Universidad Tecnológica de Pereira
Facultad Ciencias de la Salud

Grupo y Semillero de Investigación Salud Pública e Infección

ACIN

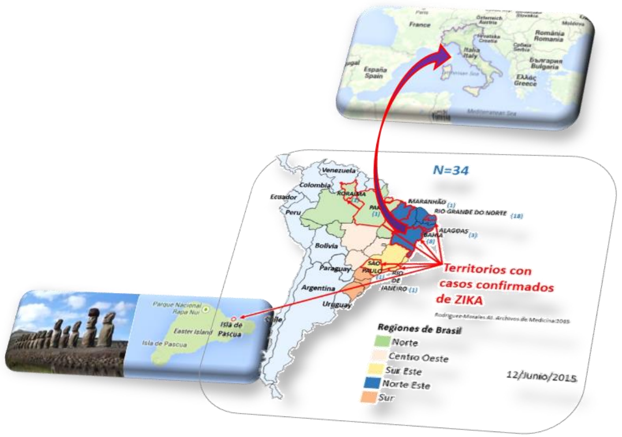
International Society of Chemotherapy for Infection and Cancer

SLAMVI
Sociedad Latinoamericana de Medicina del Viajero

Asociación Panamericana de Infectología

Virus Chikungunya:

la realidad de una arbovirosis tropical que llegó para quedarse



Prof. Alfonso J. Rodríguez-Morales,

MD, MSc, DTM&H, FRSTMH(Lon), FFTM RCPS(Glasg), PhD(c)
Investigador Senior (2015-2018), Co-Director del Grupo de Investigación Salud Pública e Infección (“C”),
Docente de Parasitología y Factores de Riesgo, Departamentos de Ciencias Básicas y Medicina Comunitaria,
Facultad de Ciencias de la Salud, Universidad Tecnológica de Pereira (UTP), Pereira, Risaralda, Colombia.
Presidente, Comité de Medicina del Viajero, Asociación Panamericana de Infectología (API).
Coordinador, Comisión de Publicaciones Científicas y Docencia, Sociedad Latinoamericana de Medicina del Viajero (SLAMVI).
Co-Chair, Working Group on Zoonoses, International Society for Chemotherapy (ISC).
Comité de Zoonosis y Fiebres Hemorrágicas, Asociación Colombiana de Infectología (ACIN).
H index=14.

Contenido de la presentación

1. El contexto del dengue en las Américas y Colombia antes de 2013
2. ¿Qué impacto está teniendo y podrá tener chikungunya en adición a dengue?
3. Otros arbovirus tropicales emergentes en la región: Zika y Mayaro

Contenido de la presentación

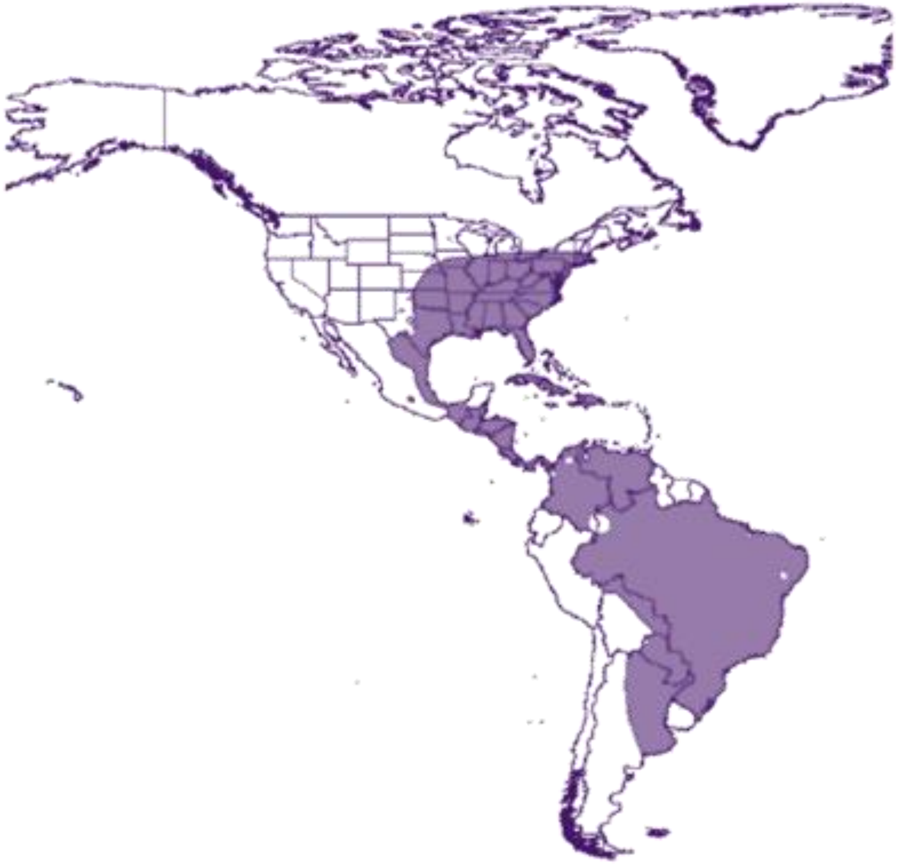
1. **El contexto del dengue en las Américas y Colombia antes de 2013**
2. ¿Qué impacto está teniendo y podrá tener chikungunya en adición a dengue?
3. Otros arbovirus tropicales emergentes en la región: Zika y Mayaro

1. El contexto de dengue en las Américas y en Colombia antes de 2013

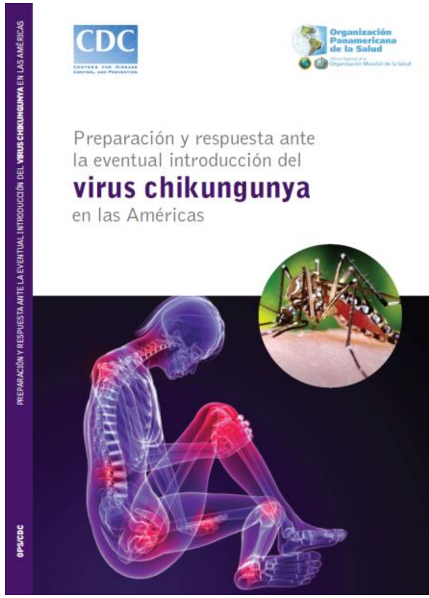
Figura 4. Distribución del *Ae. aegypti* en las Américas.[a]

[a] Adaptado de Arias, 2002.[60]

Figura 5. Distribución aproximada del *Ae. albopictus* en las Américas.[a]



[a] Adaptado de Benedict et al. 2007.[61]



Journal of Clinical Virology
Volume 66, May 2015, Pages 60–61

Letter to the Editor

Venezuela: Far from the path to dengue and chikungunya control

Alfonso J. Rodríguez-Morales, Alberto E. Paniz-Mondolfi

Public Health and Infection Group of Research, Faculty of Health Sciences, Universidad Tecnológica de Pereira, Pereira, Risaralda, Colombia

Department of Pathology and Laboratory Medicine, Hospital Internacional, Barquisimeto, Venezuela and the Laboratory of Biochemistry, Instituto de Biomedicina, Caracas, Venezuela

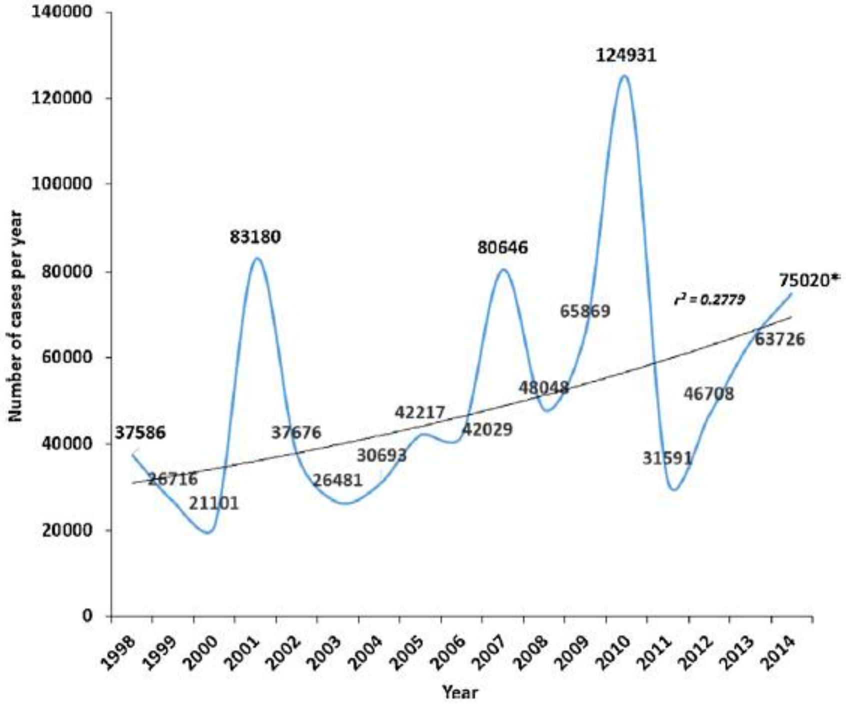


Fig. 1. Dengue in Venezuela, 1998–2014.
*Data up to epidemiological week 44 (November 1, 2014).

Rodríguez-Morales AJ, Paniz-Mondolfi AE. Venezuela: far from the path to dengue and chikungunya control. J Clin Virol 2015 May; 66:60-61.

Rodríguez-Morales AJ, Paniz-Mondolfi AE. Venezuela's failure in malaria control. The Lancet 2014 Aug 23; 384(9944):663-664

THE LANCET
Volume 384, Issue 9944, 23–29 August 2014, Pages 663–664

Correspondence

Venezuela's failure in malaria control

Alfonso J Rodríguez-Morales[a], Alberto E Paniz-Mondolfi[b]

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[b] Yale University School of Medicine, New Haven, CT, USA

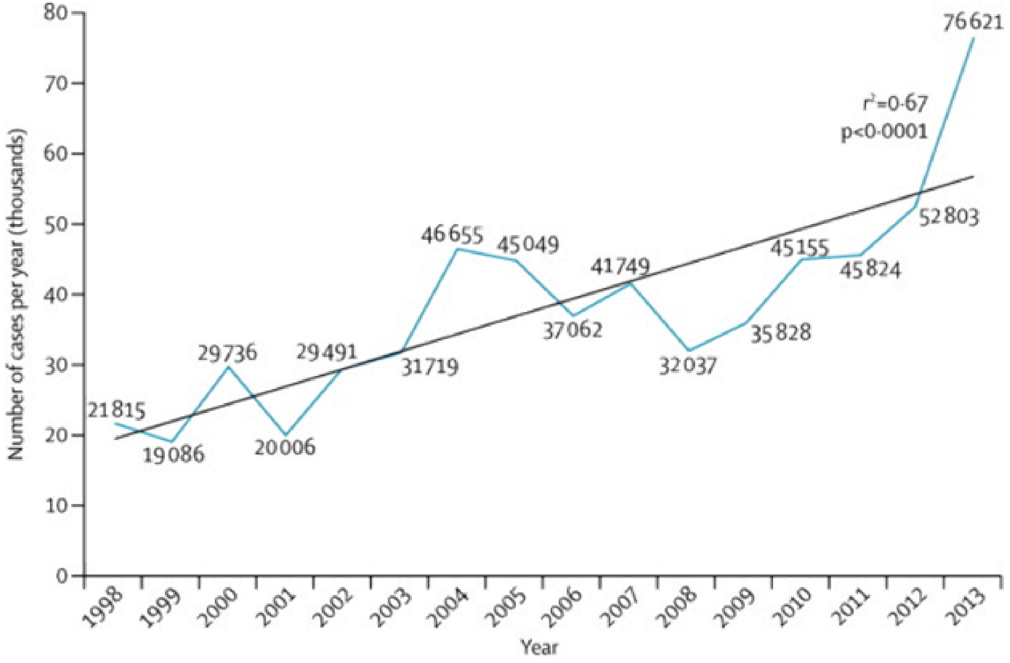
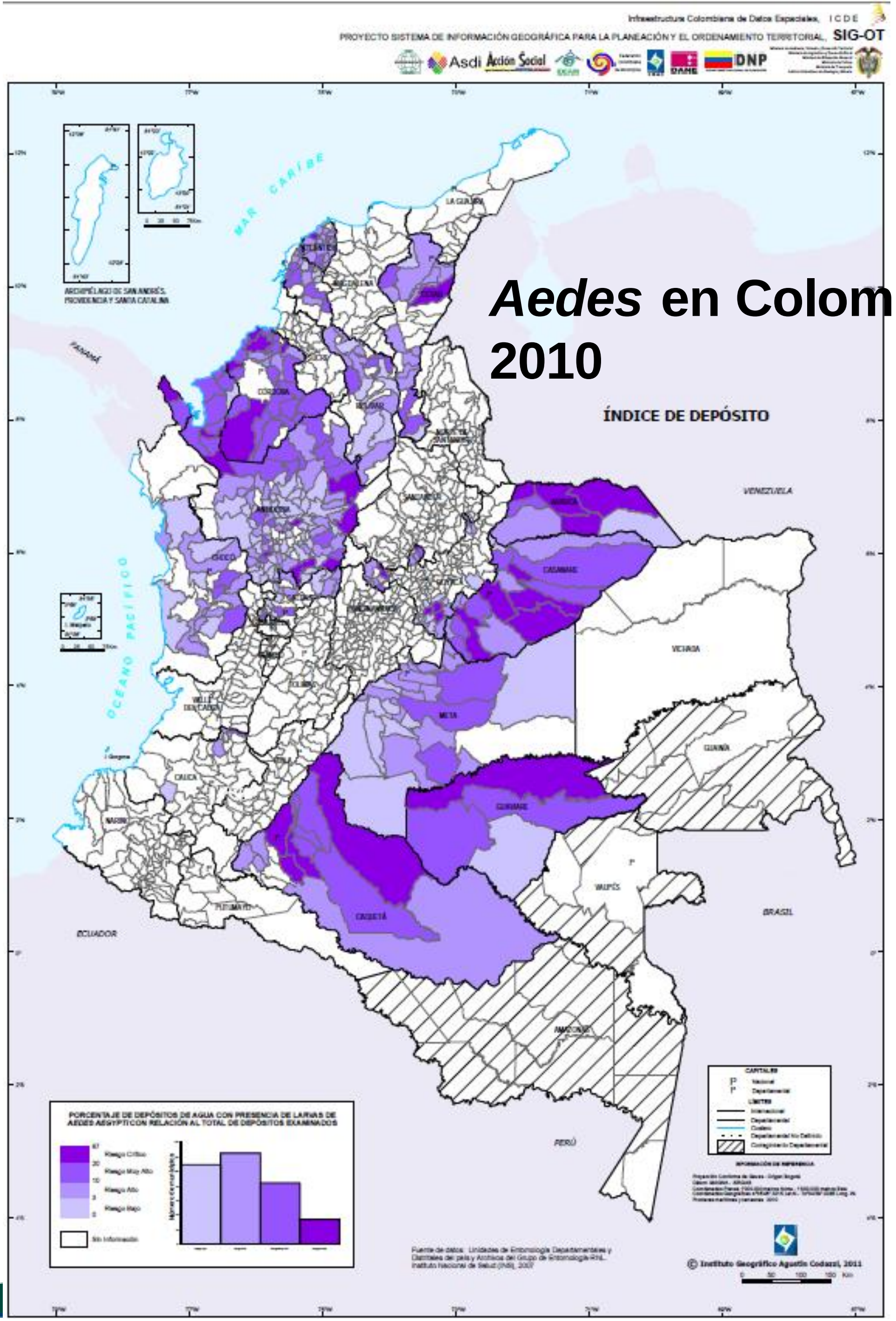
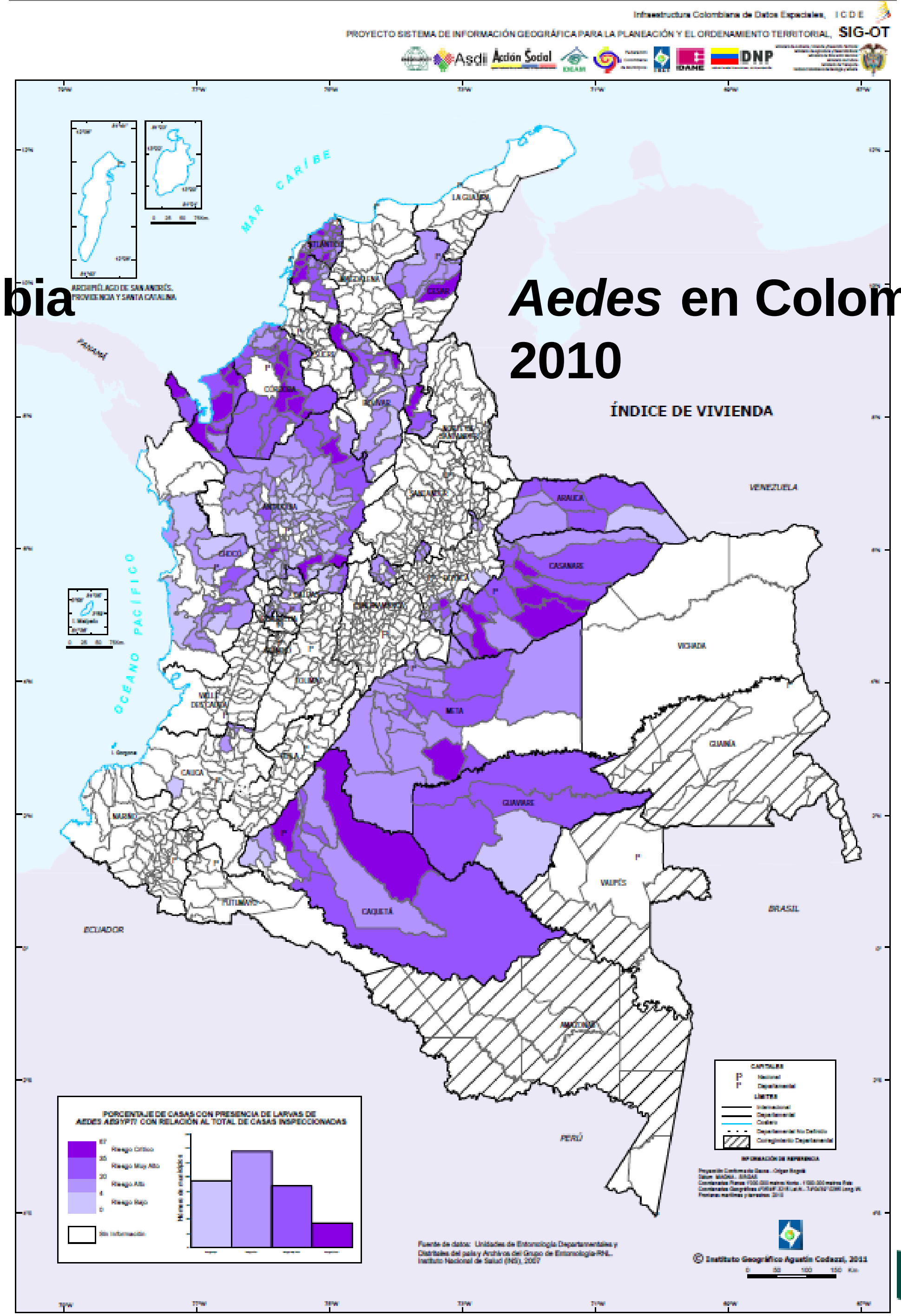


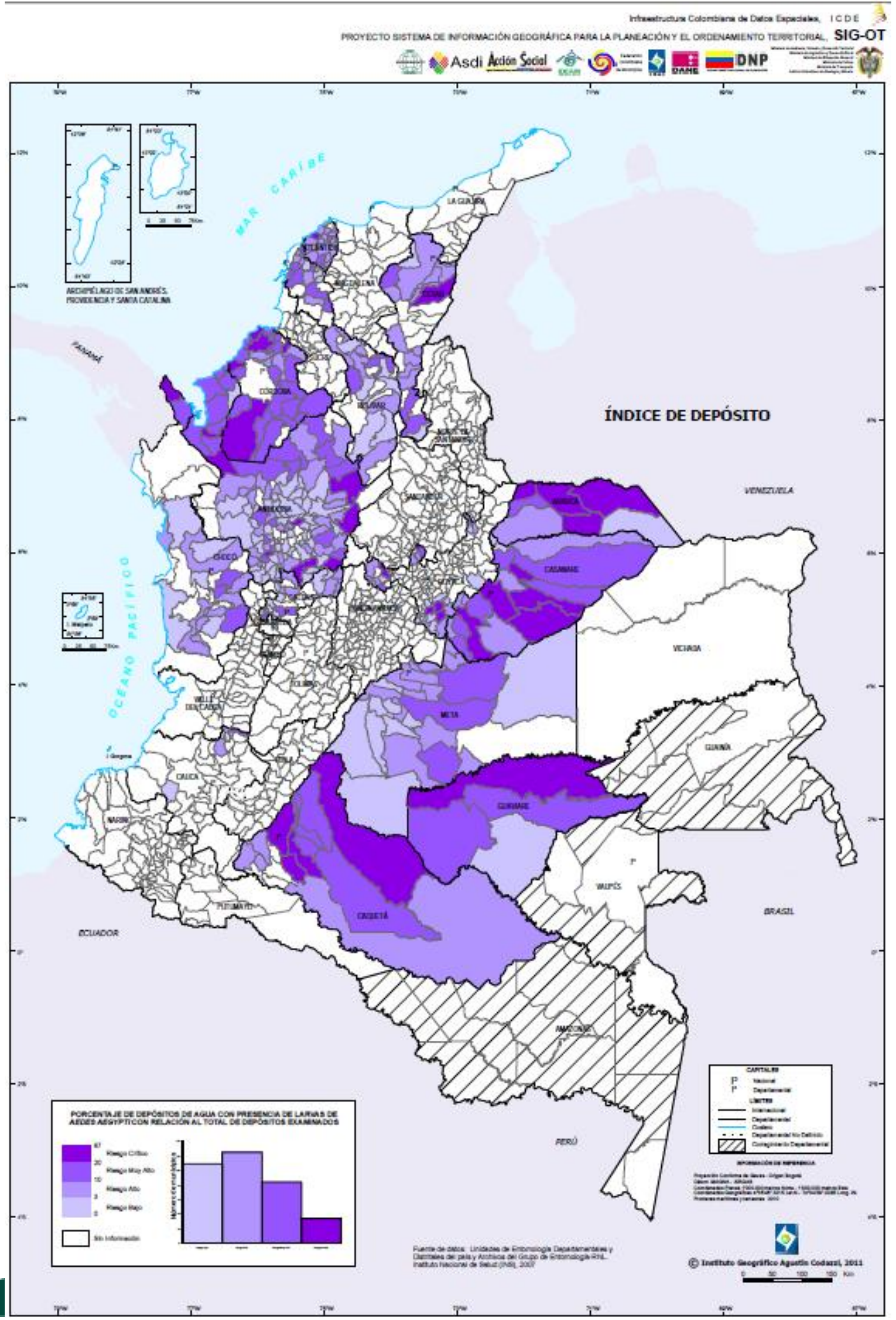
Figure.
Malaria in Venezuela, 1998–2013



Aedes en Colombia 2010



Aedes en Colombia 2010



Infraestructura Colombiana de Datos Espaciales, ICDE
PROYECTO SISTEMA DE INFORMACIÓN GEOGRÁFICA PARA LA PLANEACIÓN Y EL ORDENAMIENTO TERRITORIAL, SIG-OT
Asdi
Acción Social
DANE
DNP
ÍNDICE DE DEPÓSITO
MAR CARIBE
OCÉANO PACÍFICO
ARCHIPIÉLAGO DE SAN ANDRÉS, PROVIDENCIA Y SANTA CATALINA
PANAMÁ
VENEZUELA
ECUADOR
BRASIL
PERÚ
VICHADA
GUAINÍA
VAUPÉS
AMAZONAS
CAQUETÁ
GUAVIARE
META
CASANARE
PUTUMAYO
PORCENTAJE DE DEPÓSITOS DE AGUA CON PRESENCIA DE LARVAS DE AEDES AEGYPTI CON RELACIÓN AL TOTAL DE DEPÓSITOS EXAMINADOS
Riesgo Crítico
Riesgo Muy Alto
Riesgo Alto
Riesgo Bajo
Sin Información
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MAPA FÍSICO - POLÍTICO
MAR CARIBE
OCÉANO PACÍFICO
ARCHIPIÉLAGO DE SAN ANDRÉS, PROVIDENCIA Y SANTA CATALINA
I. Malpelo
PANAMÁ
VENEZUELA
ECUADOR
PERÚ
BRASIL
LA GUAJIRA
ATLÁNTICO
MAGDALENA
CESAR
SUCRE
BOLÍVAR
CÓRDOBA
NORTE DE SANTANDER
ANTIOQUIA
SANTANDER
ARAUCA
BOYACÁ
CASANARE
CHOCÓ
RISARALDA
CALDAS
CUNDINAMARCA
QUINDÍO
TOLIMA
VALLE DEL CAUCA
META
VICHADA
GUAINÍA
CAUCA
HUILA
GUAVIARE
NARIÑO
PUTUMAYO
CAQUETÁ
VAUPÉS
AMAZONAS
Riohacha
Santa Marta
Barranquilla
Cartagena
Valledupar
Sincelejo
Montería
Cúcuta
Bucaramanga
Arauca
Puerto Carreño
Medellín
Quibdó
Tunja
Yopal
Manizales
Pereira
Armenia
Ibagué
Bogotá, D.C.
Villavicencio
Cali
Neiva
Popayán
San José del Guaviare
Inírida
Florencia
Pasto
Mocoa
Mitú
Leticia
RÍO ARAUCA
RÍO CASANARE
RÍO META
RÍO VICHADA
RÍO GUAVIARE
RÍO INÍRIDA
RÍO GUAINÍA
RÍO VAUPÉS
RÍO CAQUETÁ
RÍO PUTUMAYO
R. AMAZONAS
RÍO MAGDALENA
RÍO CAUCA
MATICES HIPSOMÉTRICOS (ALTIMETRÍA)
msnm
4000 m
3000
2000
1000
500
200
100
0
Límite internacional
Límite departamental
Capital de la república
Capital de departamento
Distrito capital
Río
0 100 200 km
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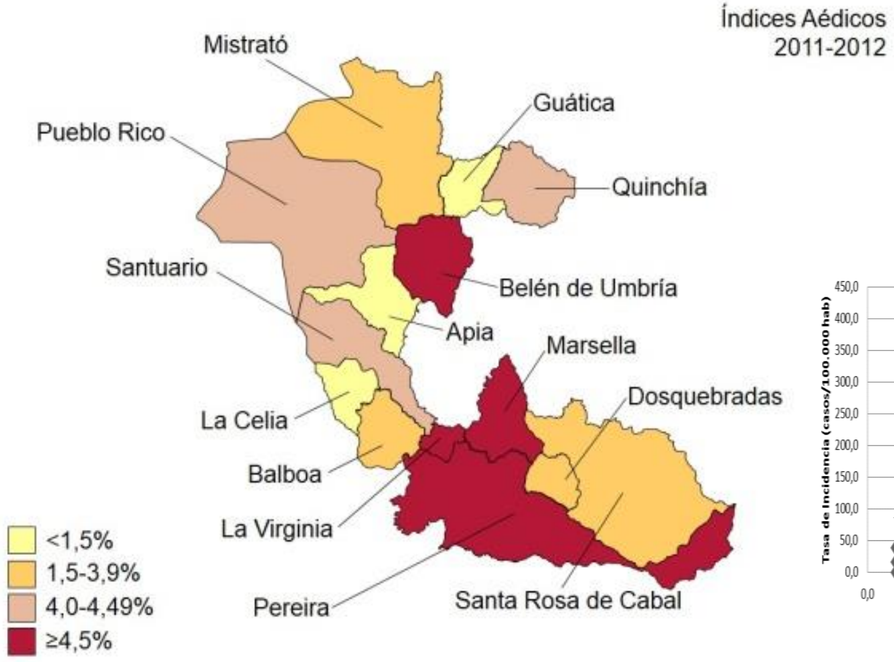
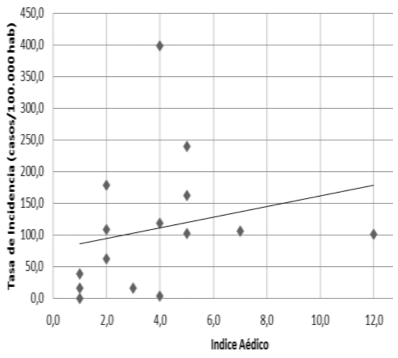
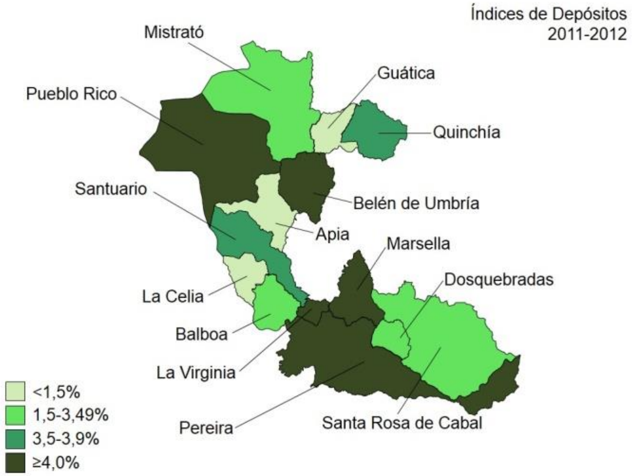
Aedes en Risaralda, Colombia 2011-2012







Agudelo-Ospina JA, Alzate-Carvajal C, Arroyave-Castaño AF, Manrique-Castaño S, Quiroga-Mendoza CA, Sarria-Gómez D, Yepes-Echeverri MC, Herrera-Giraldo AC, Botero S, Rodríguez-Morales AJ. Caracterización entomológica del Dengue en el Departamento de Risaralda, Colombia, 2011-2012. Rev Cuerpo Méd HNAAA 2014;7(4):15-21

REVISTA CHILENA de INFECTOLOGÍA

Chikungunya en las Américas: Preparación, vigilancia y alerta en Chile

Chikungunya in the Americas: Preparedness, surveillance and alert in Chile

Rev Chilena Infectol 2014; 31 (6): 761-762

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Facultad de Medicina, Universidad Austral, Valdivia, Chile.

Patricio Alfaro-Toloza
Asociación Chilena de Seguridad, Chillán, Chile.

Alfonso J. Rodríguez-Morales
Grupo de Investigación Salud Pública e Infección, Facultad de Ciencias de la Salud, Universidad Tecnológica de Pereira, Risaralda, Colombia.

Actualmente los gobiernos del continente americano se encuentran en alerta sanitaria por el incremento sostenido de casos de la fiebre Chikungunya en la región. Desde que se comunicó el primer caso autóctono de esta enfermedad en el hemisferio occidental, en diciembre de 2013 en San Martín, se han notificado una serie de casos en al menos 31 países de todo el continente americano, incluyendo E. U. A., Colombia, Brasil, entre otros[1]. Según un estudio realizado entre los años 2006 y 2013, se reportaron en promedio 28 casos nuevos por año[1]. La Organización Mundial de la Salud ha reportado a la fecha, que durante el período 2013-2014 el número de casos autóctonos sospechosos asciende a 737.084 y el de confirmados a 10.637[2].

Rev.MVZ Córdoba 19(2):4045-4046, 2014. ISSN: 0122-0268

EDITORIAL

Virus Chikungunya in Colombia, a simple matter of time?

¿Virus Chikungunya en Colombia, simple cuestión de tiempo?

Marco González T. M.Sc. Salim Mattar V. Ph.D.

