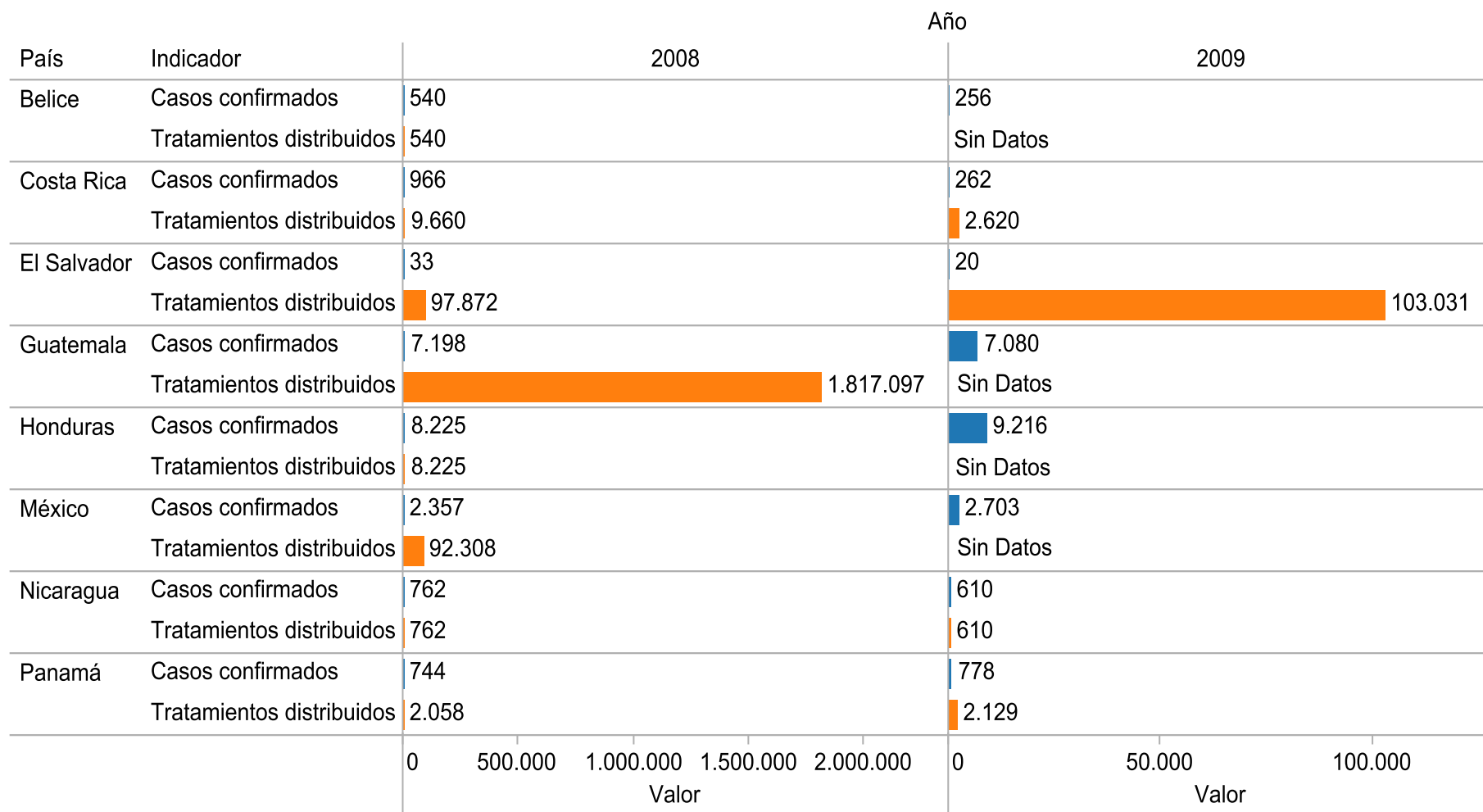
Number of *P. falciparum* in the Region of the Americas, 2000 – 2009