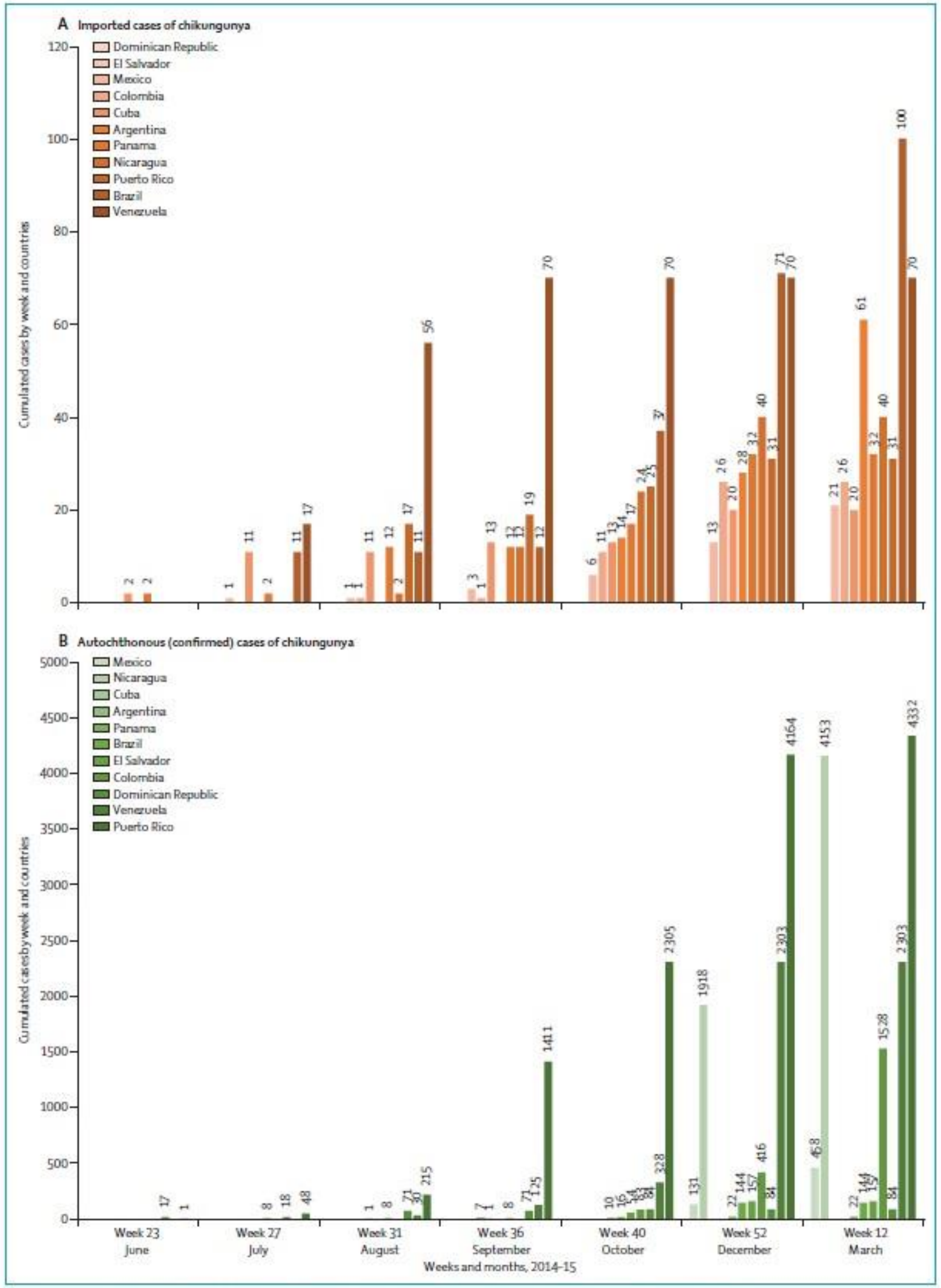
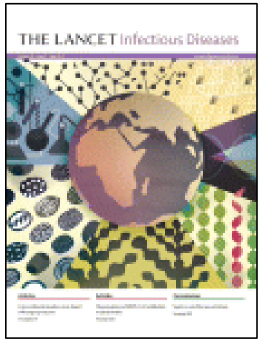
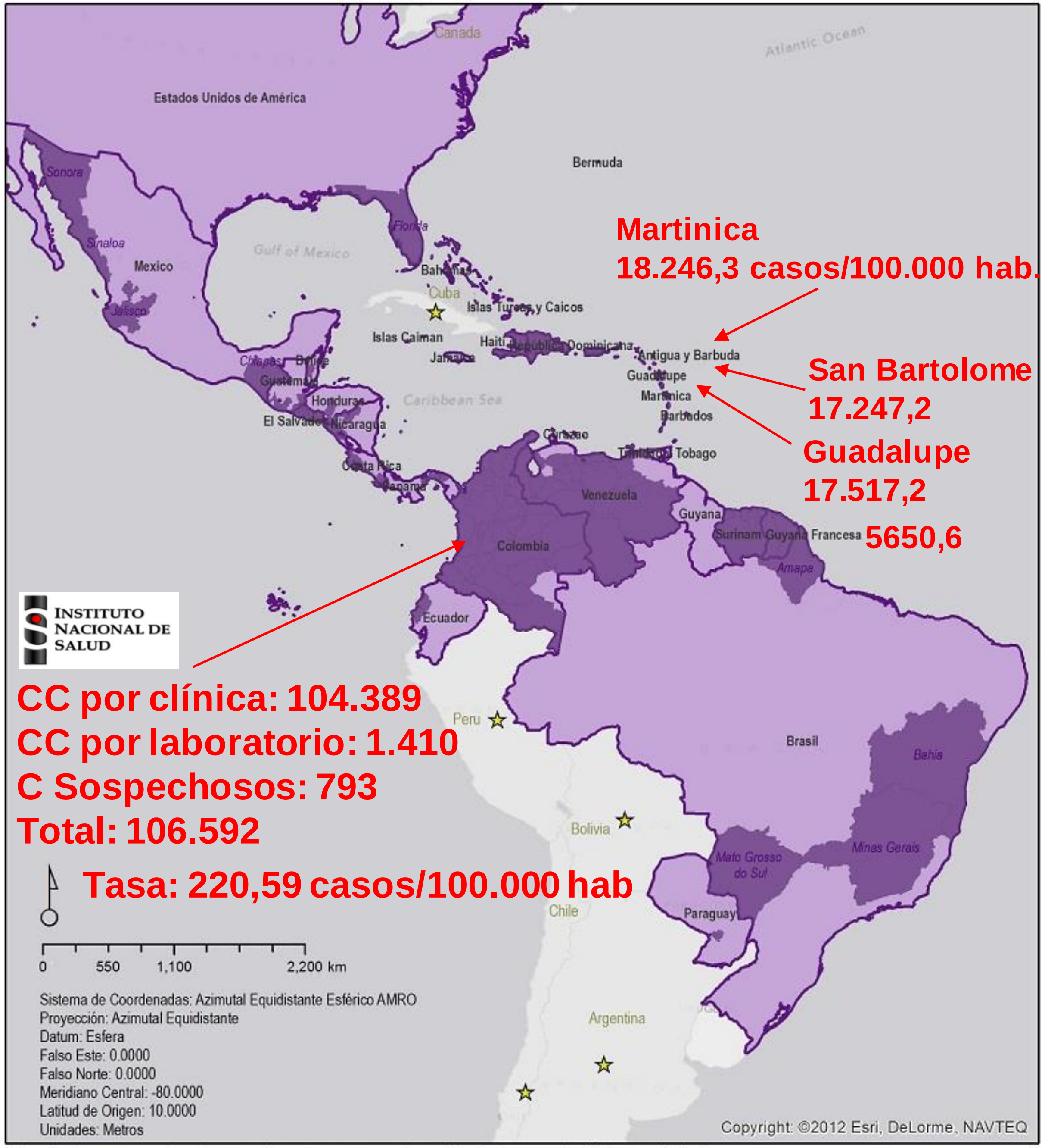


Figure: Change in the cumulated number of chikungunya cases in selected Latin American countries, June, 2014 to March, 2015

Rapidly progressing spreading in the Americas, 2013-2015



Alfaro-Toloza P, Clouet-Huerta DE, **Rodríguez-Morales AJ**. **Chikungunya, the emerging migratory rheumatism.** *Lancet ID* 2015 May; 15(5):510-512. (Indexed on Medline/Index Medicus)



* Nota: Se han representado en el mapa países enteros aunque no haya evidencia de presencia del virus en todo el país.

Martinica
18.246,3 casos/100.000 hab.

San Bartolome
17.247,2

Guadalupe
17.517,2

5650,6

CC por clínica: 104.389
CC por laboratorio: 1.410
C Sospechosos: 793
Total: 106.592

Tasa: 220,59 casos/100.000 hab

Organización Panamericana de la Salud
Organización Mundial de la Salud
Oficina Regional para las Américas

Países/territorios con transmisón autóctona o casos importados de Chikungunya en las Américas, SE 52, 2014

Leyenda
- Países/Territorios con transmisión autóctona
- Áreas sub-nacionales con transmisión autóctona reportada
- Países/Territorios sin transmisión autóctona, con casos importados ☆

N=1.110.034

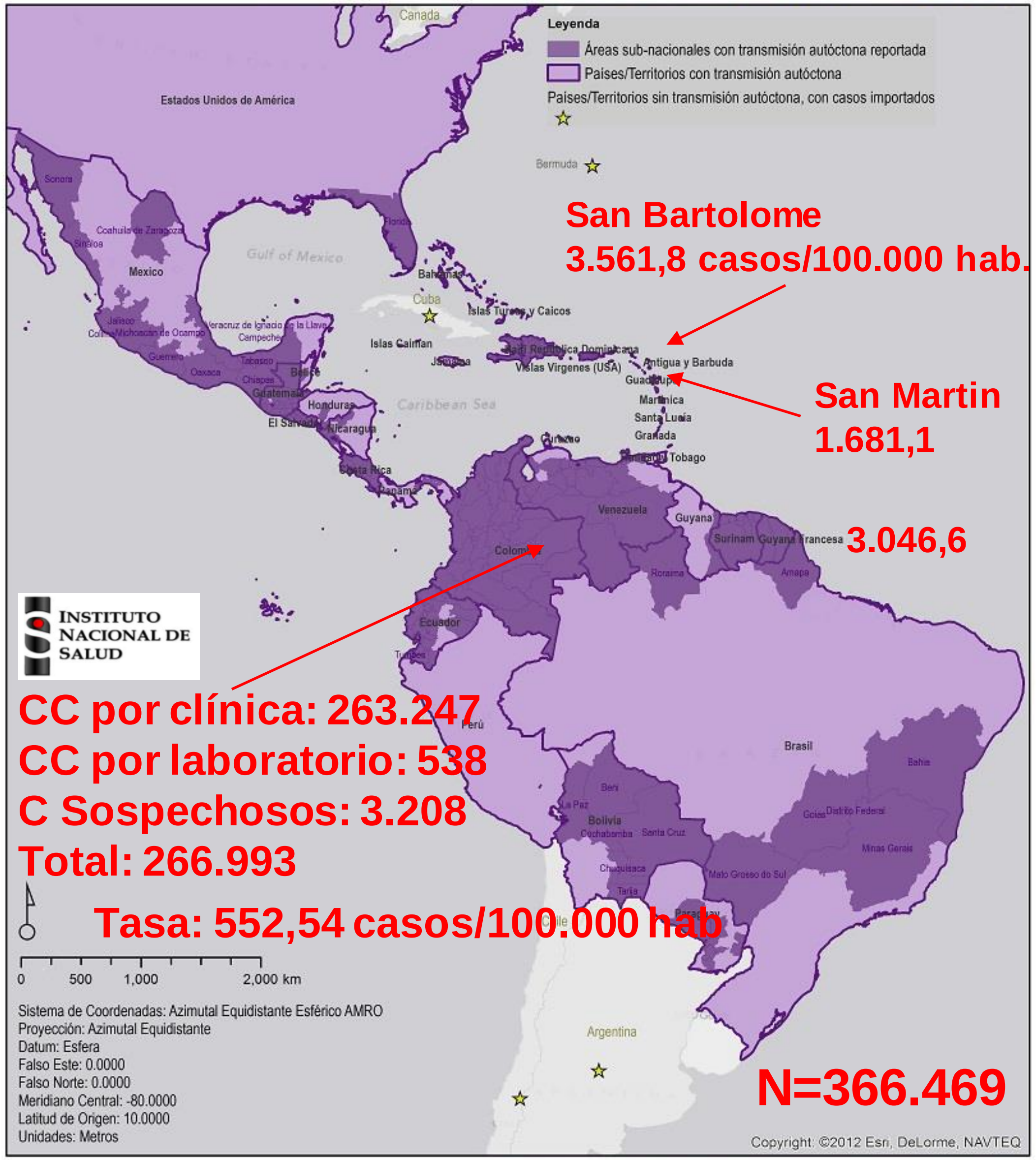
Organización Panamericana de la Salud
Organización Mundial de la Salud
Américas

Número de casos reportados de chikungunya en países o territorios de las Américas 2013-2014 (por semanas)
Casos acumulados
(actualizados al 15 de mayo del 2015)

País/Territorio	Semana[a]	Casos de transmisión autóctona[b]		Casos importados	Tasa de incidencia[c]	Fallecidos	Población[d] X 1000
		Sospechosos	Confirmados				
América del Norte							
Bermuda	Semana 46			10	0.0	0	69
Canadá	Semana 32		0	8	0.0	0	35,182
México	Semana 53		155	13	0.1	0	118,129
Estados Unidos de América *	Semana 51		11	2,010	0.0	0	320,051
Subtotal		*0*	*166*	*2,041*	*0.0*	*0*	*473,431*
Istmo Centroamericano							
Belice	Semana 44		3		0.9	0	332
Costa Rica^	Semana 51	185	13	40	4.1	0	4,872
El Salvador	Semana 47	135,226	157		2,135.4	0	6,340
Guatemala#	Semana 53	27,343	198		178.1	0	15,468
Honduras	Semana 53	5,338	9	5	66.0	0	8,098
Nicaragua*	Semana 50	1,598	1,918	40	57.8	0	6,080
Panamá	Semana 48		22	32	0.6	0	3,864
Subtotal		*169,690*	*2,320*	*117*	*381.8*	*0*	*45,054*
Caribe Latino							
Cuba	Semana 42			20	0.0	0	11,266
República Dominicana	Semana 53	539,099	84		5,182.5	6	10,404
Guayana Francesa	Semana 50	9,050	5,020		5,650.6	0	249
Guadalupe	Semana 50	81,200	430		17,517.2	67	466
Haiti	Semana 28	64,695	14		627.2	0	10,317
Martinica	Semana 50	72,200	1,515		18,246.3	83	404
Puerto Rico*	Semana 52	21,518	4,278	31	699.5	10	3,688
San Bartolomé	Semana 50	1,393	142		17,247.2	0	9
San Martín (Francia)	Semana 50	4,830	793		15,755.1	3	36
Subtotal		*793,985*	*12,276*	*51*	*2,188.6*	*169*	*36,839*
Área Andina							
Bolivia	Semana 50		0	4	0.0	0	10,671
Colombia	Semana 53	90,481	577	26	188.4	3	48,321
Ecuador	Semana 51		3	7	0.0	0	15,738
Perú	Semana 52		0	11	0.0	0	30,376
Venezuela	Semana 52	37,274	2,486	50	130.8	3	30,405
Subtotal		*127,755*	*3,066*	*98*	*96.5*	*6*	*135,511*
Cono Sur							
Argentina	Semana 53			41	0.0	0	41,446
Brasil	Semana 53	705	2,196	93	1.4	0	200,362
Chile	Semana 53		0	19	0.0	0	17,620
Paraguay	Semana 48		1	7	0.0	0	6,802
Subtotal		*705*	*2,197*	*160*	*1*	*0*	*266,230*
Caribe No-Latino							
Anguila	Semana 52	46	52	2	612.5	0	16
Antigua y Barbuda	Semana 52	1,426	18		1,604.4	0	90
Aruba	Semana 50	417	66	12	443.1	0	109
Bahamas	Semana 51		92	5	24.4	0	377
Barbados	Semana 52	1,665	114	8	615.6	0	289
Islas Caimán	Semana 52	162	43	3	379.6	0	54
Curazao	Semana 44	1,838	835	7	1,818.4	0	147
Dominica	Semana 52	3,590	173		5,154.8	0	73
Granada	Semana 46	3,070	26		2,814.5	0	110
Guyana	Semana 31		76		9.5	0	800
Jamaica	Semana 52	1,420	89	2	54.2	0	2,784
Montserrat	Semana 52	105	14		2,380.0	0	5
Saint Kitts y Nevis	Semana 53	627	28		1,284.3	0	51
Santa Lucia	Semana 52	645	238		541.7	0	163
San Vicente y las Granadinas	Semana 49	1,220	173		1,352.4	0	103
Sint Maarten (Países Bajos)[Σ]	Semana 52		470		1,175.0	0	40
Suriname'	Semana 43		1,210	14	224.5	1	539
Trinidad y Tobago	Semana 51		291	3	21.7	0	1,341
Islas Turcas y Caicos	Semana 44		19	7	39.6	0	48
Islas Vírgenes (RU)	Semana 47	347	47		1,231.3	0	32
Islas Vírgenes (EUA)	Semana 53	1,321	276	8	1,521.0	2	105
Subtotal		*17,899*	*4,350*	*71*	*305.8*	*3*	*7,276*
TOTAL		**1,110,034**	**24,375**	**2,538**	**117.6**	**178**	**964,341**

Organización Panamericana de la Salud
Organización Mundial de la Salud — Américas

Países/territorios con transmisión autóctona o casos importados de Chikungunya en las Américas, SE 49, 2013 - SE 23, 2015



Fuente de datos:
OPS\OMS. Número de casos reportados de fiebre chikungunya en las Américas
http://www.paho.org/viruschikungunya
Producción del Mapa:
OPS-OMS AD CHA IR ARO

* Nota: Se han representado en el mapa países enteros aunque no haya evidencia de presencia del virus en todo el país.

Organización Panamericana de la Salud
Organización Mundial de la Salud — Américas

Número de casos reportados de chikungunya en países o territorios de las Américas 2015 (por semanas) Casos acumulados
Semana Epidemiológica / SE 23 (actualizada al 12 de junio de 2015)

País/Territorio	Semana[a]	Casos de transmisión autóctona[b]		Casos importados	Tasa de incidencia[c]	Fallecidos[d]	Población[e] X 1000
		Sospechosos	Confirmados				
América del Norte							
Bermuda	Semana 17			3			69
Canadá	Semana 4			312			35,182
México	Semana 23		1,388	11	1.2		118,129
Estados Unidos de América[f]	Semana 22			157			320,051
Subtotal		0	1,388	483	0.3	0	473,431
Istmo Centroamericano							
Belice	Semana				0.0		332
Costa Rica	Semana 20		142		2.9		4,872
El Salvador	Semana 22	12,187	3		192.3		6,340
Guatemala	Semana 21	7,342	522		50.8	1	15,468
Honduras	Semana 20	28,544	5		352.5		8,098
Nicaragua	Semana 12	17,946	2,235		331.9		6,080
Panamá	Semana						3,864
Subtotal		66,019	2,907	0	153.0	1	45,054
Caribe Latino							
Cuba	Semana				0.0		11,266
República Dominicana	Semana 18	59			0.6		10,404
Guayana Francesa	Semana 22	5,830	1,756		3,046.6	2	249
Guadalupe	Semana 9	150			32.2		466
Haití	Semana						10,317
Martinica	Semana 9	320			79.2		404
Puerto Rico[f]	Semana 21	415	79		13.4	14	3,688
San Bartolomé	Semana 18	317			3,561.8		9
San Martín (Francia)	Semana 18	600			1,681.1	3	36
Subtotal		7,691	1,835	0	25.9	19	36,839
Area Andina							
Bolivia	Semana 13	143	916	1	9.9		10,671
Colombia	Semana 21	254,666	532		528.1	32	48,321
Ecuador	Semana 22	14,459	1,268	89	99.9		15,738
Perú	Semana 23		1	27	0.0		30,376
Venezuela	Semana 17	12,482	296				30,405
Subtotal		281,750	3,013	117	210.1	32	135,511
Cono Sur							
Argentina	Semana 22			21			41,446
Brasil	Semana 15	3,060	5	7	1.5		200,362
Chile	Semana 16			1			17,620
Paraguay	Semana 20	1,584	732		34.2		6,802
Uruguay	Semana						3,419
Subtotal		4,684	737	29	2.0	0	269,649
Caribe No-Latino							
Anguila	Semana 11	28	3		193.8		16
Antigua y Barbuda	Semana 8	16	0		17.8		90
Aruba	Semana 14	66	686		689.9		109
Bahamas	Semana 17		10	1	2.7		377
Barbados	Semana 19	290	15		105.5	2	289
Islas Caimán	Semana 8	67	1		125.9		54
Curazao	Semana						147
Dominica	Semana 5	8			11.0		73
Granada	Semana						110
Guyana	Semana 2	5,310	29		667.4		800
Jamaica	Semana 6	298			10.7		2,784
Montserrat	Semana 20	13			260.0		5
Saint Kitts y Nevis	Semana						51
Santa Lucía	Semana						163
San Vicente y las Granadinas	Semana 8	3	2		4.9		103
Sint Maarten (Países Bajos)[f]	Semana						40
Suriname	Semana						539
Trinidad y Tobago	Semana 20		83		6.2		1,341
Islas Turcas y Caicos	Semana						48
Islas Vírgenes (RU)	Semana						32
Islas Vírgenes (EUA)	Semana 12	226	102		311.4		105
Subtotal		6,325	931	1	99.7	2	7,276
TOTAL		366,469	10,791	630	39.0	54	967,760

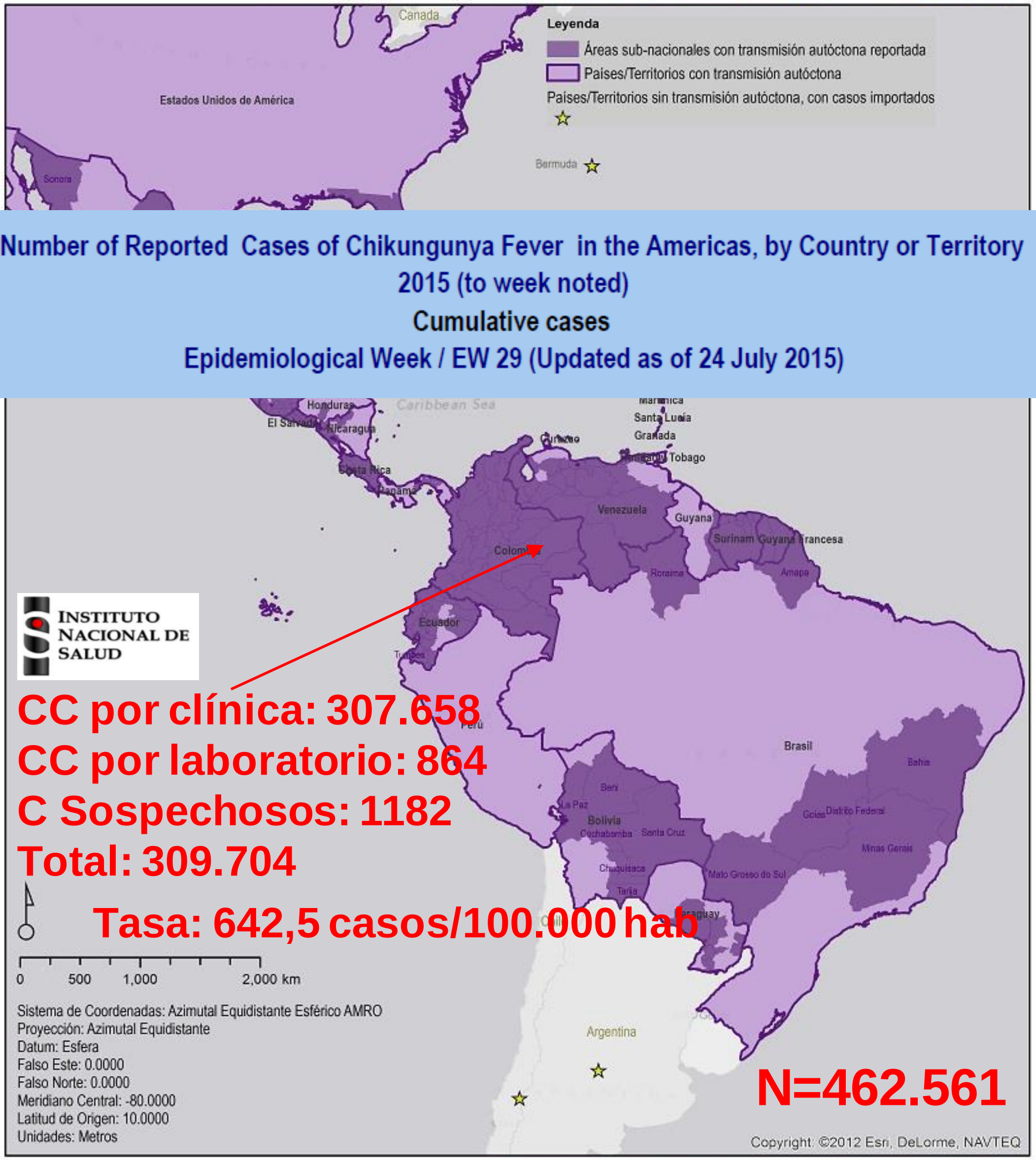
Organización Panamericana de la Salud · Organización Mundial de la Salud · Américas

Países/territorios con transmisión autóctona o casos importados de Chikungunya en las Américas, SE 49, 2013 - SE 23, 2015

Number of Reported Cases of Chikungunya Fever in the Americas, by Country or Territory 2015 (to week noted)

Cumulative cases

Epidemiological Week / EW 29 (Updated as of 24 July 2015)



INSTITUTO NACIONAL DE SALUD

CC por clínica: 307.658

CC por laboratorio: 864

C Sospechosos: 1182

Total: 309.704

Tasa: 642,5 casos/100.000 hab

N=462.561

Fuente de datos:
OPS\OMS. Número de casos reportados de fiebre chikungunya en las Américas
http://www.paho.org/viruschikungunya
Producción del Mapa:
OPS-OMS AD CHA IR ARO

* Nota: Se han representado en el mapa países enteros aunque no haya evidencia de presencia del virus en todo el país.

Pan American Health Organization · World Health Organization · Americas

Number of Reported Cases of Chikungunya Fever in the Americas, by Country or Territory
2015 (to week noted)
Cumulative cases
Epidemiological Week / EW 29 (Updated as of 24 July 2015)

Country/Territory	Week[a]	Autochthonous transmission cases[b]		Imported cases	Incidence Rate[c]	Deaths[d]	Population[e] X 1000
		Suspected	Confirmed				
North America							
Bermuda	Week 17			3			69
Canada	Week 4			312			35,182
Mexico	Week 29		2,487	11	2.1		118,129
United States of America[*]	Week 29			237			320,051
Subtotal		*0*	*2,487*	*563*	*0.5*	*0*	*473,431*
Central American Isthmus							
Belize	Week				0.0		332
Costa Rica	Week 20		142		2.9		4,872
El Salvador	Week 27	23,811	13		375.8	0	6,340
Guatemala	Week 21	7,342	522		50.8	1	15,468
Honduras	Week 26	49,162	5		607.1	0	8,098
Nicaragua	Week 12	17,946	2,235		331.9		6,080
Panama	Week 26		7	12			3,864
Subtotal		*98,261*	*2,924*	*12*	*224.6*	*1*	*45,054*
Latin Caribbean							
Cuba	Week				0.0		11,266
Dominican Republic	Week 22	63			0.6		10,404
French Guiana	Week 26	6,180	1,756		3,187.1	2	249
Guadaloupe	Week 9	150			32.2		466
Haiti	Week						10,317
Martinique	Week 9	320			79.2		404
Puerto Rico[f]	Week 27	575	103		18.4	14	3,688
Saint Barthelemy	Week 18	317			3,561.8		9
Saint Martin (French part)	Week 18	600			1,681.1	3	36
Subtotal		*8,205*	*1,859*	*0*	*27.3*	*19*	*36,839*
Andean Area							
Bolivia	Week 13	143	916	1	9.9		10,671
Colombia	Week 27	301,609	561		625.3	37	48,321
Ecuador	Week 29	26,806	3,144	95	190.3	2	15,738
Peru	Week 24	11	7	27	0.1		30,376
Venezuela	Week 17	12,482	296		42.0		30,405
Subtotal		*341,051*	*4,924*	*123*	*255.3*	*39*	*135,511*
Southern Cone							
Argentina	Week 24			29			41,446
Brazil	Week 23	6,958	114	7	3.5		200,362
Chile	Week 28			6			17,620
Paraguay	Week 26	1,761	830		38.1		6,802
Uruguay	Week						3,419
Subtotal		*8,719*	*944*	*42*	*3.6*	*0*	*269,649*
Non-Latin Caribbean							
Anguilla	Week 11	28	3		193.8		16
Antigua and Barbuda	Week 8	16	0		17.8		90
Aruba	Week 14	66	686		689.9		109
Bahamas	Week 17		10	1	2.7		377
Barbados	Week 19	290	15		105.5	2	289
Cayman Islands	Week 8	67	1		125.9		54
Curacao	Week						147
Dominica	Week 5	8			11.0		73
Grenada	Week						110
Guyana	Week 2	5,310	29		667.4		800
Jamaica	Week 6	299			10.7		2,784
Montserrat	Week 20	13	0		260.0		5
Saint Kitts and Nevis	Week						51
Saint Lucia	Week						163
Saint Vincent and the Grenadines	Week 8	3	2		4.9		103
Sint Maarten (Dutch part)[z]	Week						40
Suriname	Week						539
Trinidad and Tobago	Week 20		83		6.2		1,341
Turks and Caicos Islands	Week						48
Virgin Islands (UK)	Week						32
Virgin Islands (US)	Week 12	225	102		311.4		105
Subtotal		*6,325*	*931*	*1*	*99.7*	*2*	*7,276*
TOTAL		462,561	14,069	741	49.3	61	967,760

Pan American Health Organization — World Health Organization — Americas

Countries/territories with autochthonous transmission or imported cases of Chikungunya in the Americas, EW 49, 2013 - EW 32, 2015

CC por clínica: 320.891
CC por laboratorio: 1104
C Sospechosos: 972
Total: 322.967
Tasa: 670,0 casos/100.000 hab

N=514.534

Data source:
PAHO/WHO. Number of reported cases of Chikungunya Fever in the Americas
http://www.paho.org/chikungunya
Map production:
PAHO-WHO AD CHA IR ARO

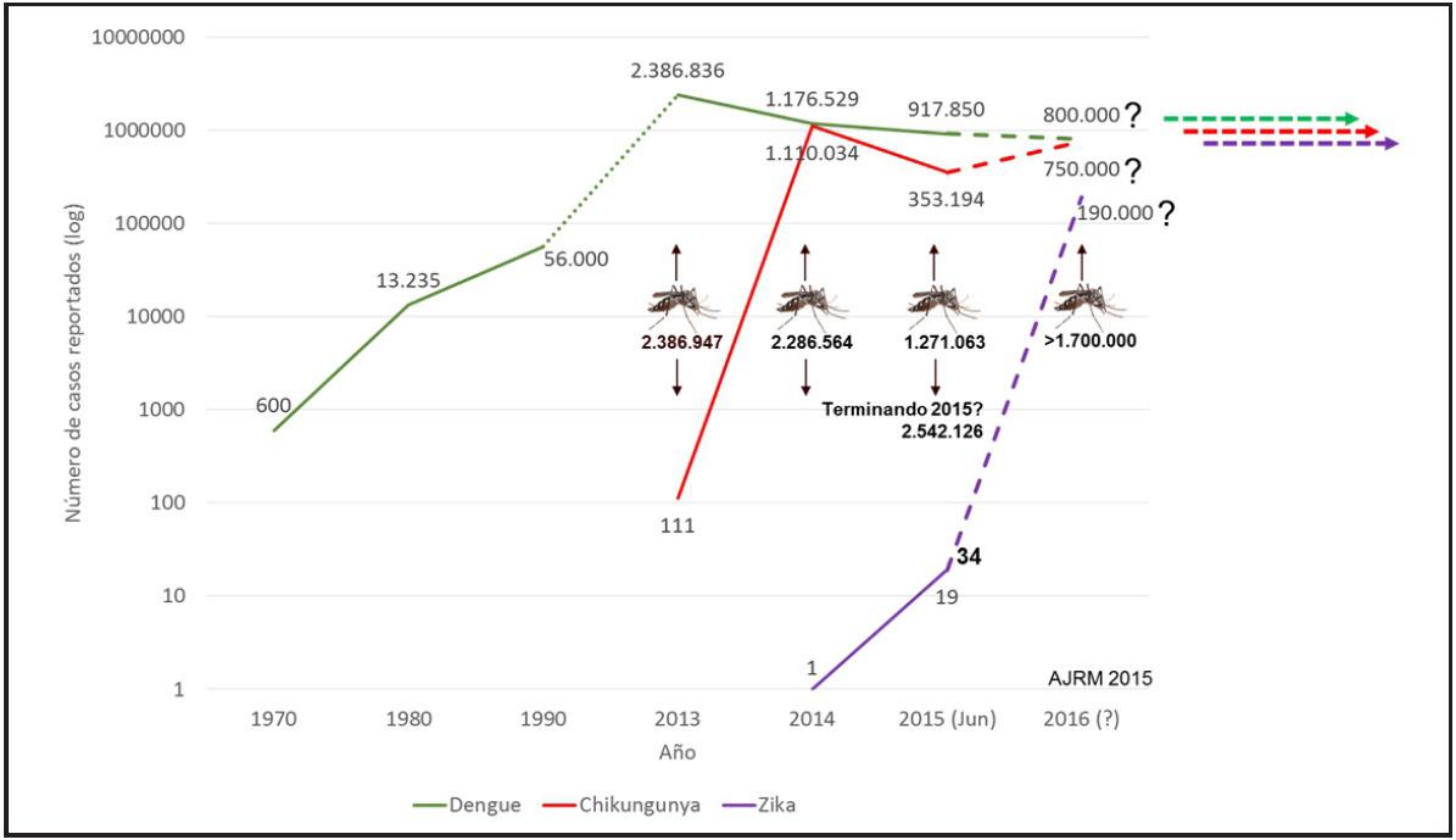
* Note: Entire countries have been shaded on the map though there is no evidence of country-wide virus presence.