Number of Malaria Cases Treated with ACT by Year Americas, 2000 – 2009



Número de tratamientos distribuidos en Mesoamérica, 2008 y 09



Scales

Differ

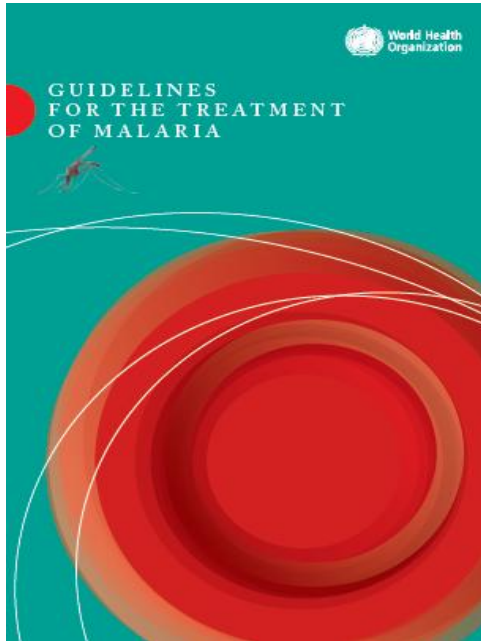
Diversity of Treatment Regimens

- WHO – *P. falciparum* – ACT (Amazon)
CQ – efficacy trials HON, NIC
- WHO – *P. vivax* - Primaquine 14 days (210mg)
- Mexico and Central America –
Presumptive treatment (time diagnosis –proper treatment)
Primaquine 5 days, 7 days, 14 days
Mexico “3x3x3”
- Compare 7, 14 days;
- Standardize regimens (procurement, facilitate access)



WHO treatment guidelines

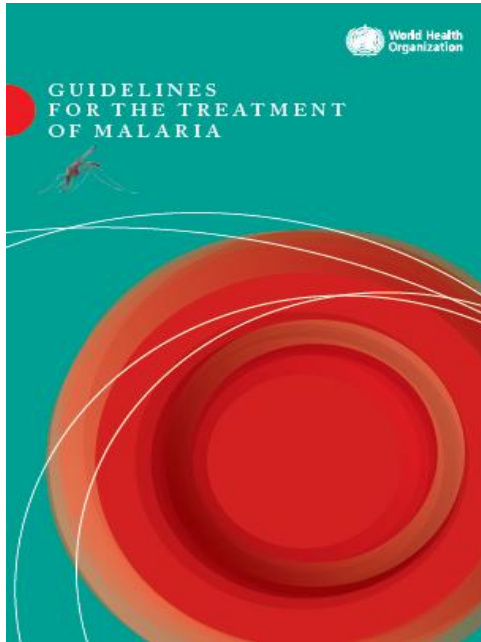
Combinations recommended against *P. falciparum*



- Artemisinin based combinations
 - Artemether + lumefantrine
 - Artesunate + amodiaquine
 - Artesunate + mefloquine
 - Artesunate + sulfadoxine-pyrimethamine
 - ACT + Tet or Dox or Cln (special groups)
 - Dihydroartemisinin + Piperaquine
 - ACT + PQ (0.75mg/kg single dose)

WHO calls for use of ACTs and careful monitoring of their efficacy (2006)

WHO treatment guidelines

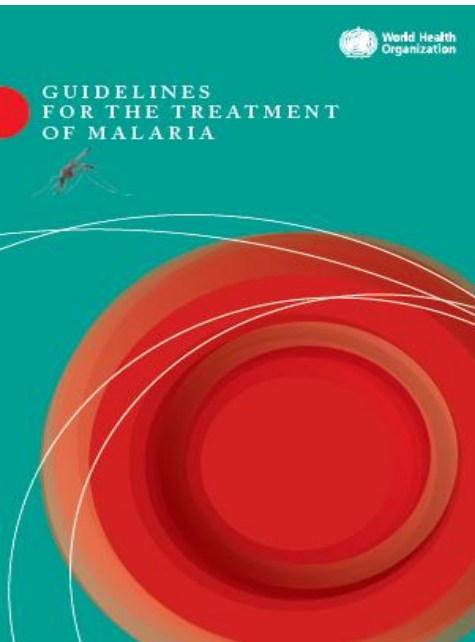


Recommendations against *P. vivax*:

- Sensitive to Chloroquine:
(CQ) 25mg/kg divided over three days +
(PQ) 0.25mg/kg daily for 14 days
- Resistant to Chloroquine
Suggest ACT+PQ (with AQ, MQ or PPQ)
(DHA+PPQ; AL; AS+AQ; AS+MQ)
exception AS+SP – not effective in many places

WHO calls for use of ACTs and careful monitoring of their efficacy (2006)