Pan American Health Organization — World Health Organization — Americas

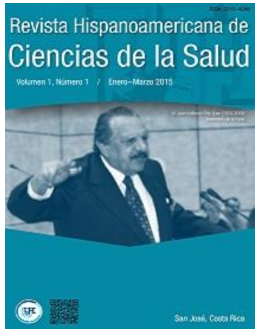
Number of Reported Cases of Chikungunya Fever in the Americas, by Country or Territory
2015 (to week noted)
Cumulative cases
Epidemiological Week / EW 33 (Updated as of 21 August 2015)

Country/Territory	Week[a]	Autochthonous transmission cases[b]		Imported cases	Incidence Rate[c]	Deaths[d]	Population[e] X 1000
		Suspected	Confirmed				
North America							
Bermuda	Week 17			3			69
Canada	Week 4			312			35,182
Mexico	Week 33		4,205	14	3.6		118,129
United States of America[*]	Week 33			294			320,051
Subtotal		*0*	*4,205*	*623*	*0.9*	*0*	*473,431*
Central American Isthmus							
Belize	Week				0.0		332
Costa Rica	Week 20		142		2.9		4,872
El Salvador	Week 32	34,157	16		539.0	0	6,340
Guatemala	Week 21	7,342	522		50.8	1	15,468
Honduras	Week 26	49,162	5		607.1	0	8,098
Nicaragua	Week 31	38,281	2,853		676.5	1	6,080
Panama	Week 30	123	15	15			3,864
Subtotal		*129,065*	*3,553*	*15*	*294.4*	*2*	*45,054*
Latin Caribbean							
Cuba	Week				0.0		11,266
Dominican Republic	Week 28	67			0.6		10,404
French Guiana	Week 32	6,450	1,756		3,295.6	2	249
Guadaloupe	Week 9	150			32.2		466
Haiti	Week						10,317
Martinique	Week 9	320			79.2		404
Puerto Rico[f]	Week 31	622	109		19.8	14	3,688
Saint Barthelemy	Week 18	317			3,561.8		9
Saint Martin (French part)	Week 18	600			1,681.1	3	36
Subtotal		*8,526*	*1,865*	*0*	*28.2*	*19*	*38,839*
Andean Area							
Bolivia	Week 13	143	916	1	9.9		10,671
Colombia	Week 31	318,611	997		661.4	40	48,321
Ecuador	Week 31	27,364	3,373	88	195.3	2	15,738
Peru	Week 27	30	32	30	0.2		30,376
Venezuela	Week 30	13,890	313		46.7		30,405
Subtotal		*360,038*	*5,631*	*119*	*269.8*	*42*	*135,511*
Southern Cone							
Argentina	Week 29			31			41,446
Brazil	Week 30	8,648	123	7	4.4		200,362
Chile	Week 28			6			17,620
Paraguay	Week 30	1,942	859		41.2		6,802
Uruguay	Week						3,419
Subtotal		*10,590*	*982*	*44*	*4.3*	*0*	*269,649*
Non-Latin Caribbean							
Anguilla	Week 11	28	3		193.8		16
Antigua and Barbuda	Week 8	16	0		17.8		90
Aruba	Week 29	281	686		887.2		109
Bahamas	Week 17		10	1	2.7		377
Barbados	Week 25	82	0		28.4		289
Cayman Islands	Week 8	67	1		125.9		54
Curacao	Week						147
Dominica	Week 5				0.0		73
Grenada	Week						110
Guyana	Week 2	5,310	29		667.4		800
Jamaica	Week 6	299			10.7		2,784
Montserrat	Week 29	7	0		140.0		5
Saint Kitts and Nevis	Week						51
Saint Lucia	Week						163
Saint Vincent and the Grenadines	Week 8	0	0		0.0		103
Sint Maarten (Dutch part)[z]	Week						40
Suriname	Week						539
Trinidad and Tobago	Week 30		51		3.8		1,341
Turks and Caicos Islands	Week						48
Virgin Islands (UK)	Week						32
Virgin Islands (US)	Week 12	225	102		311.4		105
Subtotal		*6,315*	*882*	*1*	*98.9*	*0*	*7,276*
TOTAL		514,534	17,118	802	54.9	63	967,760

Figura N°01. Dengue, chikungunya y zika en las Américas. Patrones previos, escenario actual y ¿potencial futuro?



Rodriguez-Morales AJ. *Aedes*: un eficiente vector de viejos y nuevos arbovirus (dengue, chikungunya y zika) en las Américas. Rev Cuerpo Médico HNAAA 2015; 8(2):50-52.



EDITORIAL INVITADO

REV HISP CIENC SALUD

LA AMENAZA DE CHIKUNGUNYA Y OTROS VIRUS EMERGENTES EN LAS AMÉRICAS

THE THREAT OF CHIKUNGUNYA AND OTHER EMERGING VIRUSES IN THE AMERICAS

Alfonso J. Rodriguez-Morales[1,2 a]

El año 2014 marcó para el continente americano la llegada y la estadía de una nueva enfermedad viral emergente transmitida por vectores, la fiebre por virus chikungunya (CHIKV).[1] La fiebre por CHIKV es una enfermedad transmitida por la picadura de mosquitos del *Aedes*, caracterizada por inicio agudo de fiebre y severa poliartralgia (síntoma además de importancia en la fase crónica de la enfermedad). Históricamente cuando se presenta, suele puede producir grandes brotes epidémicos o epidemias. Han ocurrido brotes o epidemias en países de África, Asia, Europa, y especialmente en islas de los océanos Índico y Pacífico. En 2013 se reportaron los primeros casos adquiridos localmente en islas del Caribe.

gión. Tal es el caso de virus Zika, ya presente en la región insular de Chile,[1] o el virus Mayaro (que también produce artralgias) que se ha reportado en Venezuela, Brasil, México, entre otros países. Por ello la importancia de la vigilancia entomológica y el control integrado de vectores,[13] que permite no solo luchar contra dengue o chikungunya, sino contra muchas otras potenciales enfermedades que podrían llegar posterior a un caso importado con otros agentes virales que pueden ser transmitidos por *Aedes*.

Rodriguez-Morales AJ. La amenaza de Chikungunya y otros virus emergentes en las Américas. Revista Hispanoamericana de Ciencias de la Salud 2015; 1(1):9-12.

Contenido de la presentación

1. El contexto del dengue en las Américas y Colombia antes de 2013
2. **¿Qué impacto está teniendo y podrá tener chikungunya en adición a dengue?**
3. Otros arbovirus tropicales emergentes en la región: Zika y Mayaro

Chikungunya virus

- Single-stranded RNA virus
- Genus *Alphavirus;* Family *Togaviridae*
- Three clades: West African, East-South-Central African (ESCA) and Asian
  - ESCA includes Indian Ocean Lineage (IOL)
  - Asian clade circulating in Americas
- Closely related to Mayaro, O'nyong-nyong, and Ross River viruses

Mosquito vectors

- Predominantly *Aedes aegypti* and *Aedes albopictus*
- Same mosquitoes that transmit dengue
- Widely distributed throughout Americas
- Aggressive daytime biters

Aedes aegypti

Aedes albopictus

Other modes of transmission

- Documented rarely
  - *In utero* transmission resulting in abortion
  - Intrapartum from viremic mother to child
  - Percutaneous needle stick
  - Laboratory exposure
- Theoretical concern
  - Blood transfusion
  - Organ or tissue transplantation
- No evidence of virus in breast milk

Fever and polyarthralgia

- Fever
  - Abrupt onset
  - Typically ≥39.0°C (≥102.2°F)
- Joint pain
  - Often severe and debilitating
  - Involves multiple joints
  - Usually bilateral and symmetric
  - Most common in hands and feet

Other clinical signs and symptoms

- Headache
- Myalgia
- Arthritis
- Conjunctivitis
- Nausea/vomiting
- Maculopapular rash

Hallazgos de laboratorio

- Linfopenia
- Trombocitopenia
- Elevación de la creatinina
- Transaminasas hepaticas elevadas

Manifestaciones atípicas

- Uveitis
- Retinitis
- Hepatitis
- Nefritis
- Miocarditis
- Hemorragia
- Mielitis
- Parálisis de pares craneales
- Síndrome de Guillain-Barre
- Meningoencefalitis
- Lesiones ampollosas de la piel (descrito en neonatos)

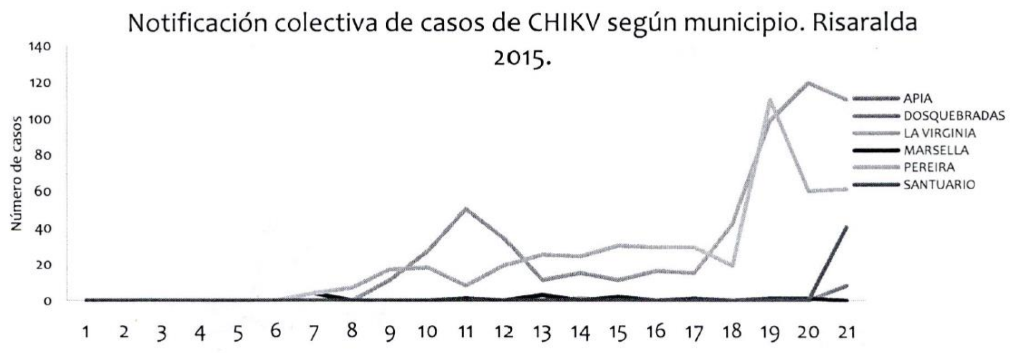
Tabla 1. Definiciones de caso y requisitos para la notificación según cada escenario de aplicación, Colombia, Octubre de 2014.

Escenario de Aplicación	Tipo de Caso	Definición	Requisitos para Notificación
Municipios sin circulación confirmada del virus (sin casos autóctonos) casos **atípicos** o **complicados** (comorbilidad, embarazo)	**Caso sospechoso**	Paciente con fiebre >38°C, artralgia grave o artritis de comienzo agudo y rash que no se explican por otras condiciones médicas, y que resida en un municipio en donde no se han confirmado casos de CHIKV por laboratorio.	1. Ficha de notificación individual 217 2. Historia Clínica 3. Toma de Muestra
Municipios sin casos confirmados previamente o para casos **atípicos** o **complicados** (comorbilidad, embarazo)	**Caso confirmado por laboratorio**	Caso sospechoso con alguna de las siguientes pruebas de laboratorio específica para CHIKV con resultado positivo (aislamiento viral, RT-PCR, IgM, o aumento de cuatro veces en el título de anticuerpos específicos IgG para CHIKV en muestras pareadas con diferencia de 15 días entre la toma de estas).	Las muestras deben ser enviadas al laboratorio del INS y deben incluir: 1. Ficha de notificación 2. Resumen de la historia clínica
Municipios con circulación confirmada del virus (casos autóctonos) o que **limitan** con municipios donde hay circulación confirmada	**Caso confirmado por clínica**	Paciente con fiebre >38°C, artralgia grave o artritis de comienzo agudo y rash, que no se explican por otras condiciones médicas, y que resida en un municipio en donde se haya declarado situación de brote	1. Notificación colectiva diaria (durante fase de introducción), código 910.

Secretaría de Salud

Risaralda Gobernación con Resultados

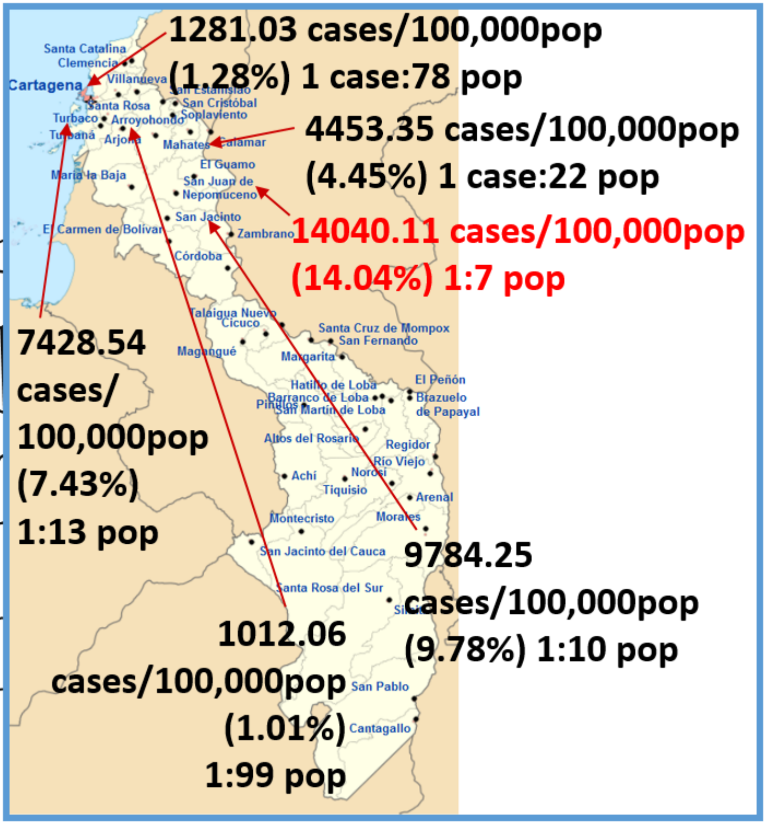
Circular 031 de Junio 9 de 2015



- Caso sospechoso: paciente con fiebre mayor a 38°C, artralgia grave o artritis de comienzo agudo y rash, que no se explica por otras condiciones médicas y que resida en un municipio en donde no se han confirmado casos de CHIKV por laboratorio.
- Caso confirmado por clínica: paciente con fiebre mayor a 38°C, artralgia grave o artritis de comienzo agudo y rash, que no se explica por otras condiciones médicas y que resida en un municipio en donde se haya detectado circulación viral.
- Caso confirmado por laboratorio: paciente sospechoso con alguna de la siguientes pruebas de laboratorio específica para CHIKV con resultado positivo: aislamiento viral, RT-PCR, IgM o aumento cuatro veces los títulos de IgG específicos para CHIKV en muestras pareadas con diferencia de 15 días.

Chikungunya Virus Infection: Ecoepidemiological Considerations of a New Threat for Latin America

Alfonso J. Rodriguez-Morales, MD, MSc, DTM&H, FRSTM&H, FFTM RCPS, PhD(c)



Municipalities	Cases	Population*	Rates**	%	1 case:pop
San Juan de Nepomuceno	4565	32,514	14040.11	14.04	7
San Jacinto	2789	28,505	9784.25	9.78	10
Turbaco	6419	86,410	7428.54	7.43	13
Mahates	1134	25,464	4453.35	4.45	22
Cartagena	12237	955,250	1281.03	1.28	78
Arroyohondo	99	9,782	1012.06	1.01	99
El Carmen de Bolívar	614	74,297	826.41	0.83	121
Arjona	188	71,180	264.12	0.26	379

Typical balcony in the colonial walled city of Cartagena de Indias, Colombia. The city was founded on June 1, 1533. The colonial walled city and fortress was designated in 1984 by the United Nations Educational, Scientific and Cultural Organization as a World Heritage Site. CHIKV infection rate is high in this city, which increases the risk to travelers.
Photo by Alfonso J. Rodriguez-Morales

Rodriguez-Morales AJ. Chikungunya Virus Infection: Ecoepidemiological considerations of a new threat for Latin America. One Health Newsletter 2015; 8(1):7-9.

ELSEVIER

Travel Medicine and Infectious Disease

Volume 13, Issue 3, May–June 2015, Pages 256–258

Rodriguez-Morales AJ, Cárdenas-Giraldo EV, Montoya-Arias CP, Guerrero-Matituy EA, Bedoya-Arias JE, Ramírez-Jaramillo V, Villamil-Gómez WE. Mapping chikungunya fever in municipalities of one coastal department of Colombia (Sucre) using Geographic information system (GIS) during 2014 outbreak: implications for travel advice. Travel Medicine & Infectious Disease 2015 May-Jun; 13(3):256-258

Table 1 CHIKV incidence rates (cases/100,000pop) by municipalities in Sucre department, Colombia, 2014.

Municipalities	Cases (2014)	% Cumulated	Population (2014)	Rates (cases/100,000pop)
Whole department	14,741	100.00	843,182	1748.26
Palmito	818	5.55	13,427	6092.20
Ovejas	985	12.23	21,142	4658.97
Sincé	1289	20.98	33,361	3863.79
Tolú	1232	29.33	32,731	3764.02
Sincelejo	7349	79.19	271,355	2708.26
Corozal	1351	88.35	61,991	2179.35
Sampues	631	92.63	37,787	1669.89
San Juan de Betulia	172	93.80	12,529	1372.82
Coveñas	105	94.51	13,300	789.47
La Unión	87	95.10	11,073	785.69
Los Palmitos	140	96.05	19,276	726.29
Buenavista	69	96.52	9502	726.16
Tolú Viejo	109	97.26	18,900	576.72
El Roble	44	97.56	10,432	421.78
Morroa	50	97.90	14,263	350.56
San Onofre	149	98.91	49,784	299.29
Coloso	16	99.02	5878	272.20
Chalán	11	99.09	4341	253.40
San Marcos	68	99.55	56,384	120.60
Galeras	20	99.69	19,866	100.67
Majagual	19	99.82	33,077	57.44
San Pedro	8	99.87	16,075	49.77
Sucre municipality	10	99.94	22,374	44.69
Caimito	2	99.95	11,962	16.72
San Benito Abad	3	99.97	25,171	11.92
Guaranda	1	99.98	17,201	5.81
Unknown	3	100.00	–	–

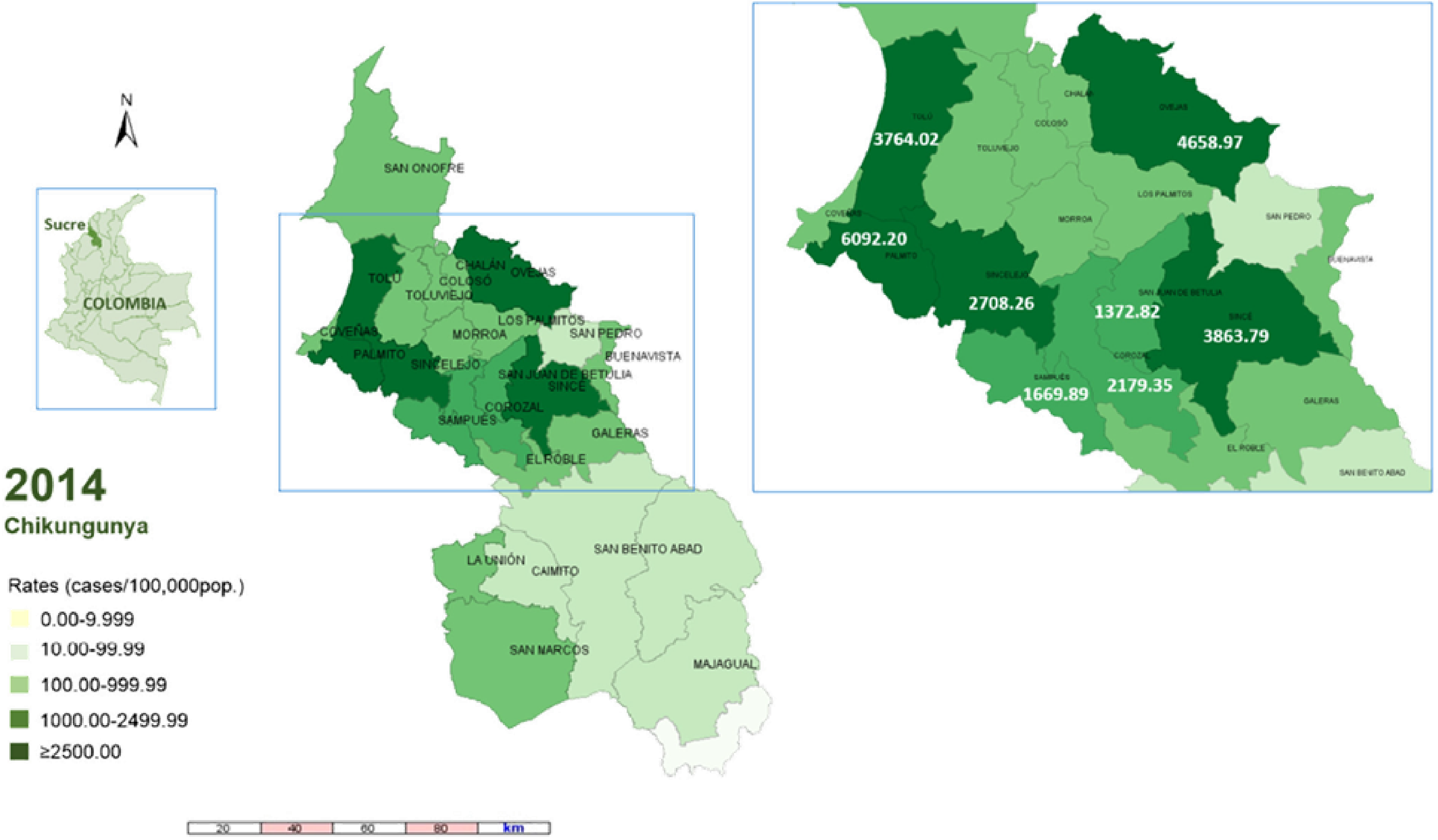


Fig. 1 Geographic distribution of CHIKV incidence rates (cases/100,000pop) in Sucre department, Colombia, 2014.

Infectio

Vera-Polania F, Cardona-Ospina JA, Rodriguez-Morales AJ.
¿Ausencia previa de circulación de virus chikungunya en Tuchín, Córdoba, Colombia? Infectio 2015
http://dx.doi.org/10.1016/j.infect.2015.04.005
(Indizada en Publindex A2, SciELO Colombia, Lilacs, Scopus)

Open Access

Tabla 1 Casos confirmados de infección por CHIKV en el departamento de Córdoba, Colombia, y sus municipios, 2014

	Población (2014)	Casos infección por CHIKV (2014)	Tasa (casos/100.000 hab)
Córdoba	1.658.090	158	9,5
Moñitos	26.593	20	75,2
Purísima	14.989	7	46,7
Los Córdobas	22.399	9	40,2
Sahagún	89.439	21	23,5
San Antero	30.240	7	23,1
San Pelayo	42.680	9	21,1
Momil	14.644	3	20,5
Ciénaga de Oro	61.846	7	11,3
Tuchín	36.732	4	10,9
Buenavista	21.082	2	9,5
Montería	428.602	39	9,1
Cereté	90.023	7	7,8
Montelíbano	77.770	6	7,7
Chimá	14.132	1	7,1
San Andrés Sotavento	40.482	2	4,9
Valencia	41.084	2	4,9
Ayapel	49.248	2	4,1
Tierralta	95.228	3	3,2
San Bernardo del Viento	34.049	1	2,9
Pueblo Nuevo	37.034	1	2,7
Lorica	116.631	3	2,6
Puerto Libertador	44.694	1	2,2
Canalete	20.591	0	0,0
Chinú	47.266	0	0,0
Cotorra	15.380	0	0,0
La Apartada	14.666	0	0,0
Planeta Rica	66.074	0	0,0
Puerto Escondido	27.462	0	0,0
San Carlos	26.366	0	0,0
San José de Ure	10.664	0	0,0
Sin dato	–	1	–

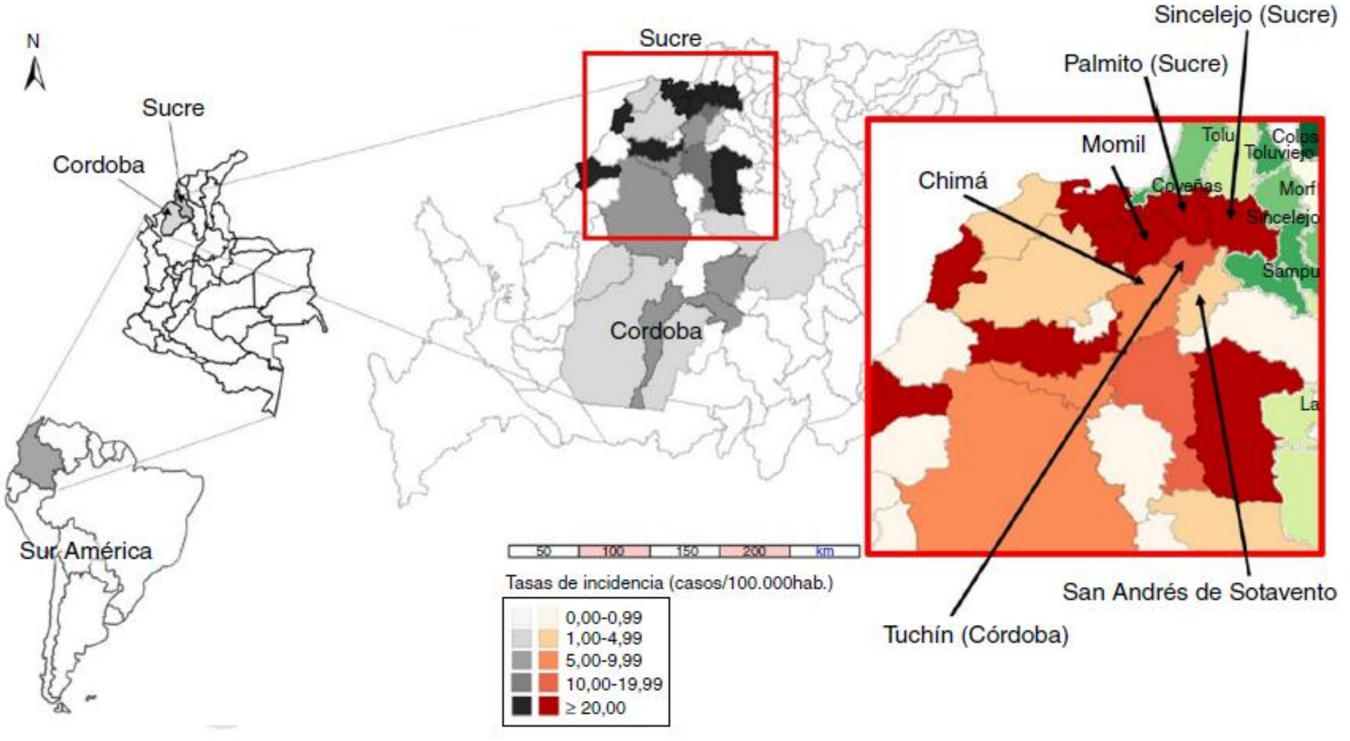
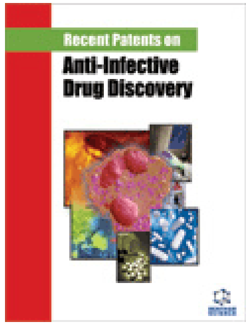


Figura 1 Tasas de incidencia (casos/100.000 hab.) por municipios en el departamento de Córdoba, Colombia, 2014 (incluye además los municipios vecinos del departamento de Sucre que colidan con el municipio Tuchín de Córdoba, Palmito y Sucre).



Letter to Editor

From Imported to an Endemic Disease: Impact of Chikungunya Virus Disease in the Hospital Epidemiology, Tolima, Colombia, 2014-2015

Carlos E. Jimenez-Canizales[1,2], David A. Medina-Gaitan[1], Álvaro E. Mondragon-Cardona[2,3] and Alfonso J. Rodríguez-Morales[2,4*]

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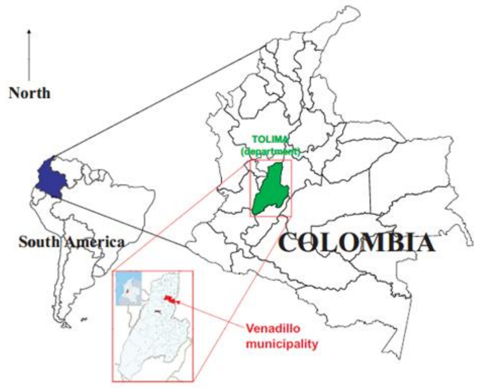


(1). Relative position of Venadillo municipality, a, Colombia, South America.

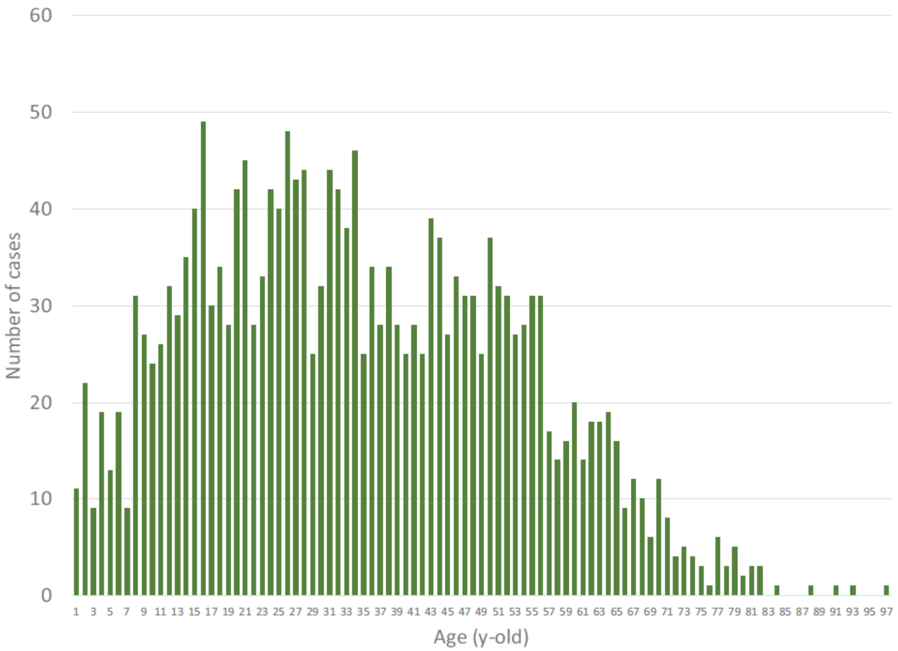


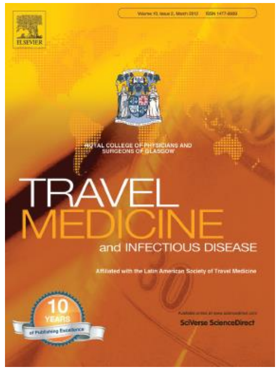
Fig. (2). Distribution by age of cases with CHIKV, Hospital Santa Barbara de Venadillo, Tolima, Colombia, South America, December 2014-March 2015.

Jimenez-Canizales CE, Medina-Gaitan DA, Mondragon-Cardona ÁE, Rodríguez-Morales AJ. From imported to an endemic disease: impact of chikungunya virus disease in the hospital epidemiology, Tolima, Colombia, 2014-2015. Recent Pat Antiinfect Drug Discov 2015 Jan-Apr; 10(1):64-66 (Indexed on Medline/Index Medicus, revista A2)

During 2014, the hospital experienced the incoming of patients with CHIKV. During that year, just **28 cases** were reported, which represented 0.2% of all consultations to this primary care hospital (28/11,360), but just in the first two months of 2015 (January and February), **1,944 cases** have been reported, representing 36.6% of all consultations to this hospital (146 times higher incidence). If we compared this relative incidence between 2014 and the beginning of 2015, this was a significant increase (x^2=4416.7; p<0.001).

Table 1 CHIKV incidence rates (cases/100,000pop) by municipalities in the departments of the Coffee-Triangle region, Colombia, 2014 and 2015 (up to epidemiological week 20).

Department	Municipality	2014			2015		
		Cases	Population	Rates (cases/100,000pop)	Cases	Population	Rates (cases/100,000pop)
Region	Total region	118	2,494,774	13.5	4459	2,505,196	530.4
Caldas	Total department	82	986,061	8.3	2542	988,003	257.3
Quindio	Total department	19	562,087	3.4	998	565,248	176.6
Risaralda	Total department	17	946,626	1.8	919	951,945	96.5
Caldas	La Dorada	60	76,574	78.4	2000	76,963	2598.7
Risaralda	La Virginia	2	31,959	6.3	489	32,039	1526.3
Caldas	Victoria	0	8505	0.0	108	8415	1283.4
Quindio	La Tebaida	0	41,169	0.0	335	42,141	795.0
Caldas	Norcasia	0	6430	0.0	46	6374	721.7
Caldas	Viterbo	1	12,506	8.0	69	12,469	553.4
Caldas	Aguadas	0	22,293	0.0	80	22,081	362.3
Quindio	Buenavista	0	2860	0.0	9	2834	317.6
Quindio	Quimbaya	2	34,859	5.7	95	34,945	271.9
Quindio	Filandia	0	13,355	0.0	21	13,414	156.6
Quindio	Calarca	2	77,198	2.6	104	77,598	134.0
Quindio	Armenia	11	295,149	3.7	376	296,691	126.7
Quindio	Montenegro	1	41,146	2.4	37	41,268	89.7
Risaralda	Pereira	12	467,209	2.6	384	469,644	81.8
Quindio	Cordoba	3	5320	56.4	4	5305	75.4
Quindio	Salento	0	7118	0.0	5	7111	70.3
Quindio	Pijao	0	6203	0.0	4	6139	65.2
Risaralda	Marsella	0	23,107	0.0	13	23,299	55.8
Risaralda	Balboa	0	6332	0.0	3	6331	47.4
Caldas	Samana	0	25,769	0.0	12	25,777	46.6
Caldas	Manizales	0	394,655	0.0	182	396,102	45.9
Caldas	Chinchina	7	51,696	13.5	15	51,492	29.1
Caldas	Palestina	1	17,795	5.6	5	17,760	28.2
Caldas	Risaralda	0	9693	0.0	2	9583	20.9
Risaralda	Santa Rosa de Cabal	2	72,028	2.8	15	72,228	20.8
Quindio	Circasia	0	29,642	0.0	5	29,886	16.7
Caldas	San Jose	0	7595	0.0	1	7588	13.2
Caldas	Manzanares	5	23,447	21.3	3	23,274	12.9
Risaralda	Santuario	0	15,681	0.0	2	15,715	12.7
Quindio	Genova	0	8068	0.0	1	7916	12.6
Risaralda	Mistrató	0	16,049	0.0	2	16,177	12.4
Risaralda	La Celia	0	8616	0.0	1	8598	11.6
Caldas	Filadelfia	1	11,200	8.9	1	11,034	9.1
Risaralda	Quinchía	0	33,695	0.0	3	33,754	8.9
Caldas	Supia	2	26,542	7.5	2	26,728	7.5
Caldas	Marquetalia	0	14,982	0.0	1	14,992	6.7
Caldas	Neira	0	30,285	0.0	2	30,513	6.6
Risaralda	Apia	0	18,833	0.0	1	18,976	5.3
Risaralda	Dosquebradas	1	196,925	0.5	6	198,874	3.0
Caldas	Villamaria	0	55,219	0.0	1	56,288	1.8
Caldas	Riosucio	3	60,798	4.9	1	61,535	1.6
Risaralda	Belén de Umbría	0	27,721	0.0	0	27,721	0.0
Risaralda	Guatica	0	15,350	0.0	0	15,306	0.0
Risaralda	Pueblo Rico	0	13,121	0.0	0	13,283	0.0
Caldas	Anserma	0	33,920	0.0	0	33,792	0.0
Caldas	Aranzazu	0	11,566	0.0	0	11,422	0.0
Caldas	Belalcazar	1	10,960	9.1	0	10,863	0.0
Caldas	La Merced	0	5623	0.0	0	5508	0.0
Caldas	Marmato	0	9026	0.0	0	9096	0.0
Caldas	Marulanda	0	3410	0.0	0	3406	0.0



Rodriguez-Morales AJ, Bedoya-Arias JE, Ramírez-Jaramillo V, Montoya-Arias CP, Guerrero-Matituy EA, Cárdenas-Giraldo EV. Using Geographic information system (GIS) to mapping and assess changes in transmission patterns of chikungunya fever in municipalities of the Coffee-Triangle region of Colombia during 2014-2015 outbreak: implications for travel advice. Travel Medicine & Infectious Disease 2015 Epub Ahead Jul 3; available online at: www.sciencedirect.com/science/article/pii/S1477893915001106

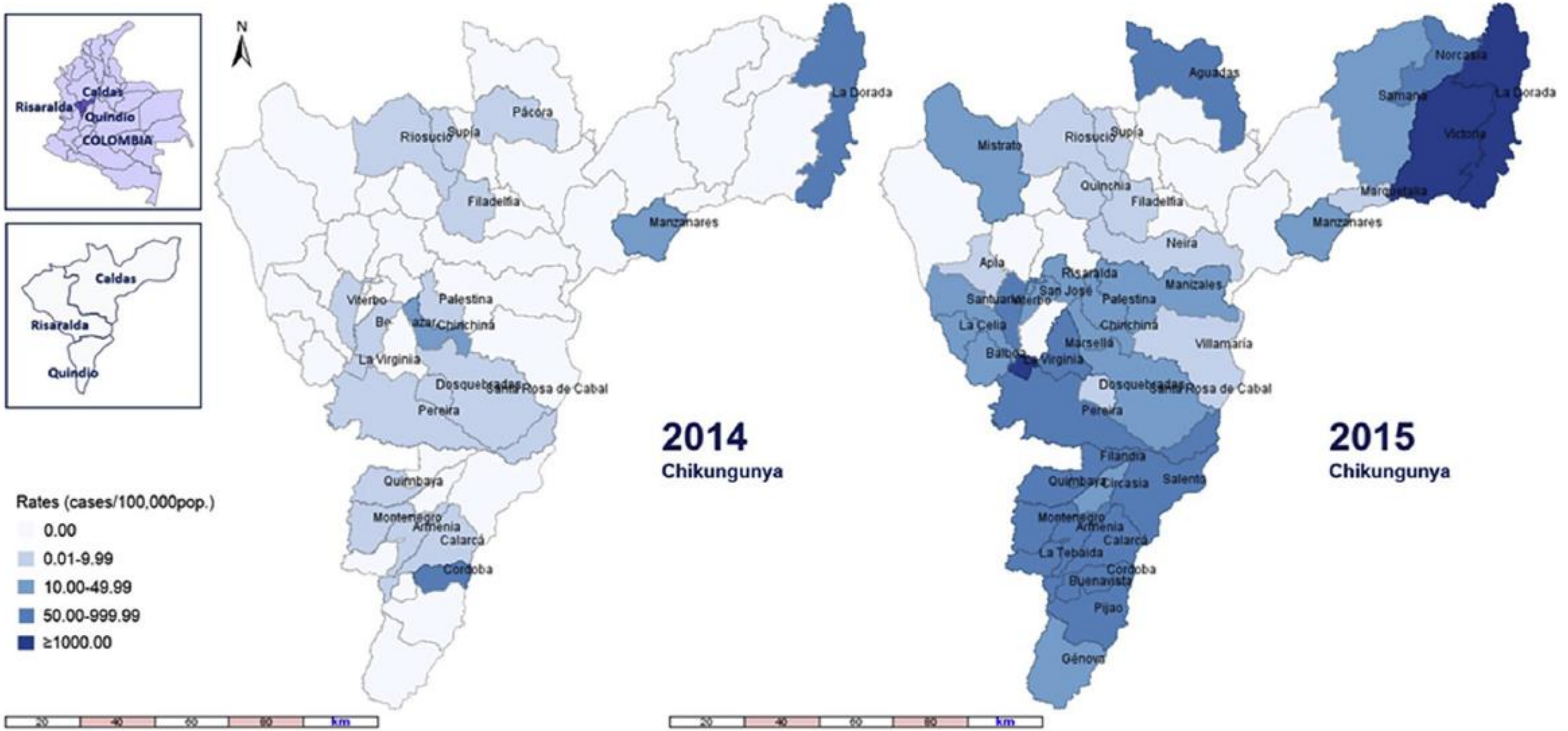


Fig. 1 Geographic distribution of CHIKV incidence rates (cases/100,000pop) in the Coffee-Triangle region, Colombia, 2014 and 2015 (up to epidemiological week 20).

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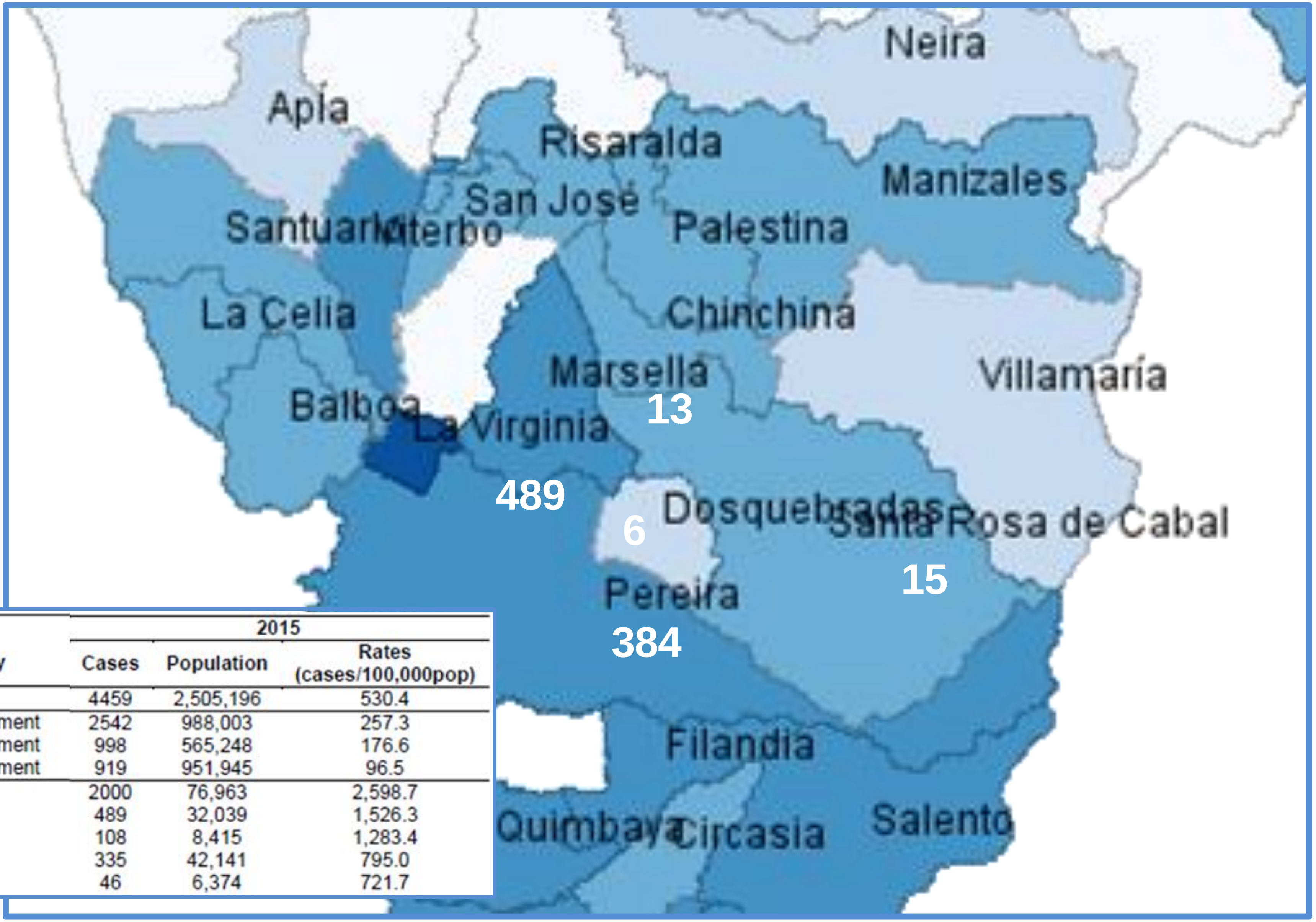

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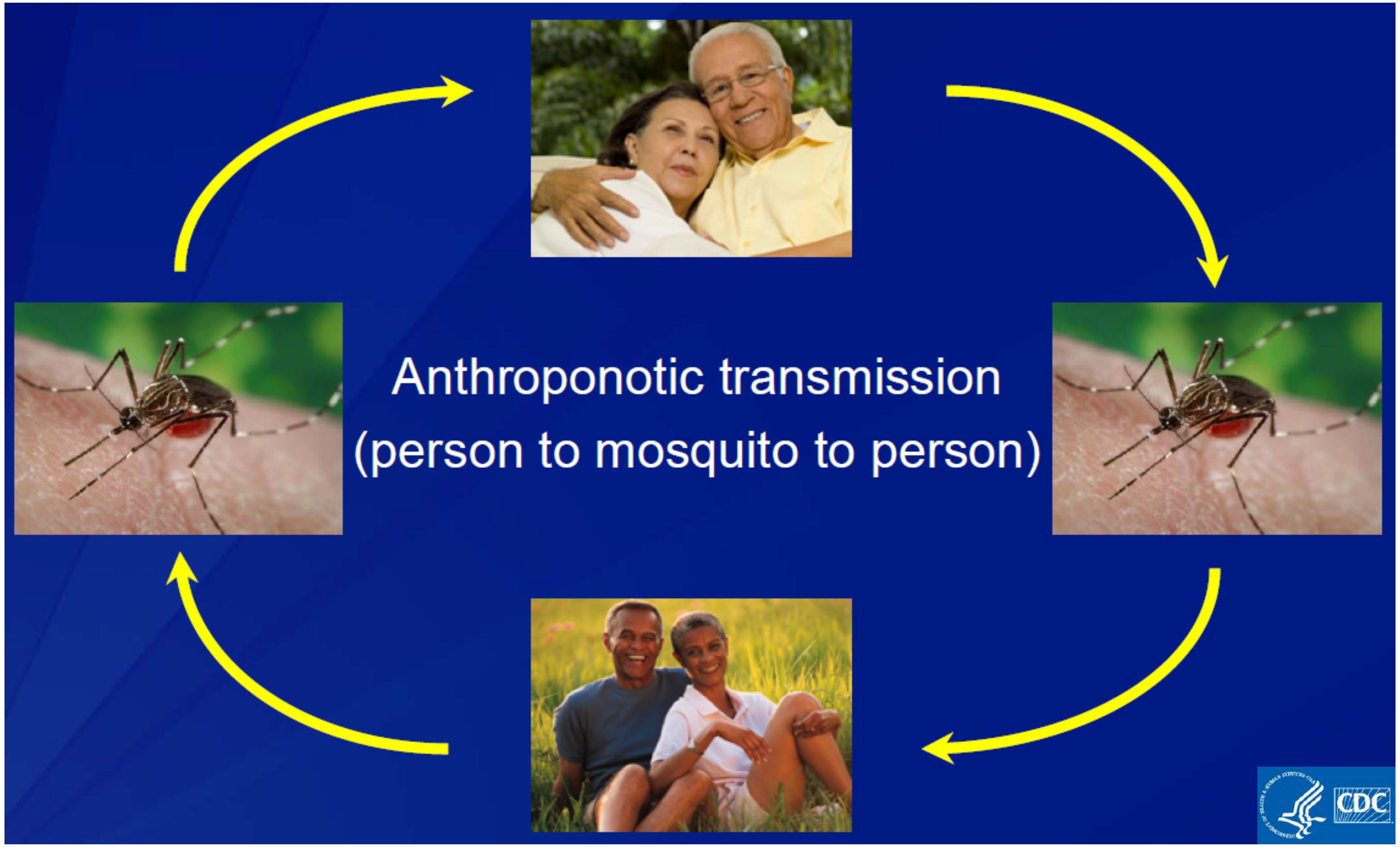
Ciclo de transmisión primaria



- La mayoría de personas infectadas presentan síntomas (72-95%)
- Período de incubación usual de 3-7 días (rango 1-12 días)

PLOS | NEGLECTED TROPICAL DISEASES

Citation: Yoon I-K, Alera MT, Lago CB, Tac-An IA, Villa D, Fernandez S, et al. (2015) High Rate of Subclinical Chikungunya Virus Infection and Association of Neutralizing Antibody with Protection in a Prospective Cohort in The Philippines. PLoS Negl Trop Dis 9(5): e0003764. doi:10.1371/journal.pntd.0003764

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RESEARCH ARTICLE

High Rate of Subclinical Chikungunya Virus Infection and Association of Neutralizing Antibody with Protection in a Prospective Cohort in The Philippines

In-Kyu Yoon[1]*, Maria Theresa Alera[2], Catherine B. Lago[2], Ilya A. Tac-An[3], Daisy Villa[3], Stefan Fernandez[1], Butsaya Thaisomboonsuk[1], Chonticha Klungthong[1], Jens W. Levy[1], John Mark Velasco[2], Vito G. Roque, Jr.[4], Henrik Salje[5], Louis R. Macareo[1], Laura L. Hermann[1,6], Ananda Nisalak[1], Anon Srikiatkhachorn[7]

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Table 2. Incidence of CHIKV infections and seroprevalence of CHIKV PRNT in different age groups.[a]

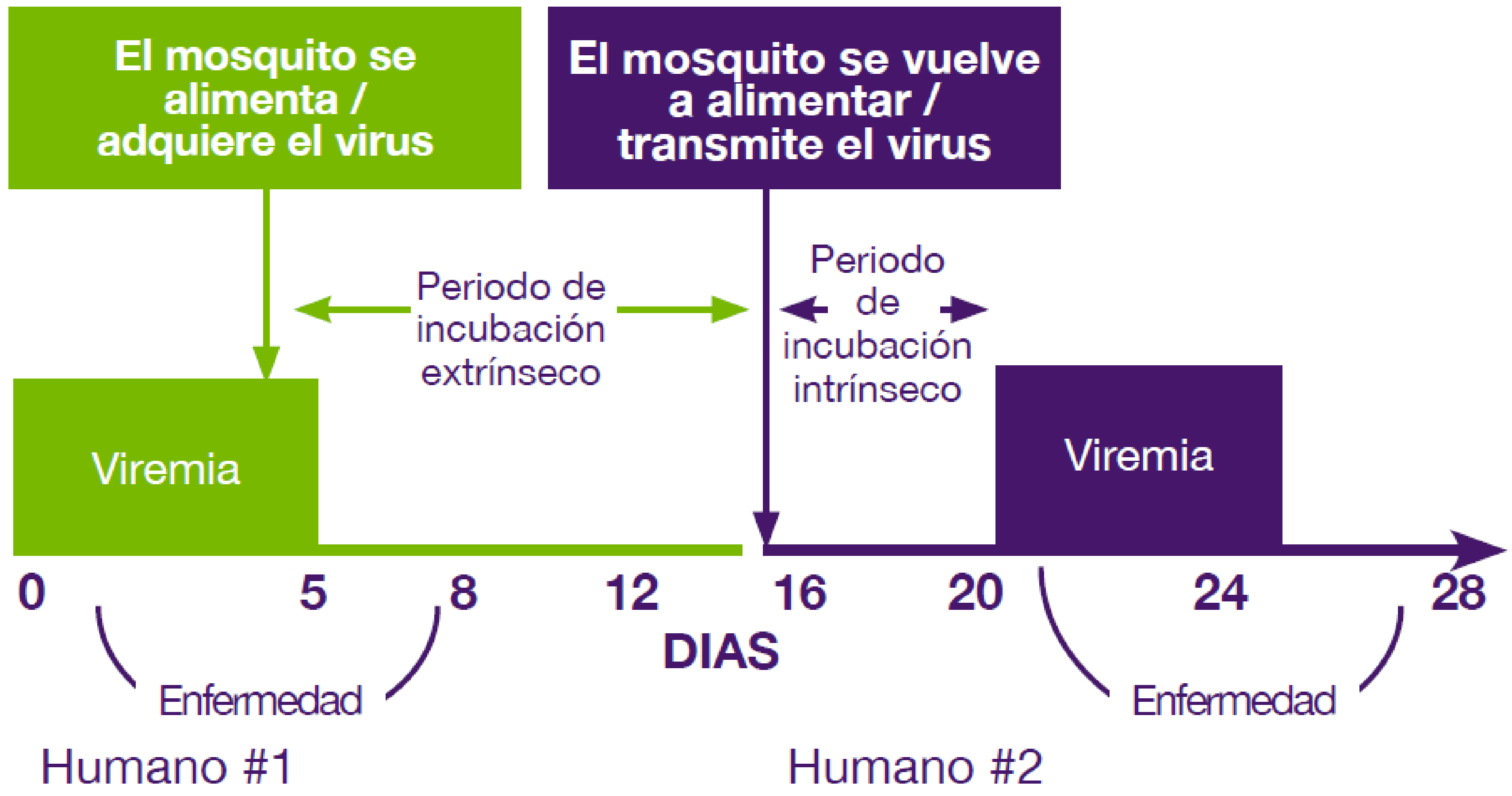
Age	Subjects, n	CHIKV PRNT ≥10, n (% of age group)[b]	Symptomatic CHIKV infection, n [n/100 person-yrs (95% CI)]	Subclinical CHIKV infection, n [n/100 person-yrs (95% CI)]	Total CHIKV infection, n [n/100 person-yrs (95% CI)]	Ratio of subclinical to symptomatic CHIKV infection
6 mos—5 yrs	148	1 (0.7)	5 [3.23 (1.23, 7.08)]	10 [6.46 (3.32, 11.47)]	15 [9.69 (5.66, 15.59)]	2:1
6–15 yrs	184	2 (1.1)	8 [4.23 (1.99, 7.98)]	24 [12.68 (8.33, 18.55)]	32 [16.91 (11.78, 23.56)]	3:1
16–30 yrs	168	34 (20.2)	2 [1.13 (0.23, 3.63)]	20 [11.32 (7.13, 17.14)]	22 [12.45 (8.02, 18.51)]	10:1
31–50 yrs	170	90 (52.9)	3 [1.8 (0.50, 4.81)]	21 [12.63 (8.05, 18.94)]	24 [14.43 (9.49, 21.12)]	7:1
>50 yrs	183	112 (61.2)	1 [0.55 (0.05, 2.59)]	12 [6.66 (3.64, 11.28)]	13 [7.21 (4.04, 11.98)]	12:1
All ages	853	239 (28.0)	19 [2.19 (1.36, 3.35)]	87 [10.03 (8.09, 12.31)]	106 [12.22 (10.06, 14.72)]	4.6:1

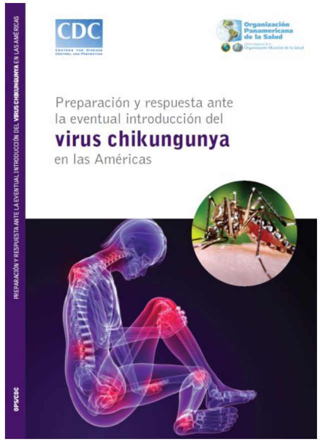
[a]Based on 853 subjects with both enrollment and 12-month blood collections.

[b]CHIKV PRNT titer at enrollment using 80% plaque reduction.

CHIKV = chikungunya virus; n = number; CI = confidence interval; PRNT = plaque reduction neutralization test.

Figura 1. **Períodos de incubación extrínseco e intrínseco del virus chikungunya.**





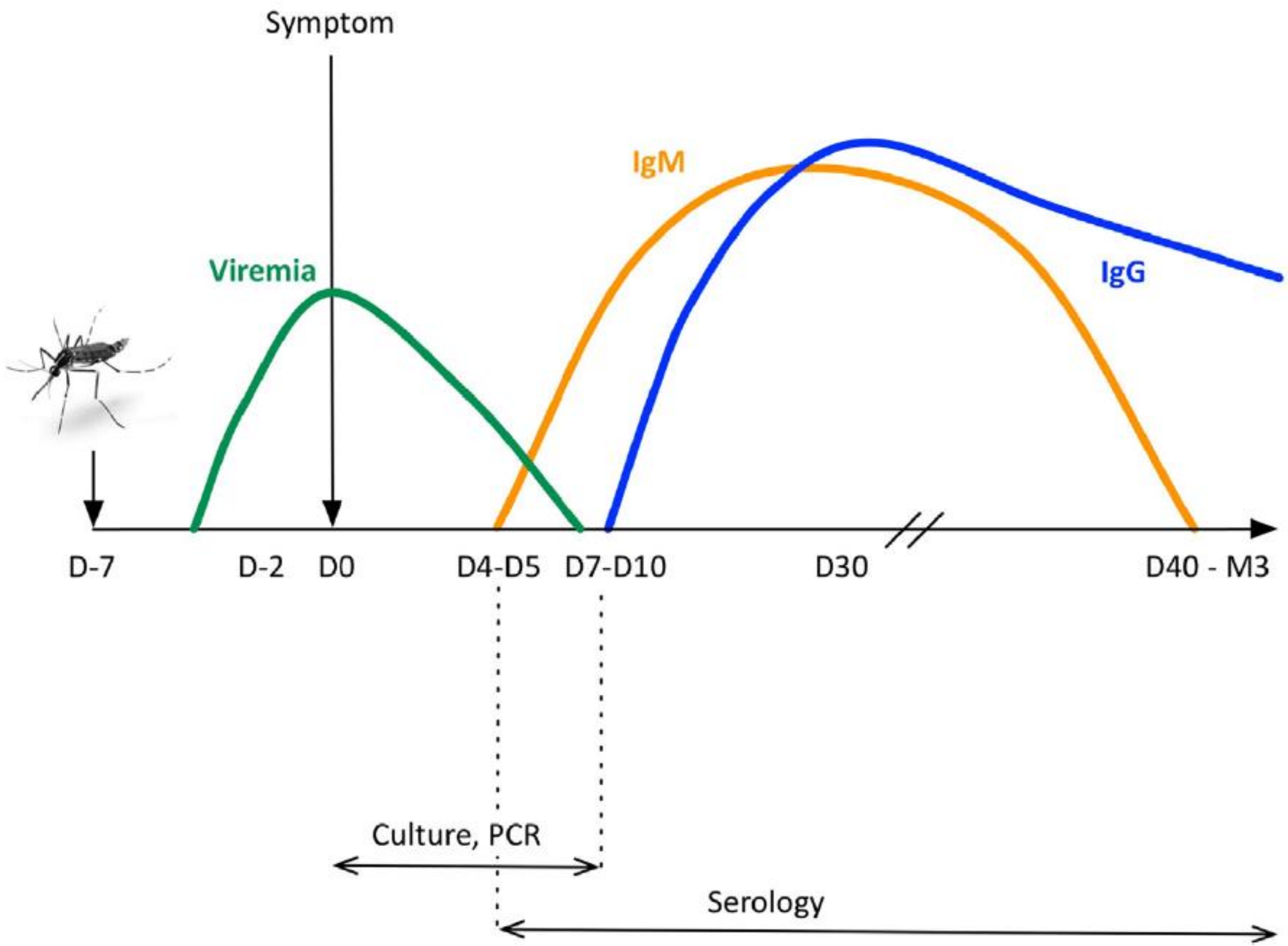


Fig. 2. Contribution of PCR and blood tests for the diagnosis of chikungunya, according to delay after infection (1).