WHO treatment guidelines



Recommendations against *P. vivax*:

- Severe *P. vivax* – cerebral malaria, severe anemia, thrombocytopaenia and pancytopenia, jaundice, splenic rupture, acute renal failure, acute respiratory distress syndrome, pulmonary oedema
- prompt and effective treatment same as for severe and complicated malaria

WHO calls for use of ACTs and careful monitoring of their efficacy (2006)

Estandarizacion de Tratamiento

- Monitoreo eficacia y efectividad de tratamiento
- In vitro, estudios moleculares, PCR. Baja Transmision
- Casos importados donde no hay resistencia – disponibilidad de antimalaricos apropiados
- Politica de tratamiento basado en evidencia
- Sistemas de suministro y monitoreo de medicamentos, intercambio dentro de red entre paises

Revisión periódica de los esquemas de tratamiento, propuesta 2010

Esquema	2010	Propuesta*	Presentaciones de medicamentos
Bolivia	AS+MQ (mono-fármaco)	AS+MQ + <u>PQ</u>	<u>Dosis fija o co-blister</u>
Brasil	ATM-LUM AS-MQ	ATM-LUM AS-MQ + <u>PQ</u>	Ambas combinaciones dosis fija
Colombia	ATM-LUM	ATM-LUM + <u>PQ</u>	Combinación dosis fija
Ecuador	AS+SP (Co-blister)	<u>ATM- LUM +PQ</u>	<u>Dosis fija</u>
Guyana	ATM-LUM	ATM-LUM+ <u>PQ</u>	Combinación dosis fija
Perú (Costa- Amazonas)	AS+SP AS+MQ (mono-fármaco)	AS+MQ + <u>PQ</u>	<u>Dosis fija o co-blister</u>
Surinam	ATM+LUM	ATM+LUM+ <u>PQ</u>	Combinación dosis fija

*Reunión AMI/RAVREDA. Cartagena, Abril 2010, últimas modificaciones subrayadas

Resultados estudios de eficacia, 2002-2009

#	País	Especie de <i>Plasmodium</i>	Droga Antimalárica testada	Año de finalización del estudio	Localidad / Municipalidad	Numero de pacientes que completaron el estudio	Falla terapéutica (%)	Fuente
1.	BOLIVIA	Pv	CQ	2003	YAQUIBA	60	0	RAVREDA / AMI
2.	BOLIVIA	Pv	CQ	2003	RIBERALTA	59	15	RAVREDA / AMI
3.	BOLIVIA	Pv	CQ	2007	YAQUIBA	57	0	RAVREDA / AMI
4.	BOLIVIA	Pv	CQ	2007	GUAYARAMERIN	75	12.1	RAVREDA / AMI
5.	BOLIVIA	Pv	CQ	2007	RIBERALTA	81	6.1	RAVREDA / AMI
6.	BRASIL	Pf	MQ	2004	MACAPA	33	6	RAVREDA / AMI
7.	BRASIL	Pf	AS+MQ	2007	MACAPA	58	0	RAVREDA / AMI
8.	BRASIL	Pv	CQ	2004	CAREIRO	40	25	RAVREDA / AMI
9.	BRASIL	Pv	CQ	2004	COARI	98	2	RAVREDA / AMI
10.	BRASIL	Pf	AS+MQ	2006	COLNIZA	49	0	RAVREDA / AMI
11.	BRASIL	Pf	AT+LM	2006	PORTO VELHO	54	0	RAVREDA / AMI
12.	BRASIL	Pf	MQ	2004	SAO LUIS	11	9	RAVREDA / AMI
13.	BRASIL	Pf	MQ	2004	MANAUS	73	1	RAVREDA / AMI
14.	BRASIL	Pv	CQ	2004	MANAUS	108	19	RAVREDA / AMI
15.	BRASIL	Pv	CQ	2004	MACAPA	136	18	RAVREDA / AMI
16.	BRASIL	Pv	CQ	2004	SAO LUIS	46	13	RAVREDA / AMI
17.	BRASIL	Pv	CQ	2004	BELEM	165	10	RAVREDA / AMI
18.	BRASIL	Pf	Q+DOX	2004	MACAPA	63	18	RAVREDA / AMI
19.	BRASIL	Pv	CQ	2004	PORTO VELHO	87	8	RAVREDA / AMI
20.	BRASIL	Pf	MQ	2004	PORTO VELHO	54	7	RAVREDA / AMI
21.	BRASIL	Pv	CQ	2004	CUIABA	75	13	RAVREDA / AMI
22.	BRASIL	Pf	Q+DOX	2007	COARI	86	33.6	RAVREDA / AMI
23.	BRASIL	Pf	AT+LM	2007	COARI	117	0	RAVREDA / AMI
24.	BRASIL	Pf	AS+MQ	2006	PORTO VELHO	86	0	RAVREDA / AMI
25.	BRASIL	Pf	Q+DOX	2004	BELEM	79	11	RAVREDA / AMI
26.	COLOMBIA	Pf	AQ+SP	2004	BUENAVENTURA	5	50	RAVREDA / AMI
27.	COLOMBIA	Pf	AQ+SP	2003	TURBO	44	2.3	RAVREDA / AMI
28.	COLOMBIA	Pf	AS+SP	2004	TURBO	47	2.1	RAVREDA / AMI
29.	COLOMBIA	Pf	AS+SP	2004	EL BAGRE	51	1.9	RAVREDA / AMI
30.	COLOMBIA	Pf	MQ+SP	2004	EL BAGRE	33	0	RAVREDA / AMI
31.	COLOMBIA	Pf	AQ	2004	EL BAGRE	12	42	RAVREDA / AMI
32.	COLOMBIA	Pf	MQ+SP	2004	TURBO	20	0	RAVREDA / AMI
33.	COLOMBIA	Pf	AQ	2004	TURBO	21	23	RAVREDA / AMI
34.	COLOMBIA	Pv	CQ	2004	BUENAVENTURA	42	0	RAVREDA / AMI
35.	COLOMBIA	Pf	AQ	2004	BUENAVENTURA	14	57	RAVREDA / AMI
36.	COLOMBIA	Pf	AQ	2003	TUMACO	29	38	RAVREDA / AMI
37.	COLOMBIA	Pv	CQ	2003	TURBO	45	2.2	RAVREDA / AMI
38.	COLOMBIA	Pf	MQ	2003	TURBO	45	2.2	RAVREDA / AMI
39.	COLOMBIA	Pf	MQ	2003	TUMACO	50	0	RAVREDA / AMI

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40.	COLOMBIA	Pf	AQ+SP	2003	EL BAGRE	46	2.2	RAVREDA / AMI
41.	COLOMBIA	Pv	CQ	2003	EL BAGRE	47	0	RAVREDA / AMI
42.	COLOMBIA	Pv	CQ	2003	GUAPI	34	0	RAVREDA / AMI
43.	COLOMBIA	Pf	SP	2003	GUAPI	44	0	RAVREDA / AMI
44.	COLOMBIA	Pf	AQ	2003	GUAPI	40	15	RAVREDA / AMI
45.	COLOMBIA	Pf	AQ+SP	2003	TUMACO	49	0	RAVREDA / AMI
46.	COLOMBIA	Pv	CQ	2003	TUMACO	49	2	RAVREDA / AMI
47.	COLOMBIA	Pf	MQ	2003	EL BAGRE	47	6.4	RAVREDA / AMI
48.	ECUADOR	Pf	AQ+SP	2004	ESMERALDAS	34	0	RAVREDA / AMI
49.	ECUADOR	Pf	CQ	2003	PORTOVIEJO	22	81	RAVREDA / AMI
50.	ECUADOR	Pv	AQ	2003	ESMERALDAS	22	0	RAVREDA / AMI
51.	ECUADOR	Pf	AQ	2004	SANTO DOMINGO	60	47	RAVREDA / AMI
52.	ECUADOR	Pf	SP	2003	PORTOVIEJO	29	0	RAVREDA / AMI
53.	ECUADOR	Pf	SP	2003	MILAGRO	49	0	RAVREDA / AMI
54.	ECUADOR	Pf	CQ	2003	MILAGRO	15	80	RAVREDA / AMI
55.	ECUADOR	Pf	CQ+SP	2004	ESMERALDAS	50	0	RAVREDA / AMI
56.	ECUADOR	Pf	AS+SP	2004	MACHALA	48	0	RAVREDA / AMI
57.	ECUADOR	Pf	AT+LM	2005	Esmeraldas-Milagro-Santo Domingo	62	0	RAVREDA / AMI
58.	ECUADOR	Pf	AS+SP	2003	ESMERALDAS	61	0	RAVREDA / AMI
59.	GUYANA	Pf	MQ	2003	PORT KAITUMA	37	28	RAVREDA / AMI
60.	GUYANA	Pf	AT+LM	2008	GEORGETOWN	63	1.7	RAVREDA / AMI
61.	GUYANA	Pf	AS+MQ	2005	MADHIA	82	1.2	RAVREDA / AMI
62.	GUYANA	Pf	MQ	2005	MADHIA	82	3.6	RAVREDA / AMI
63.	GUYANA	Pf	AS+MQ	2003	PORT KAITUMA	27	7.5	RAVREDA / AMI
64.	GUYANA	Pf	AT+LM	2004	GEORGETOWN	72	0	RAVREDA / AMI
65.	GUYANA	Pf	SP	2002	PORT KAITUMA	52		RAVREDA / AMI
66.	GUYANA	Pv	CQ	2006	GEORGETOWN	68	32.3	RAVREDA / AMI
67.	GUYANA	Pv	CQ+PQ	2006	GEORGETOWN	8	25	RAVREDA / AMI
68.	HONDURAS	Pf	CQ	2009	Puerto Lempira	67	0	RAVREDA / AMI
69.	NICARAGUA	Pf	SP	2006		28	0	RAVREDA / AMI
70.	NICARAGUA	Pf	CQ	2006		30	0	RAVREDA / AMI
71.	PERU	Pf	AS+MQ	2005	IQUITOS	95	1.01	RAVREDA / AMI
72.	PERU	Pv	CQ	2002	IQUITOS	132	4	RAVREDA / AMI
73.	PERU	Pf	CQ	2002	ULLPAYACU	20	90	RAVREDA / AMI
74.	PERU	Pf	SP	2002	ULLPAYACU	34	12	RAVREDA / AMI
75.	SURINAME	Pf	AT+LM	2003	PARAMARIBO	53	1.9	RAVREDA / AMI
76.	SURINAME	Pf	MQ	2002	PARAMARIBO	55	7	RAVREDA / AMI
77.	SURINAME	Pf	AT+LM	2006	PARAMARIBO	44	4.5	RAVREDA / AMI
78.	SURINAME	Pf	AS+MQ	2002	PARAMARIBO	52	6	RAVREDA / AMI
79.	SURINAME	Pf	AT+LM	2003	MAROWIJNE	49	2	RAVREDA / AMI
80.	SURINAME	Pf	AT+LM	2005	PARAMARIBO	36	2.8	RAVREDA / AMI
81.	SURINAME	Pf	Articom	2005	PARAMARIBO	31	6.5	RAVREDA / AMI