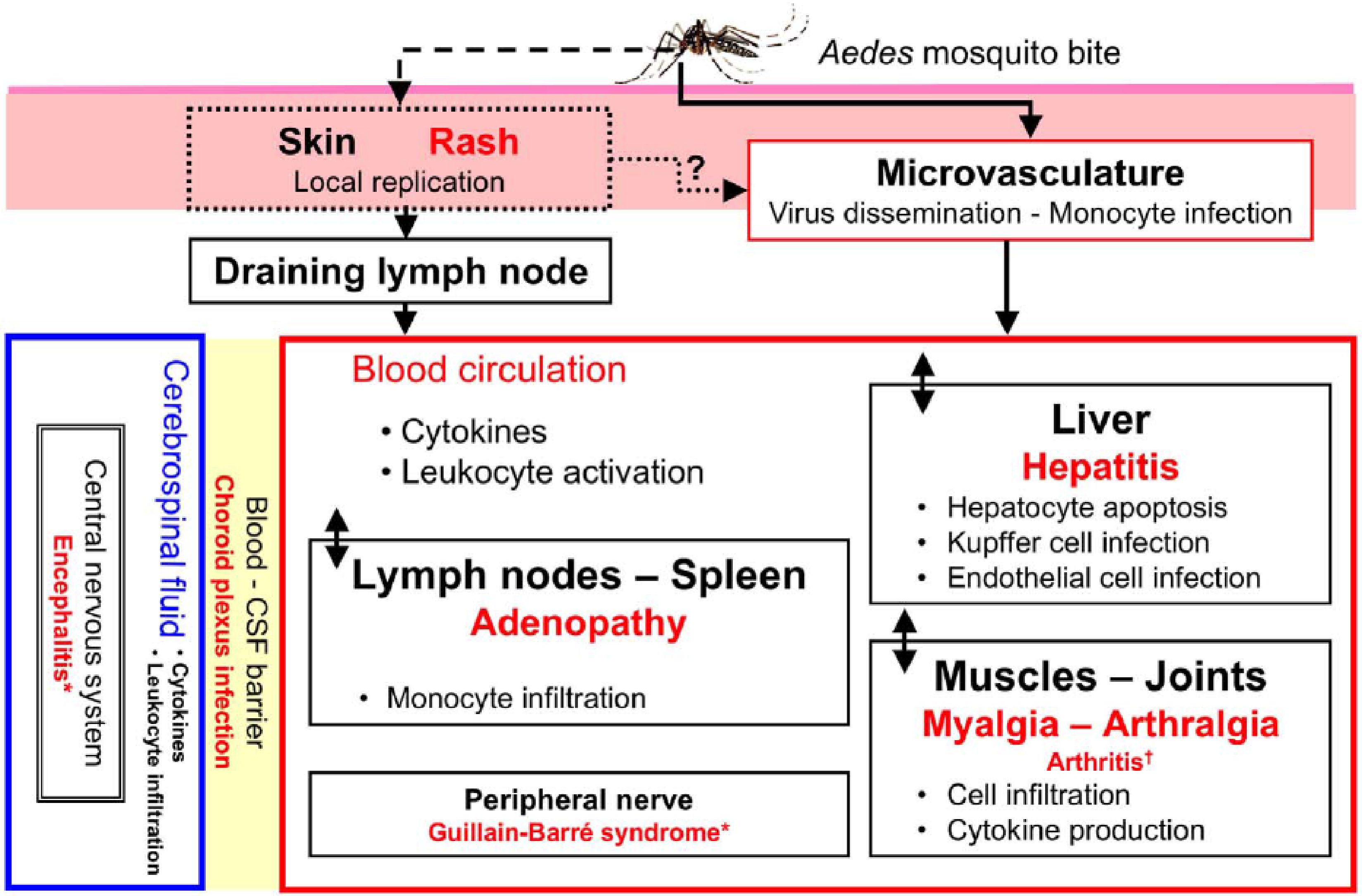
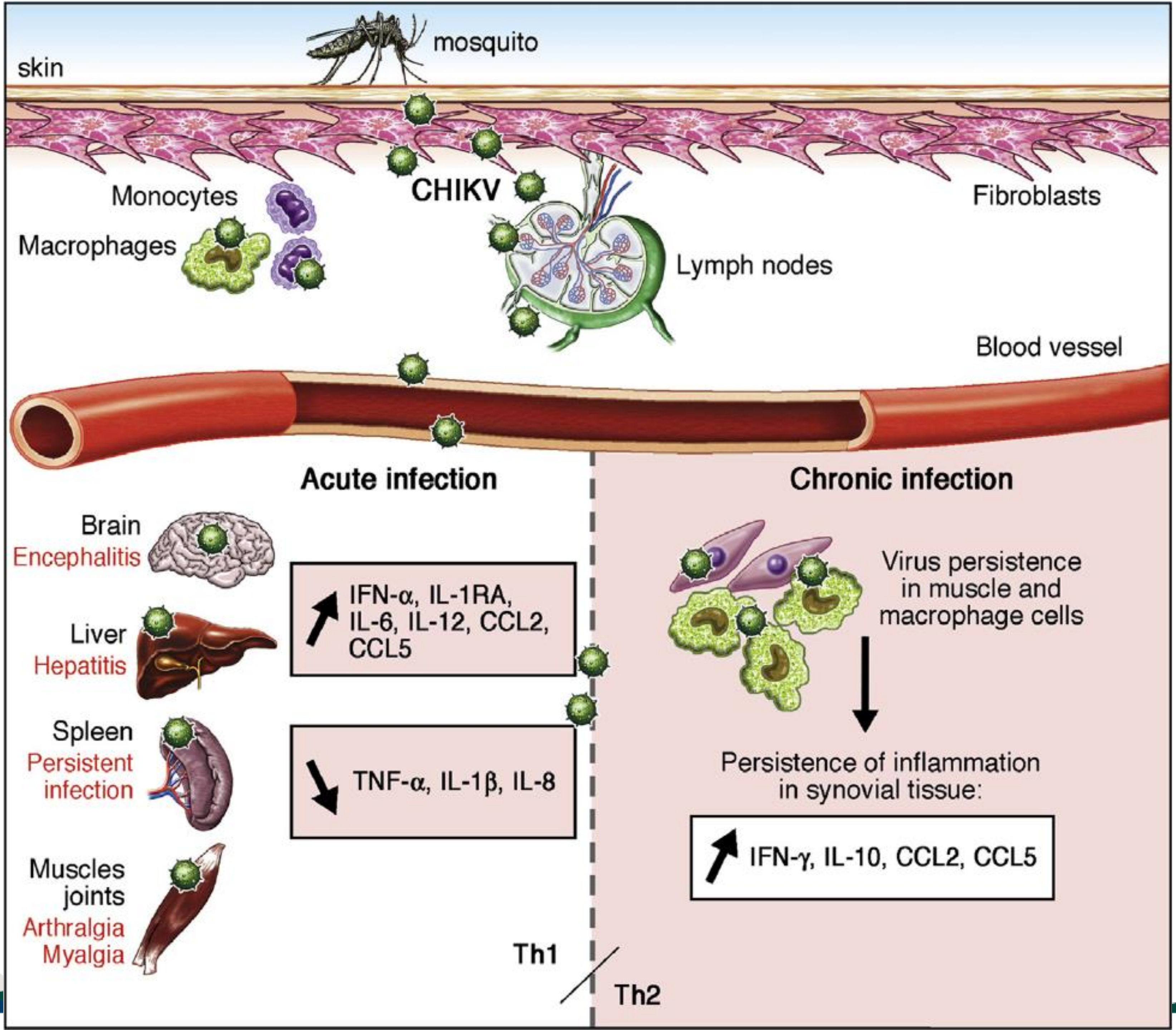


Figure 1. Virus dissemination and target organs. Following inoculation with CHIKV through a mosquito bite, the virus directly enters the subcutaneous capillaries, with some viruses infecting susceptible cells in the skin, such as macrophages or fibroblasts and endothelial cells. Local viral replication seems to be minor and limited in time, with the locally produced virus probably being transported to secondary lymphoid organs close to the site of inoculation. The blood carries most viruses, as free virions or in the form of infected monocytes, to the target organs, the liver, muscle, joints, and remote lymphoid organs. In these tissues, infection is associated with a marked infiltration of mononuclear cells, including macrophages, particularly when viral replication occurs. The pathological events associated with tissue infection are mostly subclinical in the liver (hepatocyte apoptosis) and lymphoid organs (adenopathy), whereas mononuclear cell infiltration and viral replication in the muscles and joints are associated with very strong pain, with some of the patients presenting arthritis. * Guillain-Barré syndrome and encephalitis are very rare events. † True arthritis remains a rare event (from 2% to 10%); see Table 2.
doi:10.1371/journal.pntd.0001446.g001

Dupuis-Maguiraga L, Noret M, Brun S, Le Grand R, Gras G, et al. (2012) Chikungunya Disease: Infection-Associated Markers from the Acute to the Chronic Phase of Arbovirus-Induced Arthralgia. PLoS Negl Trop Dis 6(3): e1446. doi:10.1371/journal.pntd.0001446



J Allergy Clin Immunol. 2015 Apr;135(4):846-55. doi: 10.1016/j.jaci.2015.01.039.
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Petitdemange C1, Wauquier N2, Vieillard V3.

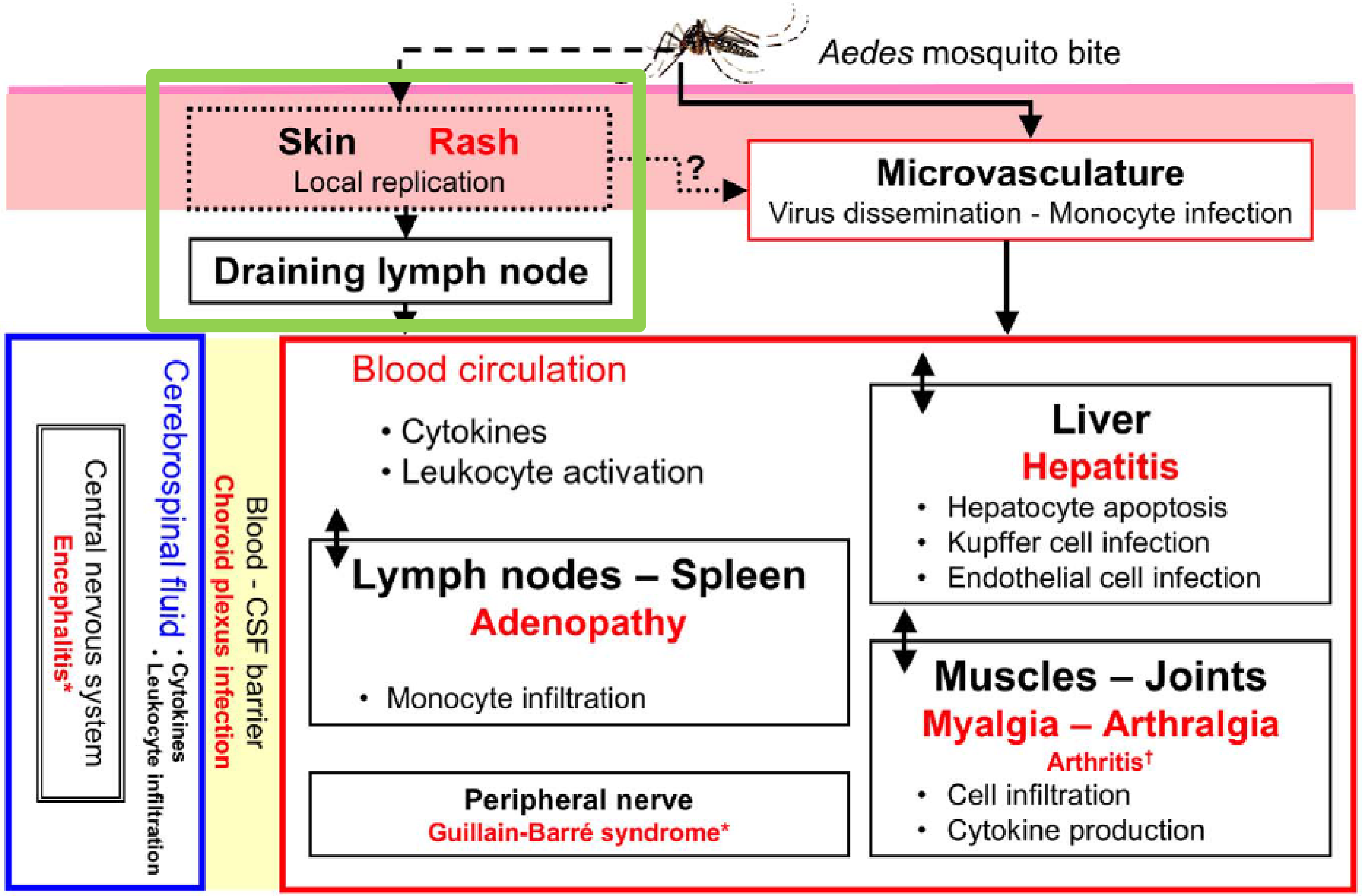

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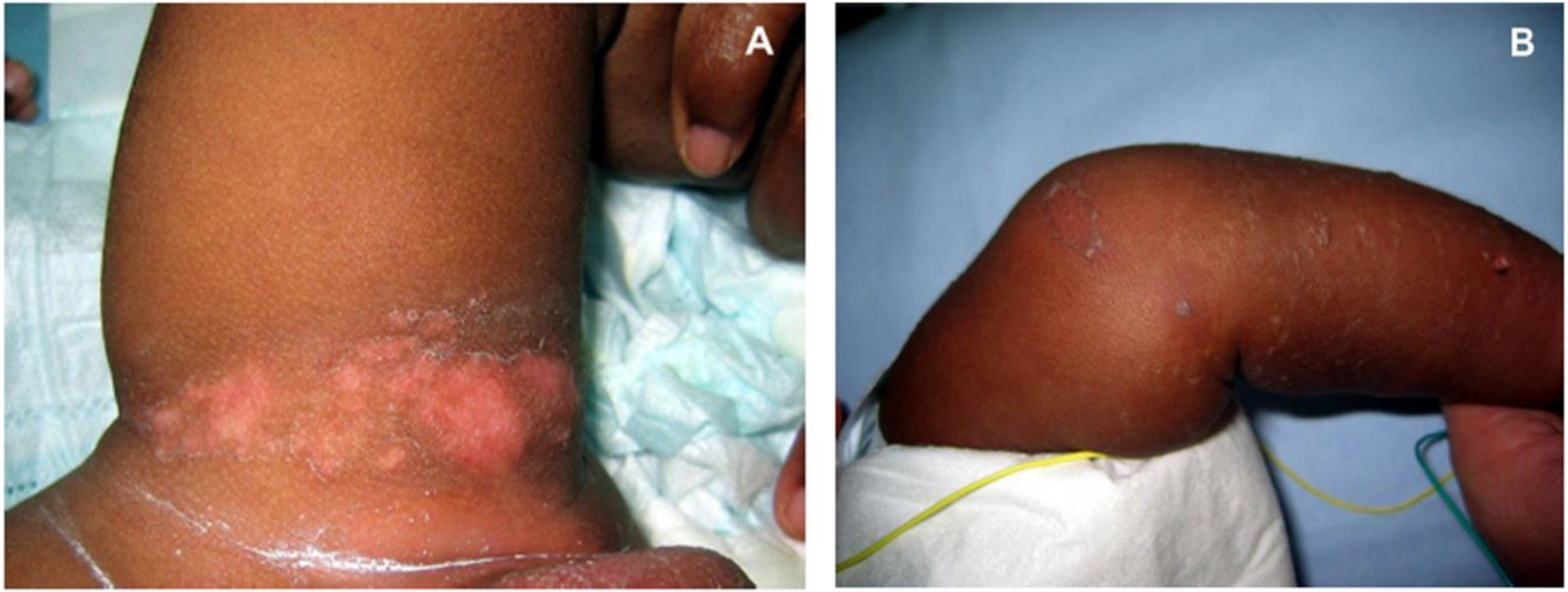
Table 1: Differences in clinical manifestations of chikungunya in children and adults

Feature	Children	Adults
Fever	Sudden onset, high-grade (> 38.9 °C), duration 1-8 days	
Skin manifestations	• Maculopapular rash (33-60%) • Pigmentary changes (42%) • Bullous rash/ skin blistering in 38-48% of infants < 6 months of age	• Maculopapular rash on trunk and limbs (35-50%) • Bullous rash/ skin blistering or photosensitivity (rare)
Muco-cutaneous manifestations	• Oral ulcers (rare)	• Oral ulcers (16%)
Musculo-skeletal manifestations	• Myalgia, arthralgia (30-50%)	• Arthritis / arthralgia, symmetric, more commonly affecting distal joints (87-99%) • Tenosynovitis (common) • Back pain (more common) • Myalgia (60-93%)
Chronic joint manifestations	• 5-11%, persistant for 2 years	• Arthralgias persistent or recurrent for 1 year in up to 57% • Arthralgias / arthritis, persistent for 3-5 years (12%)
Hemorrhagic manifestations		• Purpura, ecchymoses (10%)
	Severe bleeding including epistaxis, bleeding gums, hematemesis, melena, shock (rare)	
Neurological manifestations	• Headache (15%) • Seizures, acute encephalopathy, meningo-encephalitis (14-32%)	• Headache (40-81%) • Encephalopathy, meningo-encephalitis, acute flaccid paralysis, Guillain-Barre syndrome (< 0,1%)
Asymptomatic disease	• 35-40%	• 16-27%

Ritz N, Hufnagel M, Gérardin P. Chikungunya in Children.
Pediatr Infect Dis J. 2015 Jul;34(7):789-91.

Supplementary Figure 1: Typical skin manifestations of chikungunya: **A)** Intertriginous aphthous-like in a three-month-old infant and B) Bullous skin lesions in an eight-week-old infant.



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Results

A. Maculopapular rash in the upper back. **B.** Bullous dermatitis predominantly in the right leg.

Villamil-Gómez W, Silvera LA, Menco A, Gonzalez-Vergara A, Molinares-Palacios T, Barrios-Corrales M, Rodríguez-Morales AJ. **Congenital Chikungunya Virus Infection in Sincelejo, Colombia: A Case Series**. *Journal of Tropical Pediatrics* 2015 Epub Ahead Ago 5; Available online at: http://tropej.oxfordjournals.org/content/early/2015/08/04/tropej.fmv051 (Indexed on Medline/Index Medicus)

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doi: 10.1093/tropej/fmv051
Original Paper

OXFORD

Congenital Chikungunya Virus Infection in Sincelejo, Colombia: A Case Series

by Wilmer Villamil-Gómez,[1,2,3,4] Luz Alba-Silvera,[2,3] Antonio Menco-Ramos,[5] Alfonso Gonzalez-Vergara,[6] Tatiana Molinares-Palacios,[5] María Barrios-Corrales,[5] and Alfonso J. Rodríguez-Morales[4,7,8]

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[5]Neonatal Intensive Care Unit, Clínica Santa María, Sincelejo, Sucre, Colombia
[6]Department of Pediatrics, Hospital Universitario de Sincelejo, Sincelejo, Sucre, Colombia
[7]Public Health and Infection Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira, Pereira, Risaralda, Colombia
[8]Organización Latinoamericana para el Fomento de la Investigación en Salud (OLFIS), Bucaramanga, Colombia
Correspondence: Alfonso J. Rodríguez-Morales, Public Health and Infection Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira, Pereira, Risaralda, Colombia. E-mail arodriguezm@utp.edu.co

Results

- During the study period 7 pregnant women with CHIK delivered 8 newborn with CHIK (two twins)
- No coinfection with dengue was observed.
- From the total pregnant women, 100% presented with fever, arthralgia and exanthema.
- In addition 5 (71%) of them presented edema and 2 (29%) headache.

Table 1. Characteristics of women and newborns with chikungunya infected attended at the Clínica Santa María, Sincelejo, Sucre, Colombia, September 2014-February 2015.

Characteristic	**n**	**%**
Gravidity (n=7 women)		
Primigravidae	4	57.1
Multigravidae	3	42.9
Median age at delivery, years (n=7 women)		
<20	1	14.3
20-29	5	71.4
≥30	1	14.3

Results

Table 1. Characteristics of women and newborns with chikungunya infected attended at the Clínica Santa María, Sincelejo, Sucre, Colombia, September 2014-February 2015.

Characteristic	**n**	**%**
Mode of delivery (n=8 newborns)		
Vaginal	2	25
Cesarean	6	75
Median gestational age, weeks (n=7 women)		
<32	0	0.0
32-36	1	14.3
≥37	6	85.7
Median birth weight, grs (n=8 newborns)		
<2,000	2	25
2,000-2,499	0	0
2,500-2,999	5	62.5
≥3,000	1	12.5
Stillbirth after 22 weeks (n=8 newborns)		
Yes	3	37.50
No	5	62.50

TABLE 1. *Pigmentary Changes Noted in Chikungunya Infection*

Generalized pigmentation
Striking pigmentation on the nose called "brownie nose" or the 'Chik' sign of chikungunya (seen in our case)
Macular type (seen in our case)
Freckle-like pigmented macules that tend to coalesce (seen in our case)
Pinpoint confetti-like macules
Irregular flagellate or whiplash pattern of brownish pigmentation seen over trunk and extremities (seen in our case)
Accentuation of melasma
Pigmentation of existing acne lesions
Periorbital hypermelanosis
Addisonian-type palmar pigmentation

Pediatric Dermatology 1–4, 2015

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PLOS | NEGLECTED TROPICAL DISEASES

Neurocognitive Outcome of Children Exposed to Perinatal Mother-to-Child Chikungunya Virus Infection: The CHIMERE Cohort Study on Reunion Island

Patrick Gérardin[1,2,3]*, Sylvain Sampériz[1], Duksha Ramful[1,2,4], Brahim Boumahni[1], Marc Bintner[1], Jean-Luc Alessandri[1], Magali Carbonnier[1], Isabelle Tiran-Rajaoefera[1], Gilles Beullier[5], Irénée Boya[6], Tahir Noormahomed[7], Jocelyn Okoï[8,9], Olivier Rollot[2], Liliane Cotte[1], Marie-Christine Jaffar-Bandjee[1], Alain Michault[1], François Favier[2], Monique Kaminski[3], Alain Fourmaintraux[1], Xavier Fritel[3,10,11]

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Poisson regression model	Total	Children with GND†		Adjusted IRR	(95% CI)
Chikungunya virus infection					
Yes	32	16	(50.0)	2.79	(1.45–5.34)
No	119	17	(14.3)	1	-

Seguidos por 2 años con evaluaciones cada 6 meses

Methods: The CHIMERE ambispective cohort study compared the neurocognitive function of 33 p-CHIKV-infected children (all but one enrolled retrospectively) at around two years of age with 135 uninfected peers (all enrolled prospectively). Psychomotor development was assessed using the revised Brunet-Lezine scale, examiners blinded to infectious status. Development quotients (DQ) with subscores covering movement/posture, coordination, language, sociability skills were calculated. Predictors of global neurodevelopmental delay (GND, DQ≤85), were investigated using multivariate Poisson regression modeling. Neuroradiologic follow-up using magnetic resonance imaging (MRI) scans was proposed for most of the children with severe forms.

Results: The mean DQ score was 86.3 (95%CI: 81.0–91.5) in infected children compared to 100.2 (95%CI: 98.0–102.5) in uninfected peers ($P<0.001$). Fifty-one percent (n = 17) of infected children had a GND compared to 15% (n = 21) of uninfected children ($P<0.001$). Specific neurocognitive delays in p-CHIKV-infected children were as follows: coordination and language (57%), sociability (36%), movement/posture (27%). After adjustment for maternal social situation, small for gestational age, and head circumference, p-CHIKV infection was found associated with GND (incidence rate ratio: 2.79, 95%CI: 1.45–5.34). Further adjustments on gestational age or breastfeeding did not change the independent effect of CHIKV infection on neurocognitive outcome. The mean DQ of p-CHIKV-infecte children than in non-severe children (77.6 versus 91.2, $P<0.001$). Of the developed a microcephaly (head circumference <-2 standard deviatio palsy. MRI scans showed severe restrictions of white matter areas, predo

Conclusions: The neurocognitive outcome of children exposed to perinat CHIKV neonatal encephalopathy is associated with an even poorer outc

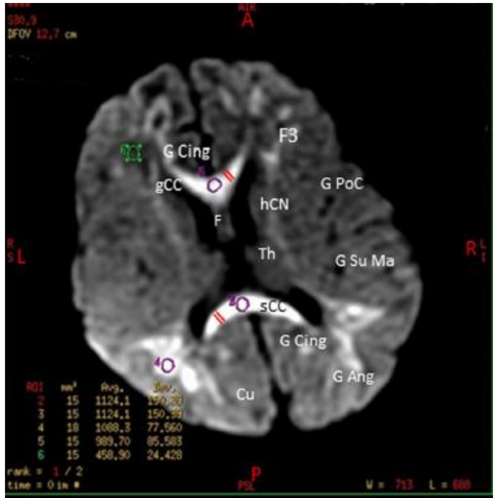


Fig.2a : 15-day DWI

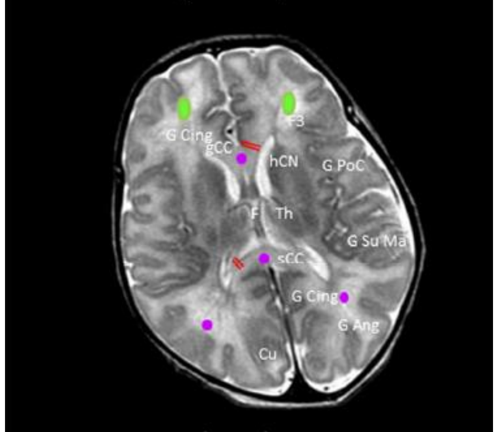
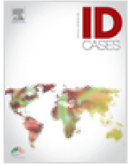


Fig.2b : 15-day T2WI

Our findings suggest that CHIKV infection, acquired in the perinatal period, can cause severe disease with lifelong expected disability!!!

IDCases

Volume 2, Issue 1, 2015, Pages 6–10



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Case Report

Chikungunya fever: Atypical and lethal cases in the Western hemisphere: A Venezuelan experience

Jaime R. Torres[a], Leopoldo Códova G.[a], Julio S. Castro[a], Libsen Rodríguez[b], Víctor Saravia[a], Joanne Arvelaez[c], Antonio Ríos-Fabra[d], María A. Longhi[d], Melania Marcano[c]

Abstract

A large epidemic of Chikungunya fever currently affects the Caribbean, Central and South America. Despite a high number of reported cases, little is known on the occurrence of severe clinical complications. We describe four Venezuelan patients with a severe and/or lethal course who exhibit unusual manifestations of the disease.

Case 1 describes a 75 year-old man with rapid onset of septic shock and multi-organ failure. Cases 2 and 3 describe two patients with rapid aggressive clinical course who developed shock, severe purpuric lesions and a distinct area large of necrosis in the nasal region. Case 4 depicts a splenectomized woman with shock, generalized purpuric lesions, bullous dermatosis and acronecrosis of an upper limb.

Chikungunya fever in the Western hemisphere may also associate with atypical and severe manifestations. Some patients experience a life-threatening, aggressive clinical course, with rapid deterioration and death due to multisystem failure.

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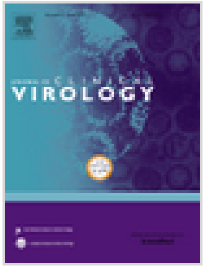

Case report

Fatal cases of Chikungunya virus infection in Colombia: Diagnostic and treatment challenges

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Table 1
Clinical and laboratory findings of fatal cases of laboratory-confirmed Chikungunya infection in Barranquilla, Colombia.

	Case 1		Case 2	Case 3
Clinical findings				
Days from symptoms onset	4		8	4
Fever	Yes		Yes	Yes
Skin rash	No		Yes	Yes
Arthralgia	Yes		Yes	No
Hypotension	Yes		Yes	No
Tachycardia	Yes		Yes	Yes
Altered mental status	No		Yes	No
Gastrointestinal symptoms*	Yes		No	Yes
Bleeding	No		No	No
Laboratory findings				
Date (dd/mm/yy)	1/12/14	2/12/14	6/12/14	6/12/14
Hemoglobin (g/dl)	15.7	15.6	17.1	18.3
Hematocrit (%)	42	42.4	51.3	53.5
Total white cells (10^9/L)	29.8	35.1	21.8	52.2
Total lymphocytes (10^9/L)	1.2	1.7	0.7	2.2
15 Platelets (10^9/L)	45	31	167	25
Prothrombin time (sec)	42.3	20.1	27.1	44.4
INR	1.4	1.37	1.53	1.51
Sodium (mmol/L)	127.5	136	129	134
Potassium (mmol/L)	4.86	3.02	6.38	5.79
Urea (mg/dl)	198	71	206	114
Creatinine (mg/dl)	4.34	3.31	6.5	5.33
Total bilirubin (mg/dl)	0.44		1.45	0.7
Aspartate aminotransferase (U/L)	146		276	270
Alanine aminotransferase (U/L)	18		74	30
Alkaline phosphatase (U/L)	265			
Glucose (mg/dl)	98		35	160
Troponin I (ng/ml)	0.68	0.57		
Albumin (g/dl)		1.46	2.62	
Lactate (mmol/L)		5.3	8.6	7.42
Creatine kinase (U/L)		509		1025
Lactate dehydrogenase (U/L)		2418		13620

INR = International Normalized Ratio.
* Gastrointestinal symptoms include nausea, vomiting or diarrhea.

CHIKUNGUÑA

Mortalidad chikunguña

Tabla 1. Distribución de casos de muertes con chikunguña, Colombia acumulado 2014-2015

Entidad Territorial	Muertes Notificadas	Muertes Confirmadas	Muertes descartada	Muertes en estudio
Norte de Santander	13	10	0	3
Cundinamarca	7	6	1	0
Huila	3	3	0	0
Tolima	6	2	0	4
Barranquilla	2	1	0	1
Sucre	3	2	0	1
Cartagena	1	1	0	0
Bolívar	3	0	0	3
Santander	3	0	0	3
Cesar	1	0	0	1
Valle del Cauca	1	0	0	1
Total	**43**	**25**	**1**	**17**

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Table 1

Estimations of CFR (%) and mortality rates due to CHIKV based on officially reported deaths during 2014 and first 15 epidemiological weeks of 2015, Colombia.

Territory	Notified deaths	Ruled out deaths	Deaths under study	Confirmed deaths (2014–2015)	Cases (2014)	Cases (2015)[a]	Population (2015)	CFR (%)[b]	Mortality rate[c] (deaths/100,000pop)
Norte de Santander	13	0	3	10	24,694	5,641	1,355,723	0.033	0.738
Huila	3	0	0	3	2,131	23,806	1,154,804	0.012	0.260
Sucre	3	0	1	2	14,741	6,140	851,526	0.010	0.235
Cundinamarca	7	1	0	6	1,816	13,148	2,680,041	0.040	0.224
Tolima	6	0	4	2	1,772	29,868	1,408,274	0.006	0.142
Cartagena	1	0	0	1	12,279	341	1,001,680	0.008	0.100
Barranquilla	2	0	1	1	4,341	3,952	1,218,737	0.012	0.082
Bolívar	3	0	3	0	18,190	426	2,097,086	0.000	0.000
Cesar	1	0	1	0	797	2,635	1,028,880	0.000	0.000
Santander	3	0	3	0	403	3,478	2,061,095	0.000	0.000
Valle del Cauca	1	0	1	0	375	44,179	4,613,377	0.000	0.000
Total	43	1	17	25	81,539	133,614	19,471,223	0.012	0.128

CFR = case fatality rate.

[a] Until week 15.

[b] (Deaths 2014–2015/Cases 2014–2015) × 100.

[c] (Deaths 2014–2015/Population 2015) × 100,000pop.