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82.	SURINAME	Pf	AS+DOX	2003	PARAMARIBO	49	18	RAVREDA / AMI
83.	SURINAME	Pf	Artecon	2006	PARAMARIBO	43	4.6	RAVREDA / AMI
84.	SURINAME	Pf	AS+MQ	2003	PARAMARIBO	41	2	RAVREDA / AMI
85.	VENEZUELA	Pv	CQ+PQ	2002	YAGUARAPARO	102	0	RAVREDA / AMI
86.	VENEZUELA	Pf	AS+MQ	2005	ATURES	60	0	RAVREDA / AMI
87.	VENEZUELA	Pv	CQ	2005	ATURES	65	1.5	RAVREDA / AMI
88.	VENEZUELA	Pf	AT+LM	2005	ATURES	60	0	RAVREDA / AMI
89.	VENEZUELA	Pf	CQ	2002	ATURES	17	100	RAVREDA / AMI
90.	VENEZUELA	Pv	CQ+PQ	2002	ATURES	102	0	RAVREDA / AMI
91.	VENEZUELA	Pf	Q+PQ	2003	ATURES	52	9.6	RAVREDA / AMI
92.	VENEZUELA	Pf	CQ	2002	TUMEREMO	21	76	RAVREDA / AMI
93.	VENEZUELA	Pf	Q+PQ	2003	TUMEREMO	45	22.2	RAVREDA / AMI
94.	VENEZUELA	Pv	CQ	2003	KM 88	44	0	RAVREDA / AMI
95.	VENEZUELA	Pv	CQ+PQ	2003	TUMEREMO	94	0	RAVREDA / AMI

Pf: *Plasmodium falciparum*, Pv: *Plasmodium vivax*

Thank you.
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