Cardona-Ospina JA, Henao-SanMartin V, Paniz-Mondolfi AE, Rodriguez-Morales AJ.
Mortality and fatality due to Chikungunya virus infection in Colombia. J Clin Virol 2015 Sep; 70:14-15.
Available online at: http://www.sciencedirect.com/science/article/pii/S1386653215002917

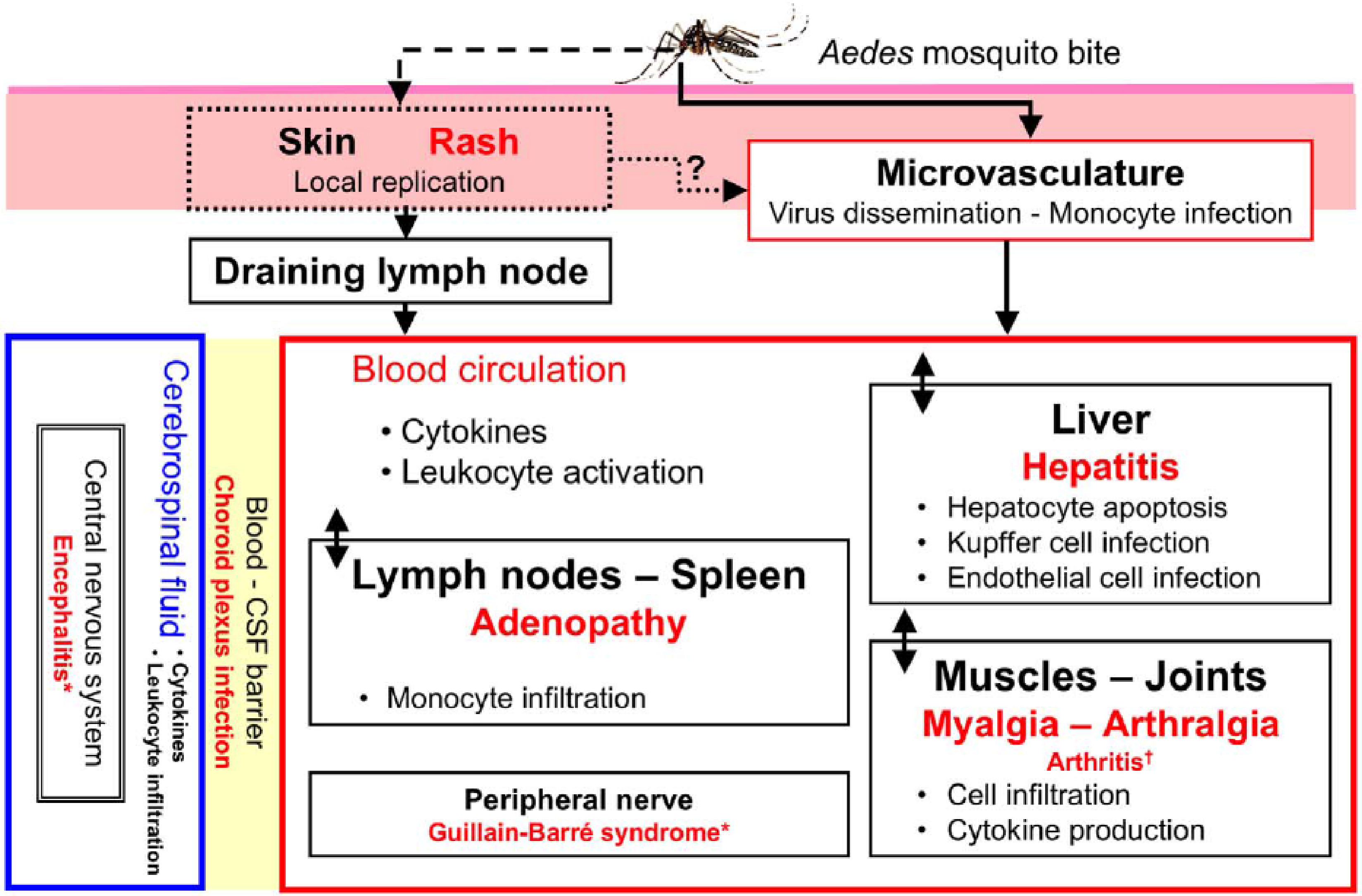

Figure 1. Virus dissemination and target organs. Following inoculation with CHIKV through a mosquito bite, the virus directly enters the subcutaneous capillaries, with some viruses infecting susceptible cells in the skin, such as macrophages or fibroblasts and endothelial cells. Local viral replication seems to be minor and limited in time, with the locally produced virus probably being transported to secondary lymphoid organs close to the site of inoculation. The blood carries most viruses, as free virions or in the form of infected monocytes, to the target organs, the liver, muscle, joints, and remote lymphoid organs. In these tissues, infection is associated with a marked infiltration of mononuclear cells, including macrophages, particularly when viral replication occurs. The pathological events associated with tissue infection are mostly subclinical in the liver (hepatocyte apoptosis) and lymphoid organs (adenopathy), whereas mononuclear cell infiltration and viral replication in the muscles and joints are associated with very strong pain, with some of the patients presenting arthritis. * Guillain-Barré syndrome and encephalitis are very rare events. † True arthritis remains a rare event (from 2% to 10%); see Table 2.
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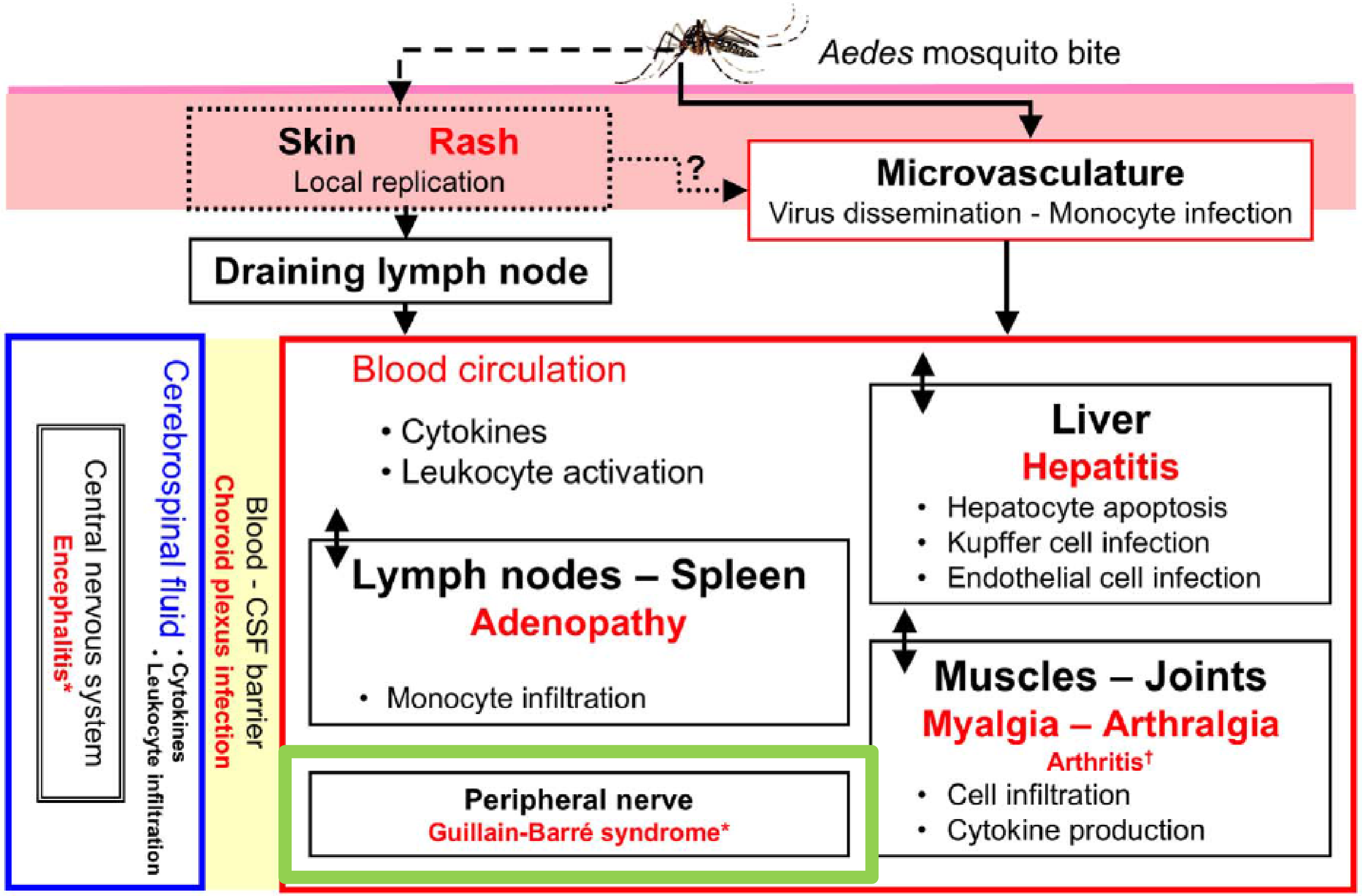

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Letter

Guillain-Barré Syndrome after Chikungunya Infection

Suggested citation for this article

To the Editor: *Chikungunya virus* is an RNA alphavirus (group A arbovirus) in the family *Togaviridae*. The known vectors are *Aedes aegypti* and *Ae. albopictus* mosqitoes. Chikungunya infection, after an incubation period of 2–10 days, has the main clinical manifestations of fever, polyarthralgia, and rash. Treatment consists of rest and medication for pain. Outcome is marked by incapacitating arthralgia, which can persist for several weeks or months (1). Complications are rare and consist of mild hemorrhage, myocarditis, and hepatitis (2). Neurologic manifestations are less well known (3). Infection is confirmed by the identification of genomic products in acute-phase blood specimens, (reverse transcription–PCR [RT-PCR]) or, more recently, by serum immunoglobulin (Ig) M or a 4-fold increase in other antibodies. In 2006, chikungunya virus was found on Réunion Island; seroprevalence on the island was estimated to be 38.2% among 785,000 inhabitants (95% confidence interval 35.9%–40.6%) (4).

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Scientific letter

Guillain–Barré syndrome after Chikungunya infection: A case in Colombia

Síndrome de Guillain-Barré post-infección por Chikungunya: un caso en Colombia

To the Editor,

Chikungunya virus (CHIKV), an arthropod-borne virus (arbovirus) of the family Togaviridae, genus Alphavirus, is transmitted by mosquitoes of the *Aedes* genus; especially *Ae. aegypti* and *Ae. albopictus*. This has emerged in tropical areas of Latin America as a public health threat since 2014, when significant expansion, of imported, but particularly autochthonous cases in previously dengue-endemic region begun to be reported and extended over the territories.[1,2]

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[b] *Program of Doctorate in Tropical Medicine, Universidad del Atlántico, Barranquilla, Atlántico, Colombia*
[c] *Department of Internal Medicine, Clínica Santa María, Sincelejo, Sucre, Colombia*
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Villamil-Gómez W, Silvera LA, Páez-Castellanos J, Rodriguez-Morales AJ. Guillain-Barré Syndrome after Chikungunya Infection: a case in Colombia. Enferm Infecc Microbiol Clin 2015 Epub Ahead Jul 8; available online at: www.sciencedirect.com/science/article/pii/S0213005X15002463 (Indexed on Medline/Index Medicus)

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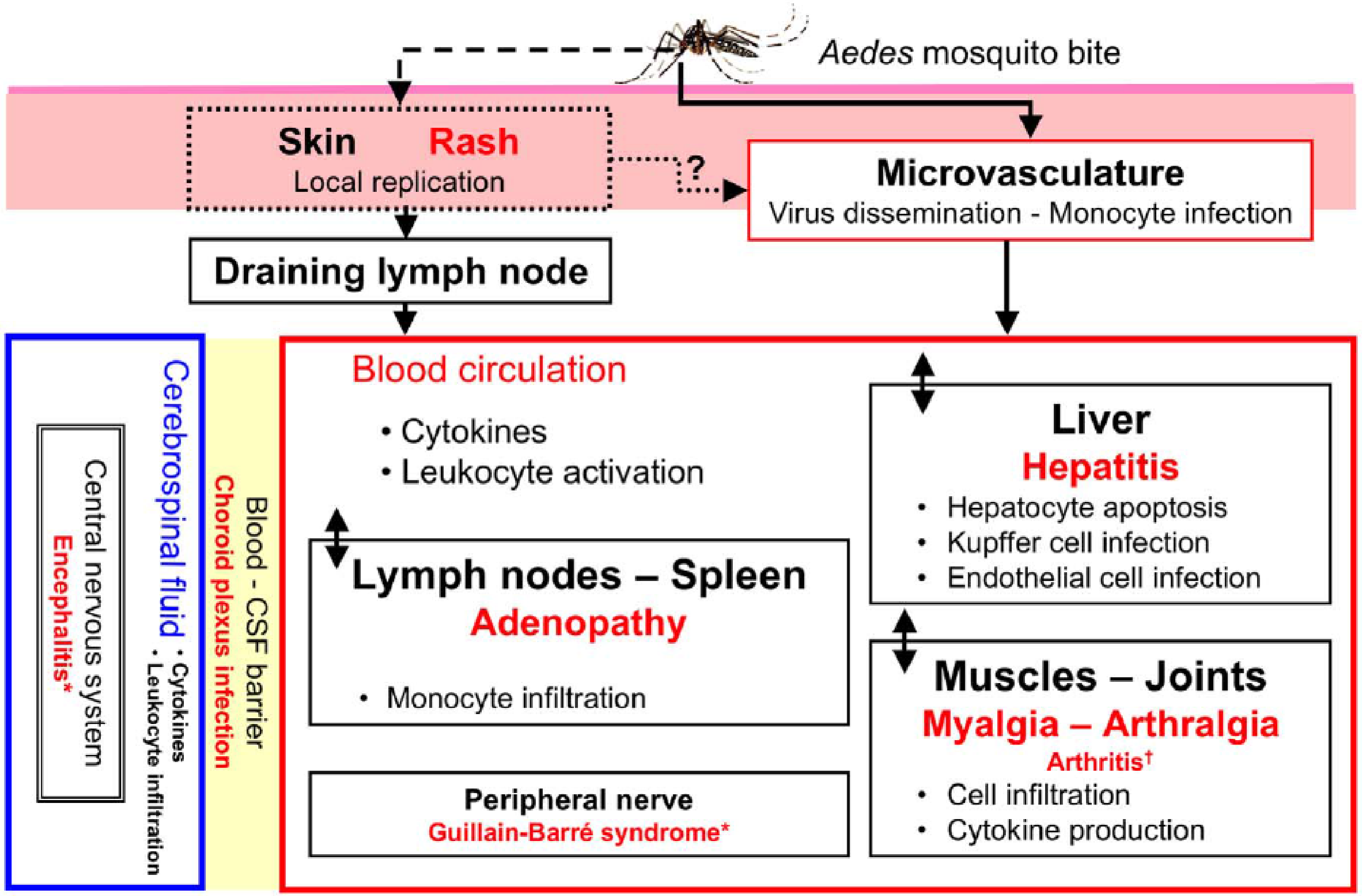

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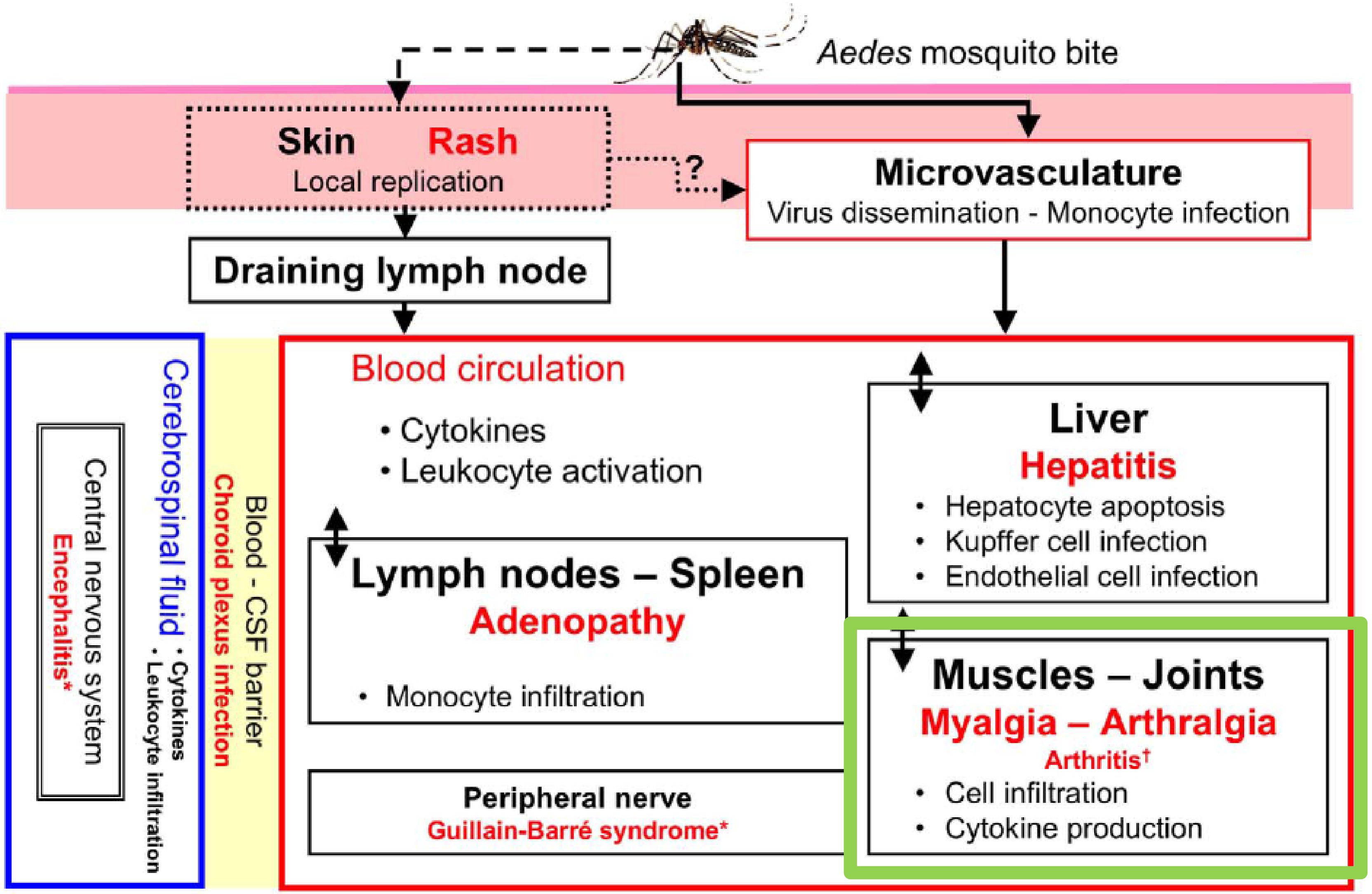

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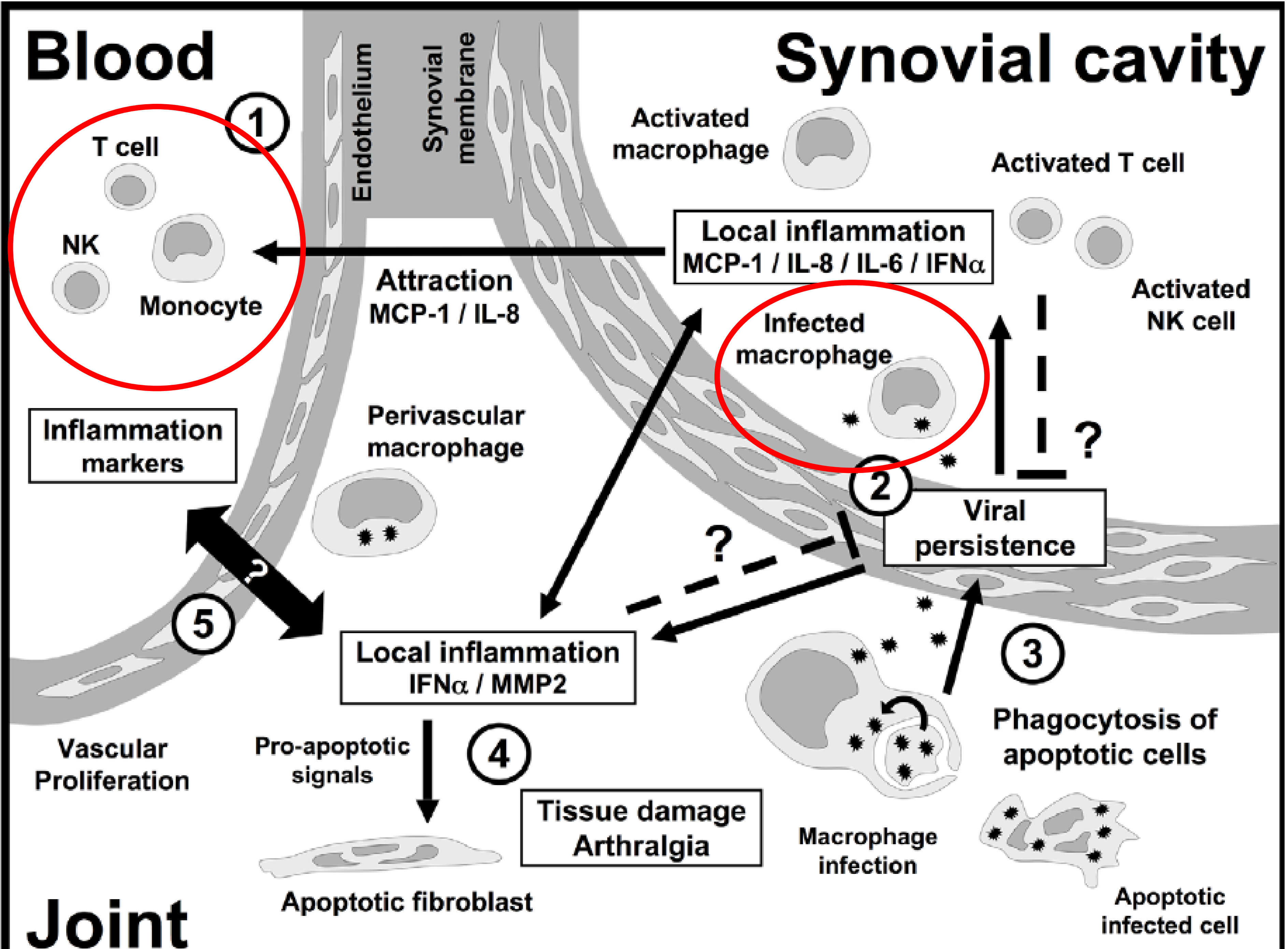


Dupuis-Maguiraga LPLoS Negl Trop Dis 6(3):e1446. doi:10.1371/journal.pntd.0001446

(1) Months after the acute infection, monocytes, T cells, and natural killer (NK) cells are still attracted to the inflamed joint, where they become activated.
(2) The infection of macrophages in joints is associated with local inflammation and the production of cytokines, chemokines, and pro-inflammatory effectors, such as MCP-1/CCL-2, IL-8, IL-6, IFN-a, and MMP2.
(3) The phagocytosis of apoptotic bodies from infected cells probably contributes to viral persistence. Nevertheless, the beneficial or deleterious effect of local inflammation on viral persistence remains unclear.
(4) When it occurs, arthritis is accompanied by high rates of fibroblast apoptosis and cartilage destruction. Chronic inflammation probably plays a major role in this damage and associated pain.
(5) The potential relationship between local inflammation of the joint and a state of systemic activation, as demonstrated by the presence of inflammation markers in plasma and blood cells, remains unclear.

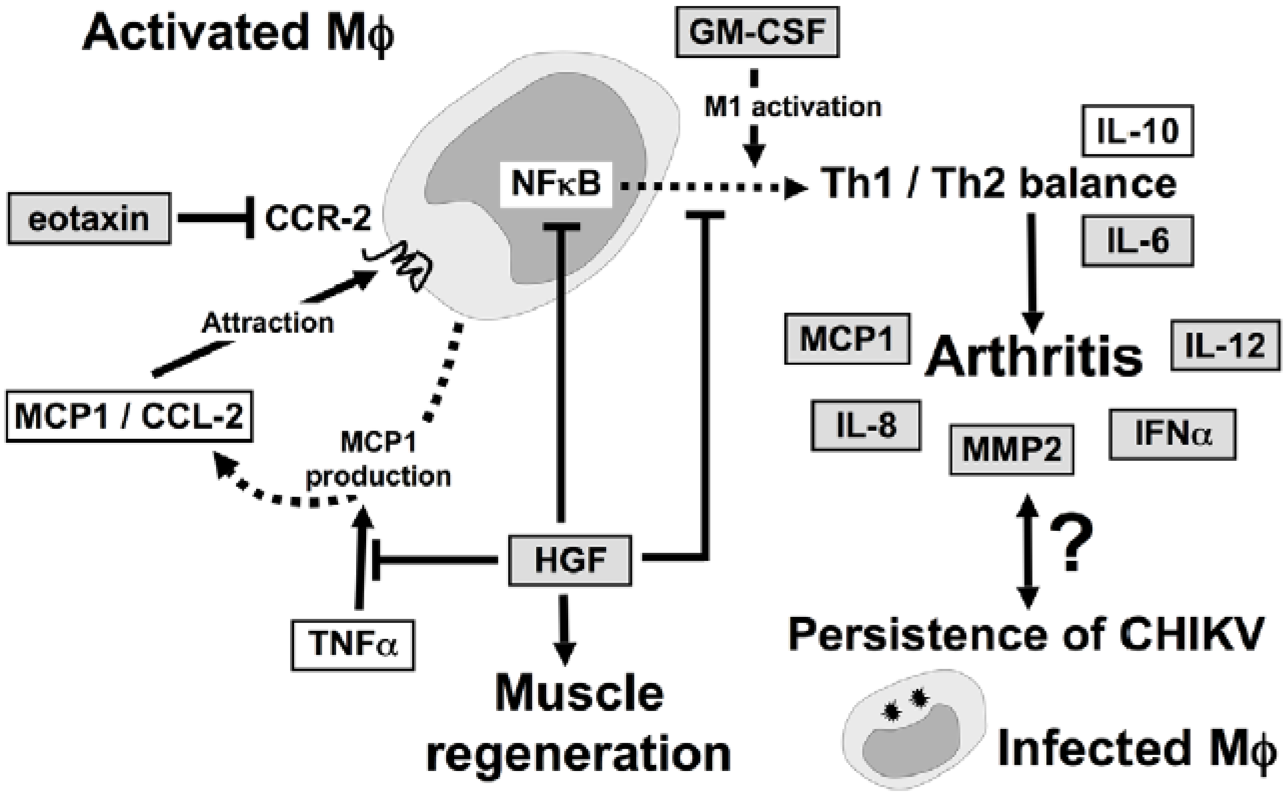


Figure 3. The macrophage is central to chronic signs of chikungunya disease. Macrophage infiltration, under the control of MCP-1/CCL-2, is a critical feature of damaged tissues. The inflammatory effectors IL-6, IL-8, MCP-1/CCL-2, MMP2, and INF-α are specifically expressed in the tissues of patients with chronic chikungunya, who have high IFN-α and IL-12 mRNA levels in their circulating leukocytes. This classical inflammatory process may be regulated by HGF and eotaxin, which have different expression profiles during the recovery phase in patients with chikungunya, depending on whether or not these patients go on to develop chronic disease. HGF also promotes muscle regeneration. Once they have infiltrated the joint or muscle, the macrophages are activated and regulate the local Th1/Th2 balance as a function of their own activation status (classical/M1 or alternative/M2). GM-CSF and HGF, which have M1 and M2 effector activities, respectively, may modulate this balance as they are differentially expressed in acute and chronic chikungunya. CHIKV persists in infected macrophages only in patients with a chronic rheumatic syndrome. The reciprocal influences connecting viral persistence and local inflammation are not known. Solid arrows: activation. Solid stopped lines: regulation. Dotted arrows: expression.
doi:10.1371/journal.pntd.0001446.g003

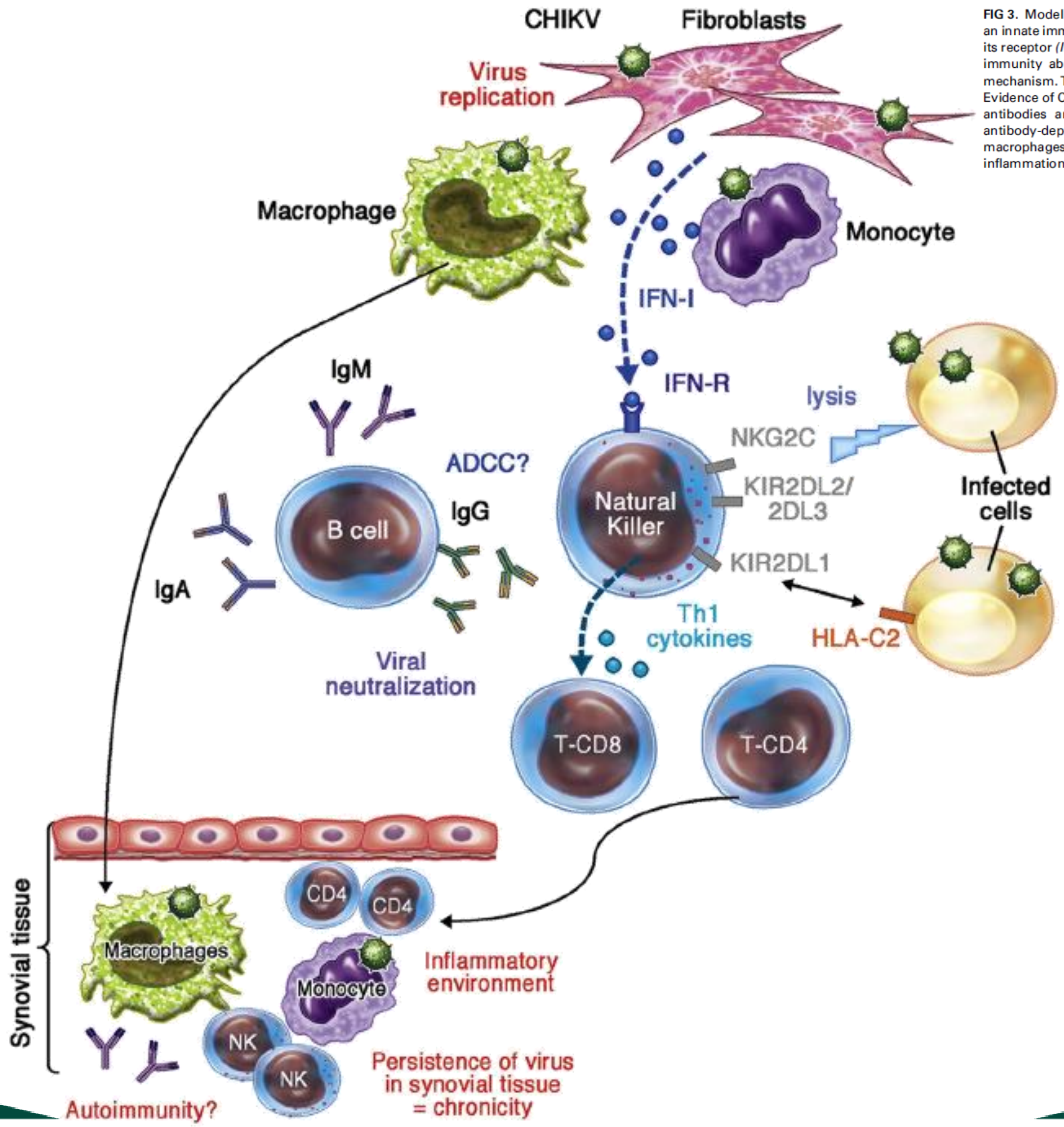
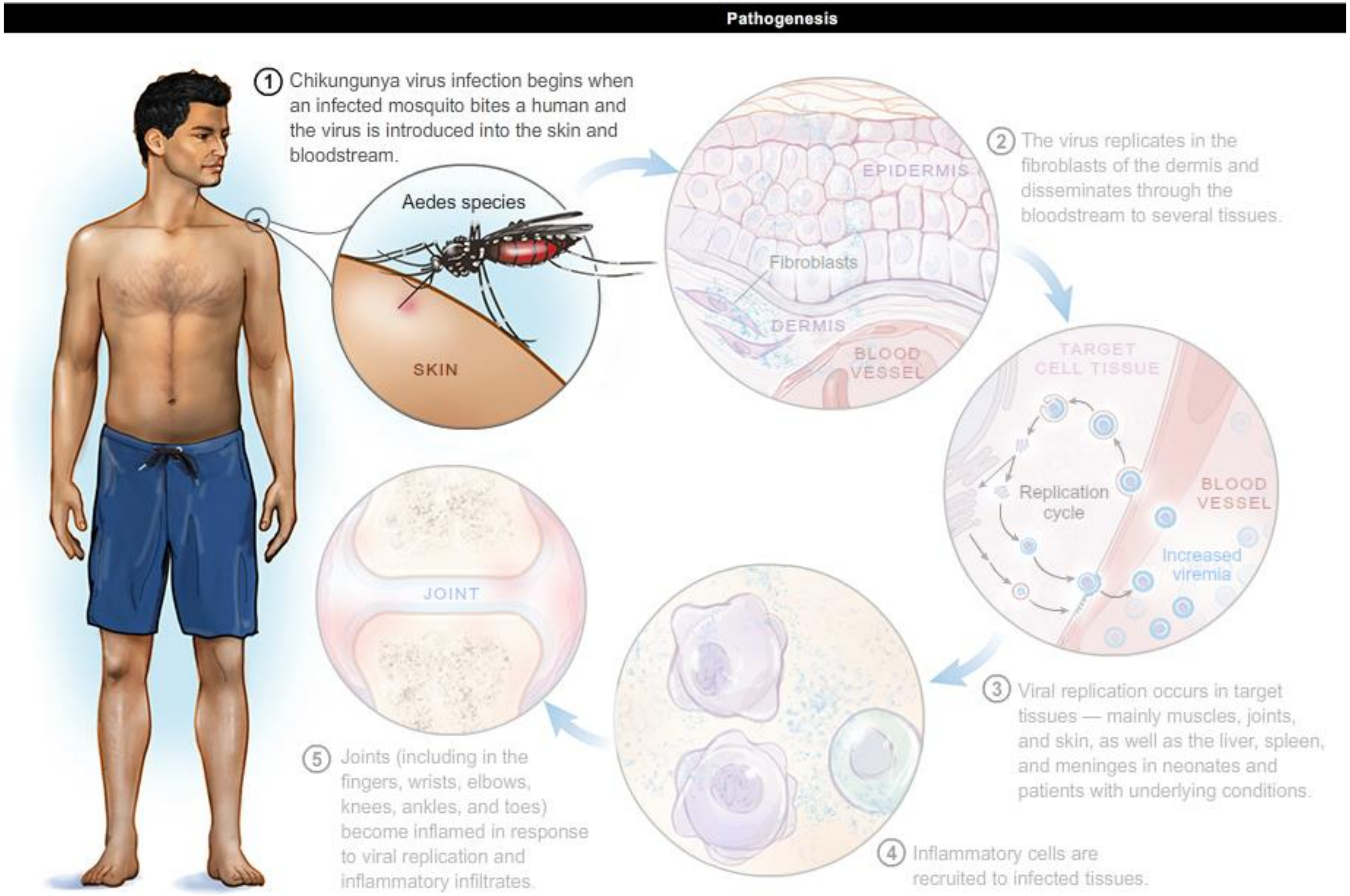
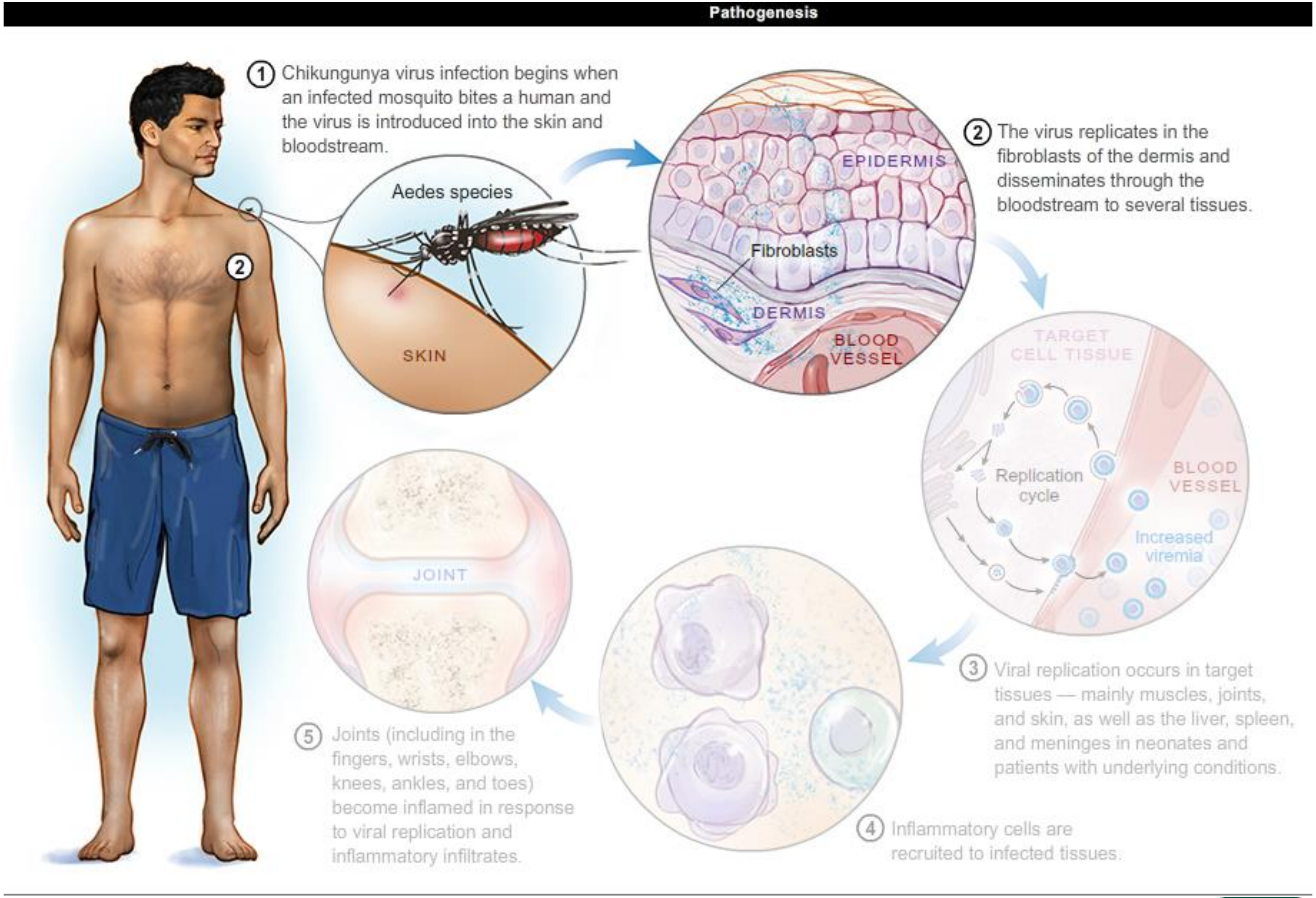


FIG 3. Model of immune activation in patients with CHIKV infection. CHIKV infection triggers activation of an innate immune response primed by strong production of type 1 interferon *(IFN-I)*, which signals through its receptor *(IFN-I-R)*, which is present on most cells, including NK cells. NK cells are major actors of innate immunity able to target CHIKV-infected cells through a NKG2C/KIR–HLA class I–dependent cytotoxic mechanism. They also participate in the recruitment of T lymphocytes through production of T_H1 cytokines. Evidence of CHIKV-specific adaptive immunity is mostly observed after viral clearance. Specific anti-CHIKV antibodies are produced and contribute to controlling the virus through viral neutralization and/or antibody-dependent cell-mediated cytotoxicity (undetermined to date). T lymphocytes and infected macrophages might contribute to the persistence of the virus and the development of localized inflammation in the synovial tissues of chronically infected patients.

J Allergy Clin Immunol. 2015 Apr;135(4):846-55. doi: 10.1016/j.jaci.2015.01.039.
Control of immunopathology during chikungunya virus infection.
Petitdemange C1, Wauquier N2, Vieillard V3.



Scott C. Weaver, Ph.D., and Marc Lecuit, M.D., Ph.D.
N Engl J Med 2015; 372:1231-1239



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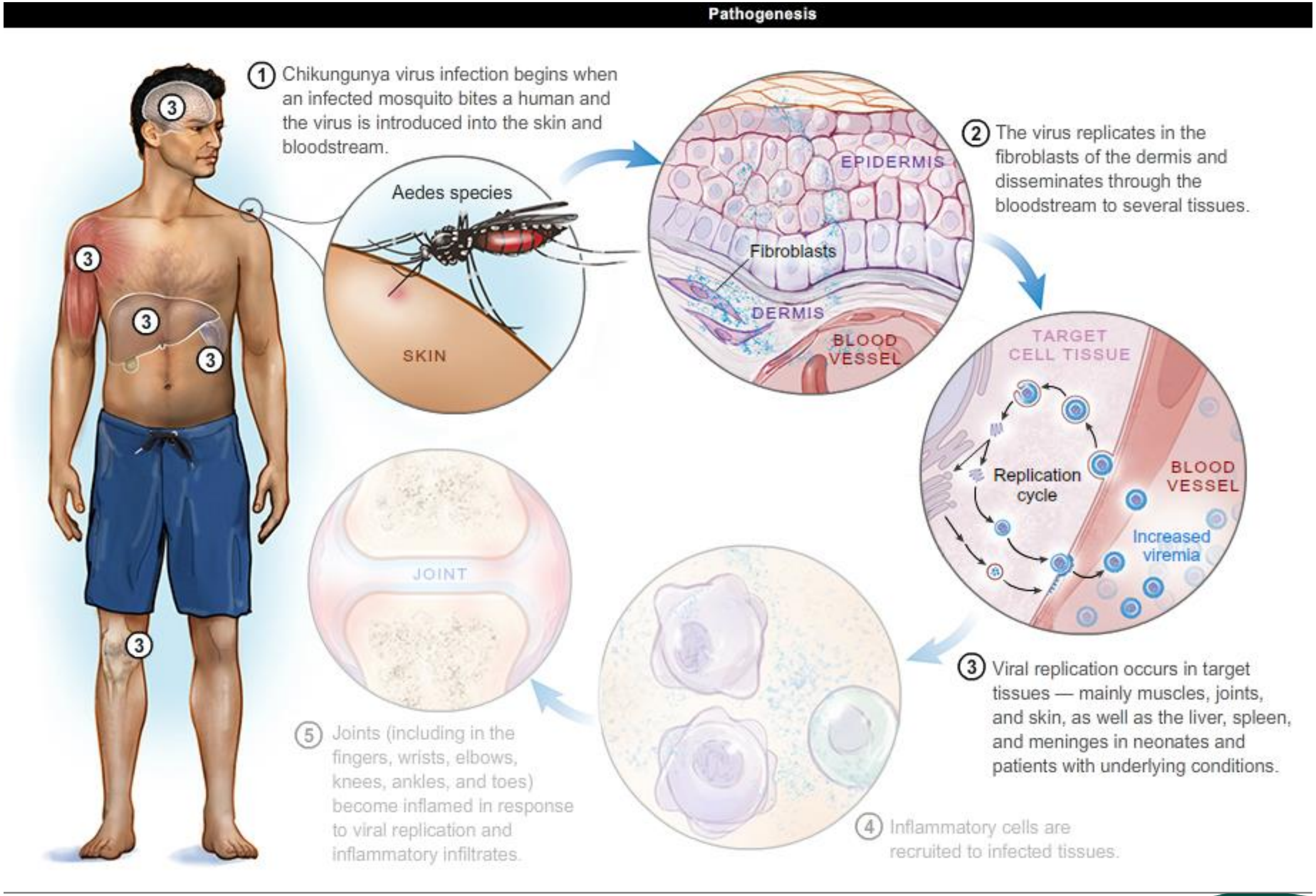
N Engl J Med 2015; 372:1231-1239



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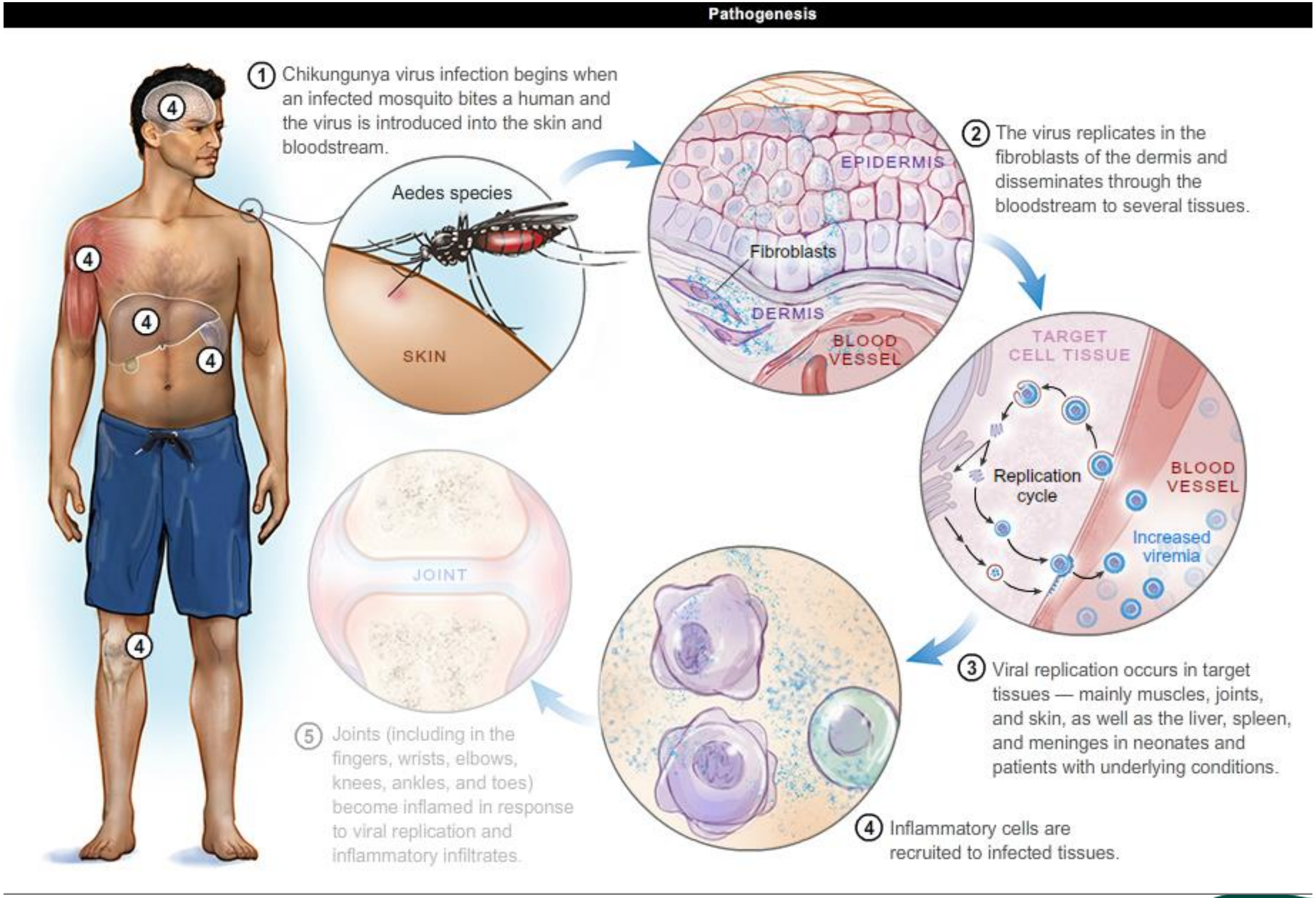
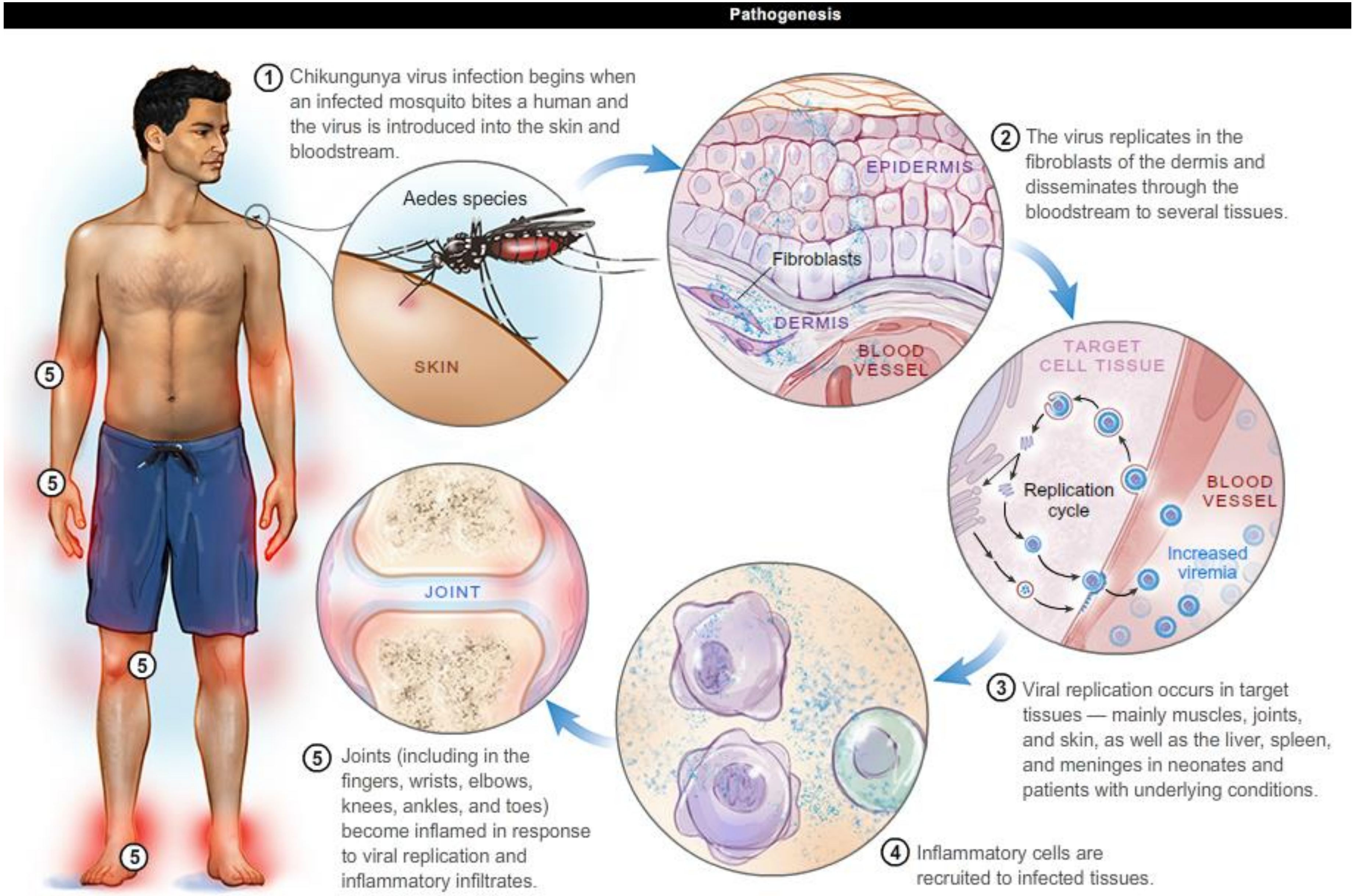


Scott C. Weaver, Ph.D., and Marc Lecuit, M.D., Ph.D.
N Engl J Med 2015; 372:1231-1239



Scott C. Weaver, Ph.D., and Marc Lecuit, M.D., Ph.D.
N Engl J Med 2015; 372:1231-1239

Rheumatol Int
DOI 10.1007/s00296-015-3302-5

Rheumatology INTERNATIONAL

SHORT COMMUNICATION - OBSERVATIONAL RESEARCH

How many patients with post-chikungunya chronic inflammatory rheumatism can we expect in the new endemic areas of Latin America?

A. J. Rodriguez-Morales[1] · J. A. Cardona-Ospina[1] · W. Villamil-Gómez[2] · A. E. Paniz-Mondolfi[3]

Received: 29 March 2015 / Accepted: 29 May 2015

Abstract Post-chikungunya chronic inflammatory rheumatism (pCHIK-CIR) is one of the consequences that are impacting new endemic countries, such as those in the Americas. The relative frequency of pCHIK-CIR is highly variable, ranging from 14.4 % to 87.2 % (including variable number of patients and follow-up times). Based on those non-weighted values, it is difficult to estimate which would be the expected number of patients with CHIK who will develop CIR. For these reasons, we modeled weighted estimations based on pooled data extracted from those eight representative studies in order to provide cumulative proportion of pCHIK-CIR over time and median time of it, but also estimations of the number of patients with CHIK reported in Latin American countries (within a 95 % CI). This model estimated a prevalence of 47.57 % for pCHIK-CIR (95 % CI 45.08–50.13), with a median time to 50 % of pCHIK-CIR in 20.12 months. Given the reported number of patients with acute CHIK during 2014 in the Americas, our estimates suggest that from those patients, 385,835–429,058 patients will develop pCHIK-CIR. Despite the limitations of these estimates, the provided figures of pCHIK-CIR presented here are preliminary approximations of what the future burden of related rheumatic disease in the region as a consequence of CHIK infection for 2015–2016 could be, given the timeframe of median time of occurrence.

Keywords Chikungunya · Chronic inflammatory rheumatism · Estimations · Epidemiology · Americas

Introduction

Chikungunya (CHIK) has emerged as a major public health threat in Latin America affecting extensive tropical and temperate areas, where the disease, originally imported to the Caribbean, has now rapidly expanded into new regions to become endemic [1–3]. Although classically presenting as an acute febrile syndrome, CHIK is well known to produce severe acute and chronic musculoskeletal manifestations ranging from eruptive polyarthritis to persistent rheumatologic and disabling symptoms [4]. Post-CHIK (pCHIK) chronic inflammatory rheumatism (CIR) was first reported in 1979 [4, 5]; however, it was not until the last decade that due to its re-emergence in Africa, Asia, Pacific Islands, Europe, and now the Latin America, clinical studies have started to resurge and assess its occurrence [4–12].

de Andrade *et al. BMC Infectious Diseases* 2010, **10**:31
http://www.biomedcentral.com/1471-2334/10/31

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

Chronic pain associated with the Chikungunya Fever: long lasting burden of an acute illness

Daniel Ciampi de Andrade[1†], Sylvain Jean[2,3†], Pierre Clavelou[3†], Radhouane Dallel[3†], Didier Bouhassira[1*†]

www.thelancet.com/infection Vol 14 September 2014 789

Chikungunya virus and arthritic disease

Chikungunya virus is a mosquito-borne alphavirus that has recently emerged in several explosive epidemics, causing febrile illness that can progress to painful and debilitating rheumatic disease. The virus continues to spread globally. Based on recent developments, we propose a potential link between chikungunya infection and other bone and joint diseases.

Chikungunya virus, transmitted by *Aedes* spp mosquitoes, is widely distributed in tropical and subtropical regions of Africa, the Indian Ocean islands, and southeast Asia. Three distinct genotypes of the virus exist, with phenotypic differences that have facilitated adaptation of the virus to *Aedes albopictus*, a species with wider geographical distribution than *Aedes aegypti*. In 2004, the virus emerged in the coastal towns of Kenya resulting in an outbreak that spread rapidly through the Indian Ocean islands and India. Subsequently, seasonal outbreaks have been recorded in various countries. The first cases had been reported by the Pan American Health Organization.[2,3]

Spread and establishment of the virus in new endemic regions will be dependent on availability of competent vectors and a source of the virus. Although establishment of the virus will require travellers with above-threshold viraemias and an overlap of seasons between the northern and southern hemispheres for vector activity, the potential exists for spread of this virus to both Europe and other regions of America.

Bone-related disorders, such as osteoporosis, rheumatoid arthritis, or osteoarthritis, affect millions of people worldwide. Osteoporosis is a systemic disease characterised by declining bone density that results in bone fractures, whereas autoimmune rheumatoid arthritis and degenerative osteoarthritis lead to chronic joint arthralgia and bone destruction. Bone homeostasis is maintained by the coordinated action of bone-forming osteoblasts and bone-

Sinclair Stammers/Science Photo Library

Table 2. Chronic chikungunya symptoms.

Setting (Date Referred)	La Réunion (2005 to 04/2006) [5]	La Réunion (04/ 2006–2007) [41,83]	India Karmataka (2008) [27]	India Maharashtra (2006) [19]	Singapore (2008) [44,77]
Number of chronic cases / number of patients in the cohort *(month after acute phase)*	56[a]/88 *(>18)* **63,6%**	116/133 *(12)* **87,2%**	94/203 *(>9)* **46,3%**	59/315 *(12)* **18,7%**	14[b]/97 *(3)* **14,4%**
Mean age of chronic cases	60	58 (median)	41	48	38±6
Sex ratio (M/F in chronic)	0.93[c]	0.33	0.81	0.33*	1.8
Hospitalized (%)	65.9	85	0	0	100
Joint pain (%)	100	100	94	100	100
Fatigue (%)	NR	NR	27	NR	NR
Joint swelling/tenosynovitis (%)	16	NR	58.5	NR	NR
Localization					NR
Symmetrical (%)	64	More often	83	NR	
Knee (self/exam) (%)	21 (57)	20	59.5	57	
Ankles/wrist (%)	29/16	31/21	54/31	15/59	
Shoulder (%)	30	NR	15	52.5	
Hips (%)	5	NR	11	7	
Continuous pain (%)	55	68		NR	100
Rheumatoid like polyarthritis (%)	ND	10	36[d]	100 NSA	0
Spondylo-arthropathy (%)	ND	22	IE	7 IA	0
Underlying disease (%)	71	Not detailed	10/20 tested by MRI	NR	0
Previous arthritis/arthralgia (%)	51	7	7	5	0

Dupuis-Maguiraga L, Noret M, Brun S, Le Grand R, Gras G, et al. (2012) Chikungunya Disease: Infection-Associated Markers from the Acute to the Chronic Phase of Arbovirus-Induced Arthralgia. PLoS Negl Trop Dis 6(3): e1446. doi:10.1371/journal.pntd.0001446

PLOS | NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

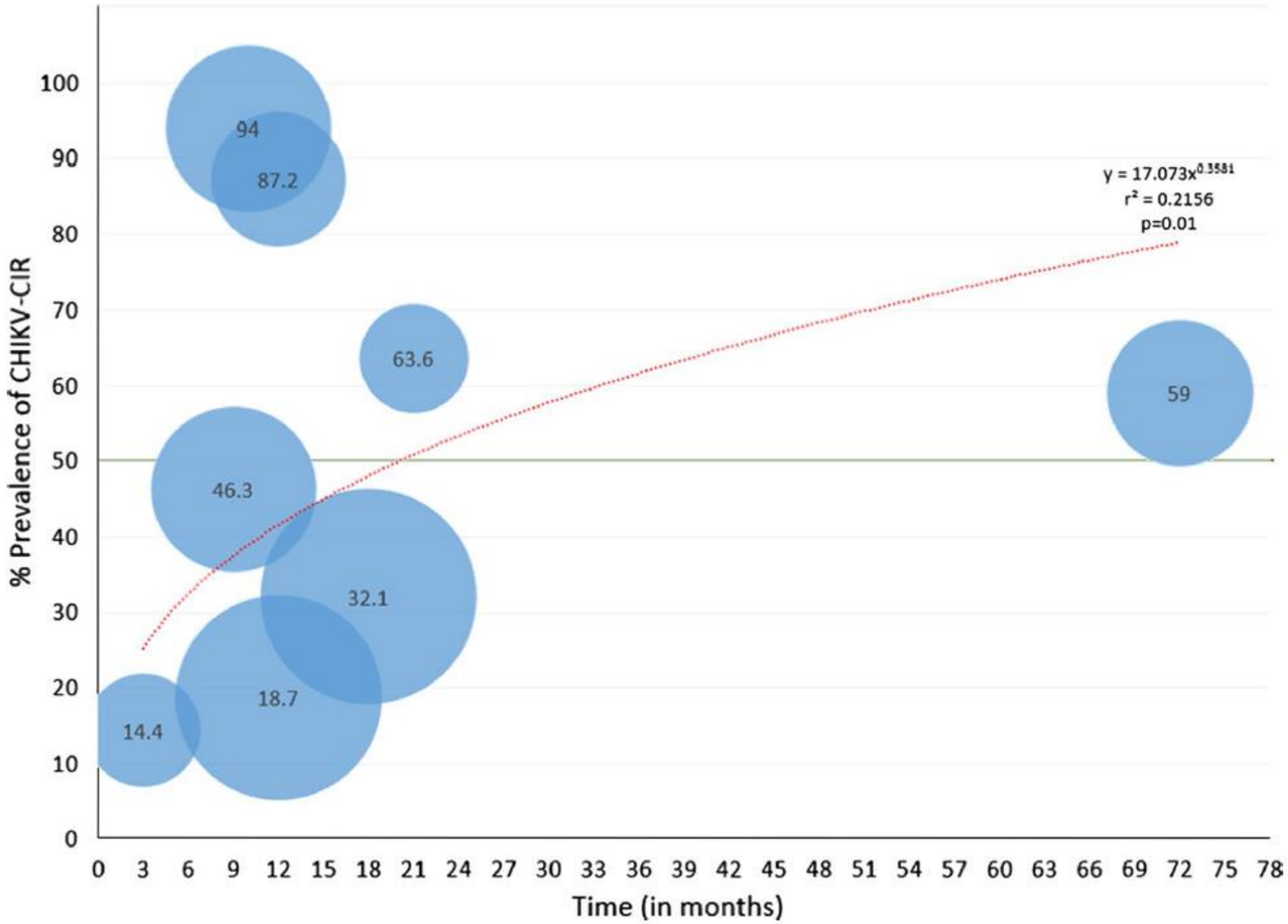
Specific Management of Post-Chikungunya Rheumatic Disorders: A Retrospective Study of 159 Cases in Reunion Island from 2006-2012

Emilie Javelle[1]*, Anne Ribera[2], Isabelle Degasne[3], Bernard-Alex Gaüzère[4], Catherine Marimoutou[5], Fabrice Simon[1]*

1 Department of Tropical and Infectious Diseases, Laveran Military Teaching Hospital, Marseille, France, **2** Private Rheumatology Office, Saint Denis, La Réunion, France, **3** Department of Rheumatology, Centre Hospitalier Universitaire de La Réunion, Hôpital Felix Guyon, Saint Denis, La Réunion, France, **4** Intensive Care Unit, Centre Hospitalier Universitaire de La Réunion, Hôpital Felix Guyon, Saint Denis, La Réunion, France, **5** French Army Centre for Epidemiology and Public Health ("IRBA"), Marseille, France

* emilie.javelle@gmail.com (EJ); simon-f@wanadoo.fr (FS)

Fig. 1 Nonlinear regression model for estimations of the cumulative proportion of patients with pCHIK-CIR over the time (bubble size is relative to each study sample size)



This model estimated a prevalence of **47.57%** for pCHIKCIR (95%CI **45.08–50.13**), with a median time to **50%** of pCHIK-CIR in **20.12 months.**

Rodriguez-Morales AJ, Cardona-Ospina JA, Villamil-Gómez W, Paniz-Mondolfi AE. How many patients with post-chikungunya chronic inflammatory rheumatism can we expect in the new endemic areas of Latin America? Rheumatol Int 2015 Epub Ahead Jun 5; available online at: http://link.springer.com/article/10.1007/s00296-015-3302-5 (Indexed on Medline/Index Medicus)

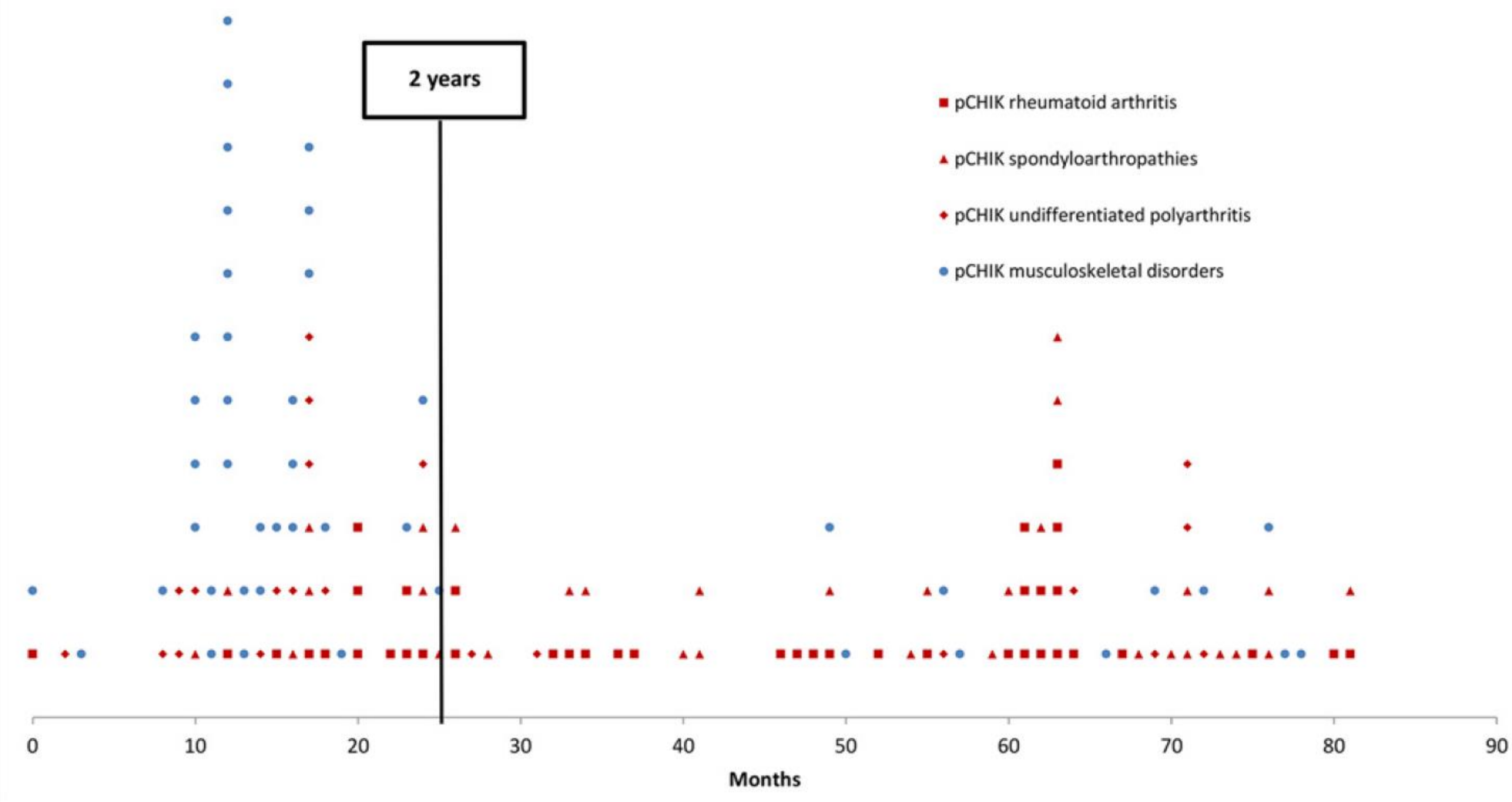


Fig 2. Time elapsed between chikungunya (CHIK) infection and the first visit to a rheumatologist for rheumatic or musculoskeletal disorders, Saint-Denis, Reunion Island, 2006–2012: musculoskeletal disorders versus chronic inflammatory rheumatisms.

doi:10.1371/journal.pntd.0003603.g002

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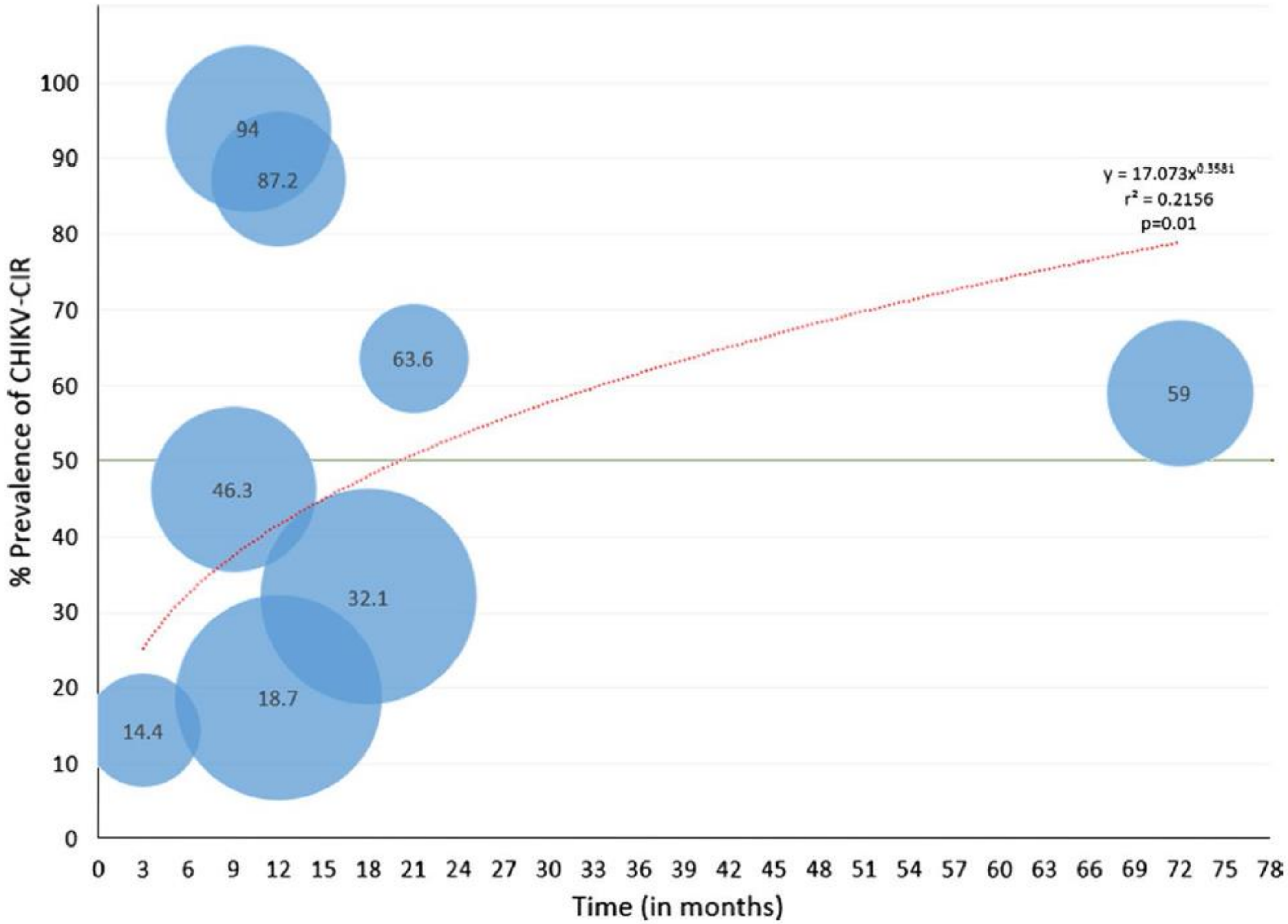

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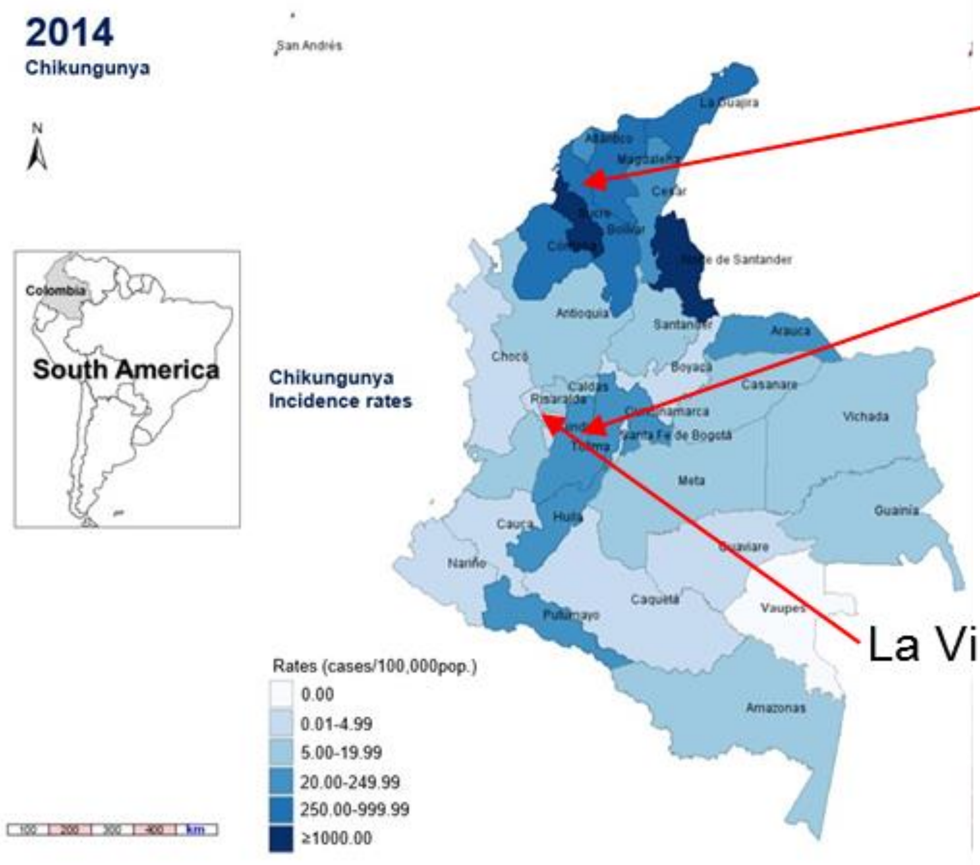
Table 1 Estimations of the number of patients which will develop pCHIK-CIR in Latin American countries

Country	Autochthonous cases					Projected number of pCHIK-CIR (95 % CI)	
	Suspected	Confirmed	Imported	Total cases	Incidence rate[a]	Lower limit	Upper limit
Dominican Republic	537,628	84	0	537,712	3051.71	242,401	269,555
El Salvador	135,226	157	0	135,383	1201.70	61,031	67,867
Colombia	83,228	578	26	83,832	202.27	37,791	42,025
Venezuela	34,642	2,303	70	37,015	1086.44	16,686	18,556
Puerto Rico	24,349	4,239	31	28,619	740.66	12,901	14,347
Guatemala	21,859	198	0	22,057	72.54	9,943	11,057
Honduras	4,072	9	5	4,086	83.87	1,842	2,048
Nicaragua	1,598	1,918	40	3,556	3.01	1,603	1,783
Brazil	792	2,165	93	3,050	1.52	1,375	1,529
Costa Rica	185	13	40	238	0.78	107	119
Mexico	0	155	13	168	0.35	76	84
Panama	0	22	32	54	0.34	24	27
Cuba	0	20	20	40	0.38	18	20
Argentina	0	0	28	28	0.41	13	14
Chile	0	0	19	19	0.18	9	10
Peru	0	0	11	11	0.17	5	6
Ecuador	0	3	7	10	0.06	5	5
Paraguay	0	1	7	8	0.10	4	4
Bolivia	0	0	4	4	0.07	2	2
Uruguay	0	0	0	0	0.00	0	0
Total Latin America	843,579	11,865	446	855,890	144.25	385,835	429,058

[a] Cases/100,000 pop; 95 % CI = 95 % confidence interval; pCHIK-CIR = post-chikungunya chronic inflammatory rheumatism

Rodriguez-Morales AJ, Cardona-Ospina JA, Villamil-Gómez W, Paniz-Mondolfi AE. How many patients with post-chikungunya chronic inflammatory rheumatism can we expect in the new endemic areas of Latin America? Rheumatol Int 2015 Epub Ahead Jun 5; available online at: http://link.springer.com/article/10.1007/s00296-015-3302-5 (Indexed on Medline/Index Medicus)

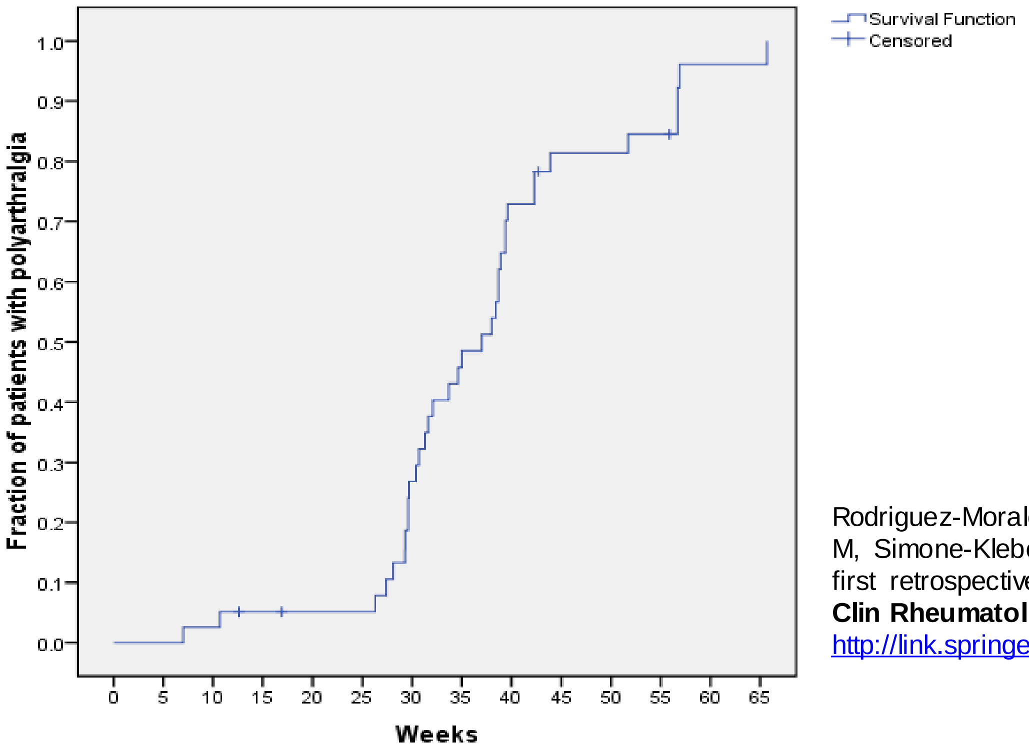
Cohortes en progreso en Colombia



Sincelejo, Sucre	1°, n=39
Venadillo, Tolima	2°, n=131
La Virginia, Risaralda	

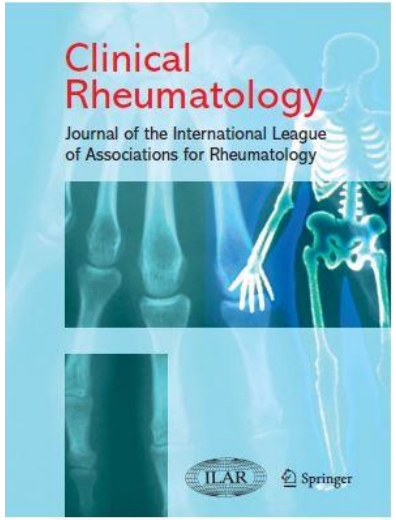
Cohortes en progreso en Colombia

- 1. Retrospectiva en Sincelejo, Sucre (N=39)
  - **89,7%** (IC95% 75,8-97,1) desarrolló pCHIK-CPA,
  - mediana de 37 semanas (IC95% 31,4-42,6)
  - 30 (76.9%) corresponded to female patients
  - with a median age of 61 years-old (range 17-88)



Rodriguez-Morales AJ, Villamil-Gomez W, Merlano-Espinosa M, Simone-Kleber L. Post-chikungunya chronic arthralgia: a first retrospective follow-up study of 39 cases in Colombia. **Clin Rheumatol** 2015 Epub Ahead Ago 4; available online at: http://link.springer.com/article/10.1007/s10067-015-3041-8

Clin Rheumatol
DOI 10.1007/s10067-015-3041-8



LETTER TO THE EDITOR

Post-chikungunya chronic arthralgia: a first retrospective follow-up study of 39 cases in Colombia

Alfonso J. Rodriguez-Morales[1,2] • Wilmer Villamil-Gomez[3,4,5] • Mara Merlano-Espinosa[6] • Laure Simone-Kleber[6]

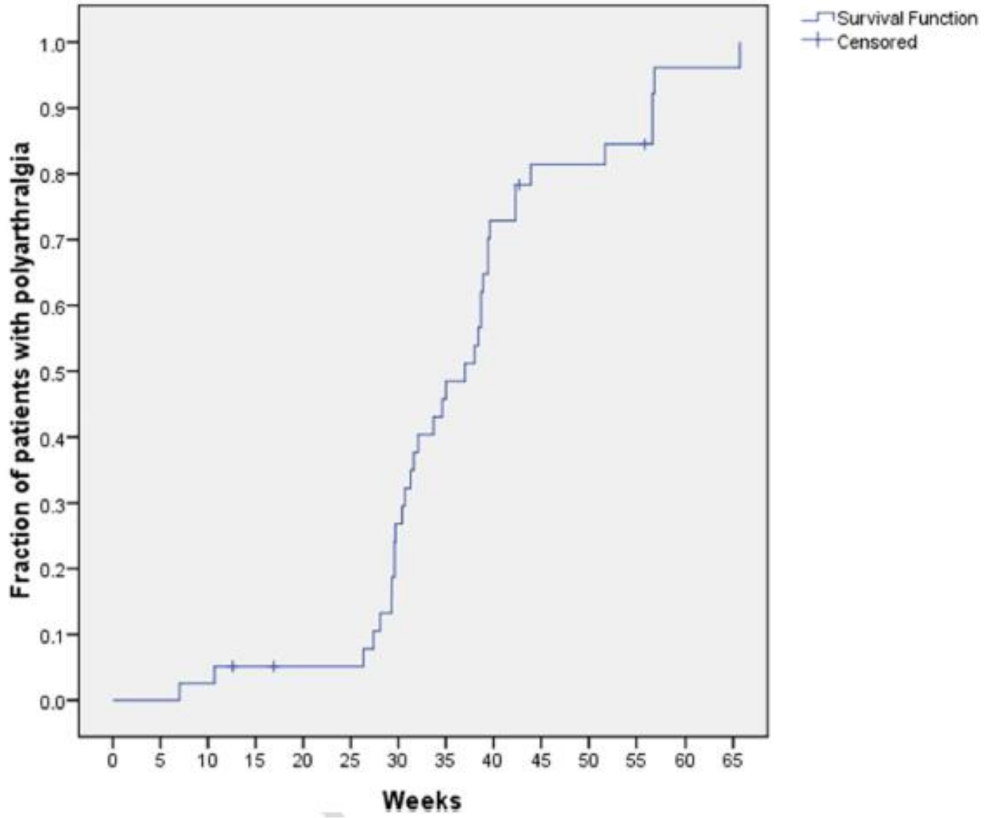


Fig. 1 Kaplan-Meier curve of the cumulated prevalence of pCHIK-CPA by follow-up time

Received: 10 July 2015 / Revised: 19 July 2015 / Accepted: 23 July 2015

Dear Editor

As has been previously described [1], chikungunya virus disease (CHIK) has emerged in Latin America as a significant acute infectious disease condition, but also with multiple implications during its chronic phase, including the post-chikungunya chronic inflammatory rheumatism (pCHIK-CIR). Until today, no observational studies in the region have described its prevalence, but recent estimations indicated that probably about 48 % of infected people in Latin America in a median of 20 months would develop it [2]. In this scenario, where over one million cases of CHIK were reported in the Americas during 2014, observational studies describing this rheumatologic consequence are urgently needed. Then, here, we detailed the prevalence of pCHIK chronic polyarthralgia

Cohortes en progreso en Colombia

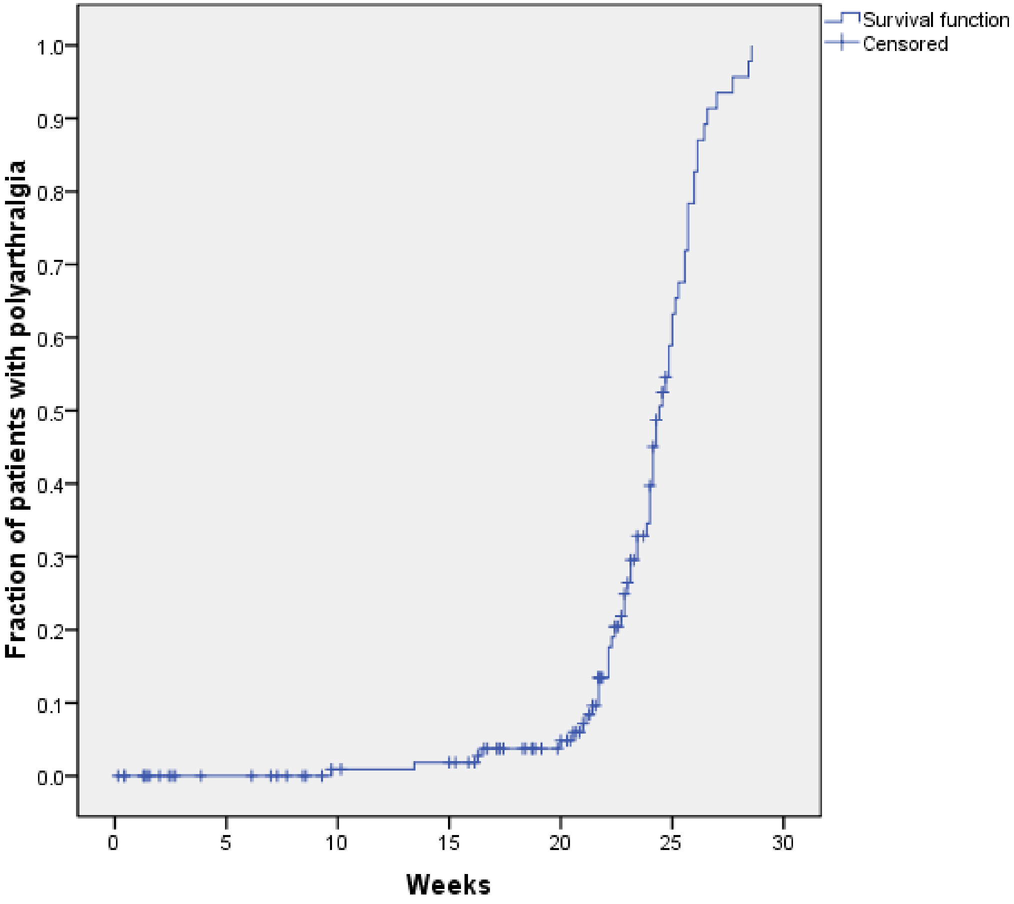
- 2. Retrospectiva en Venadillo, Tolima (N=131)

Table 1. Prevalence of pCHIK-CPA in a cohort of Tolima, Colombia; overall, by gender and age groups.

% with pCHIK-CPA (95%CI)	Age groups (years-old)		
	All ages (n=131)	**>40 (n=70)**	**≤40 (n=61)**
Total (n=131)	**44.3 (35.39-53.16)**	**48.6 (36.15-60.99**	39.3 (26.27-52.42)
Female (n=75)	**46.7 (34.71-58.62)**	**52.3 (36.38-68.17)**	38.7 (19.95-57.47)
Male (n=56)	41.1 (27.29-54.85)	42.3 (21.39-63.22)	40.0 (20.80-59.19)

pCHIK-CPA=post-chikungunya chronic polyarthralgia. 95%CI=95% confidence interval.

Rodríguez-Morales AJ, Calvache-Benavides CE, Giraldo-Gómez J, Hurtado-Hurtado N, Yepes-Echeverri MC, García-Loaiza CJ, Patiño-Barbosa AM, Sabogal-Roman JA, Patiño-Valencia S, Hidalgo-Zambrano DM, Vásquez-Serna H, Jimenez-Canizales CE. **Post-chikungunya chronic arthralgia: results from a retrospective follow-up study of 131 cases in Tolima, Colombia.** *Travel Medicine & Infectious Disease* 2015 (accepted, in press, # TMAID-D-15-00130) (Indexed on Medline/Index Medicus)



Mediana 24 semanas (IC95% 23,9-24,9)

Cohortes en progreso en Colombia

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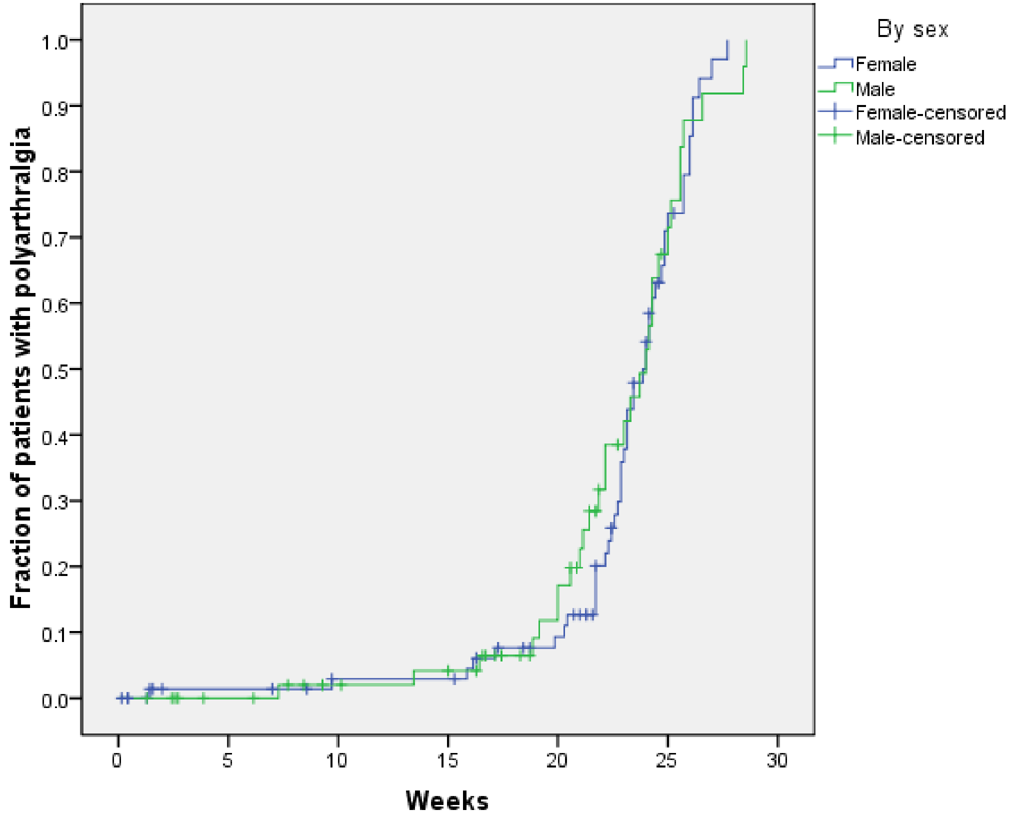

Log Rank test (Mantel-Cox) p=0.959
HR=0.985 (95%CI 0.570-1.702)

Rodríguez-Morales AJ, Calvache-Benavides CE, Giraldo-Gómez J, Hurtado-Hurtado N, Yepes-Echeverri MC, García-Loaiza CJ, Patiño-Barbosa AM, Sabogal-Roman JA, Patiño-Valencia S, Hidalgo-Zambrano DM, Vásquez-Serna H, Jimenez-Canizales CE. **Post-chikungunya chronic arthralgia: results from a retrospective follow-up study of 131 cases in Tolima, Colombia.** *Travel Medicine & Infectious Disease* 2015 (accepted, in press, # TMAID-D-15-00130) (Indexed on Medline/Index Medicus)

Cohortes en progreso en Colombia

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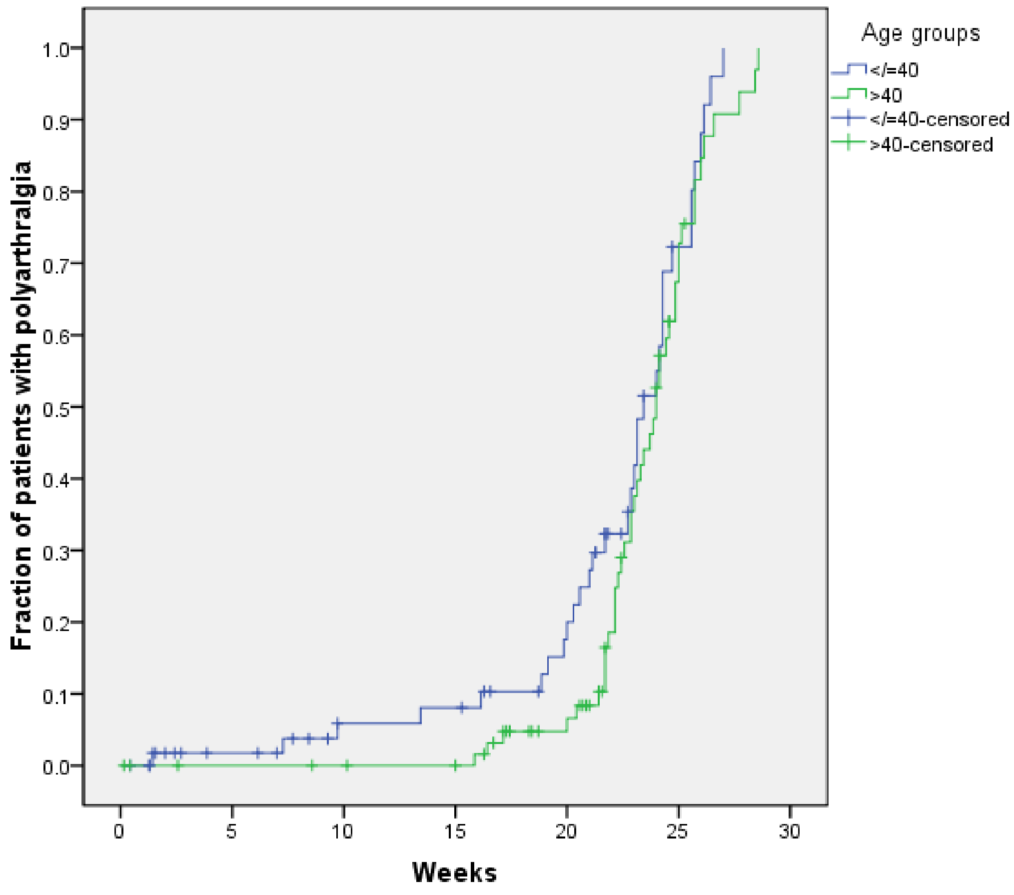

Log Rank test (Mantel-Cox) p=0.201
HR=1.009 (95%CI 0.985-1.033)

Rodríguez-Morales AJ, Calvache-Benavides CE, Giraldo-Gómez J, Hurtado-Hurtado N, Yepes-Echeverri MC, García-Loaiza CJ, Patiño-Barbosa AM, Sabogal-Roman JA, Patiño-Valencia S, Hidalgo-Zambrano DM, Vásquez-Serna H, Jimenez-Canizales CE. **Post-chikungunya chronic arthralgia: results from a retrospective follow-up study of 131 cases in Tolima, Colombia.** *Travel Medicine & Infectious Disease* 2015 (accepted, in press, # TMAID-D-15-00130) (Indexed on Medline/Index Medicus)

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Médecine et maladies infectieuses

Médecine et maladies infectieuses 45 (2015) 243–263

Recommendations

French guidelines for the management of chikungunya (acute and persistent presentations). November 2014[☆,☆☆]

Recommandations françaises pour la prise en charge du chikungunya

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SPILF – Société de Pathologie Infectieuse de Langue Française

SFR – société française de rhumatologie

SOFMER – Société Française de Médecine Physique et de Réadaptation – www.sofmer.com

CNGE

Volume 45, Issue 7, July 2015, Pages 243–263

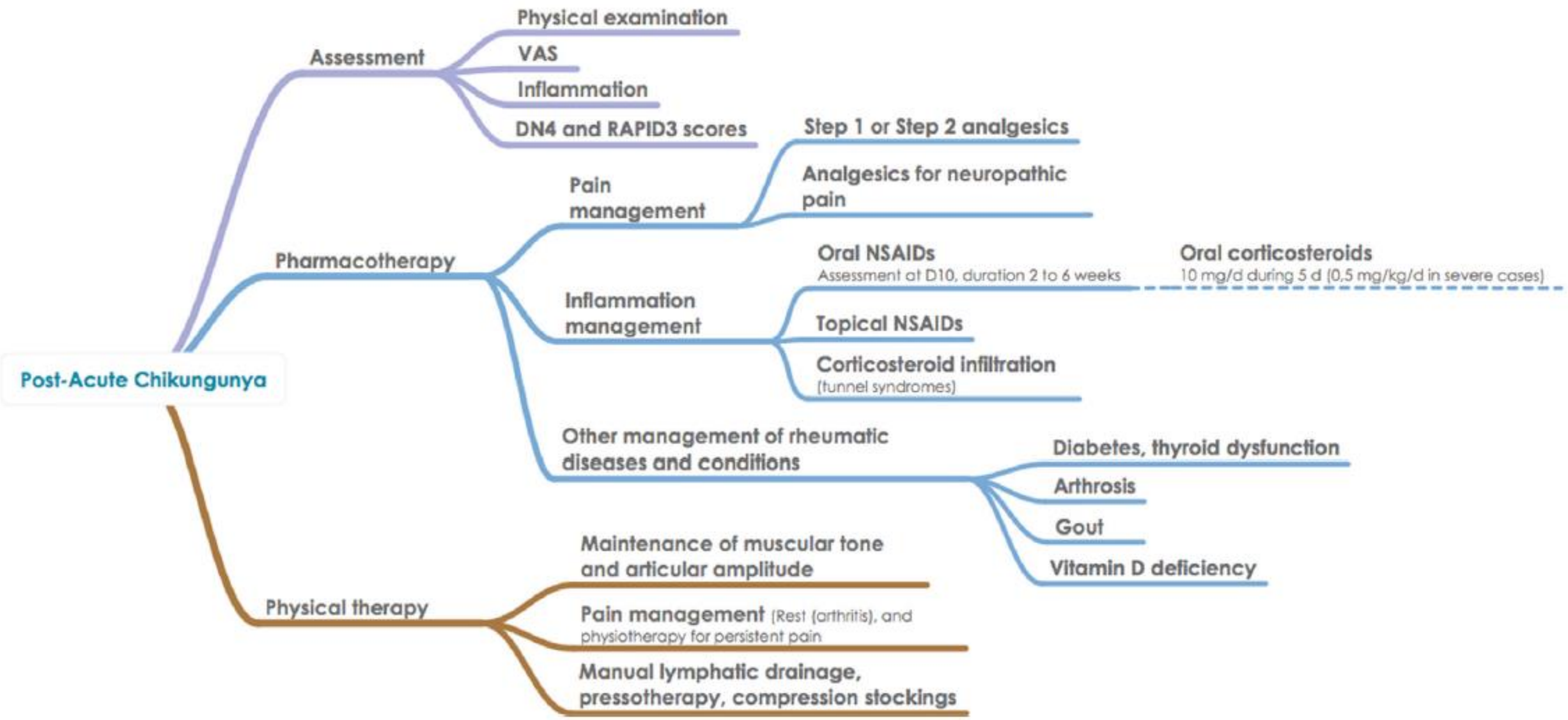


Fig. 3. Chikungunya post-acute stage, principles for patient management. VAS: Visual Analog Scale for pain; DN4 score for the diagnosis of neuropathic pain component; RAPID3 score to assess disease activity; NSAID: non-steroidal anti-inflammatory drug.

Factores de riesgo

- Aún por estudiar más, especialmente en fase crónica
- Obesidad podría ser factor de riesgo para pCHIK-CIR

  Estudio en la India (2010, n=1.111 pacientes).
  - OR=1,3 (IC95% 1,2-1,4) para cualquier secuela
  - OR=2,07 (IC95% 1,9-2,1) para pCHIK-CIR
- Reportes recientes de relación de CHIK como factor de riesgo para diabetes
  - Reporte de caso en Puerto Rico (2015)

Southeast Asian J Trop Med Public Health. 2010 Jan;41(1):85-91.
Am J Trop Med Hyg. 2015 Jun 1. pii: 14-0840.

¿Y los Factores de Riesgo para Artritis?

- ¿Uso de quinolonas? (adolescentes y adultos mayores)
- ¿BCG? en pacientes oncológicos y en recién nacidos

Table 1 Common Drug-Induced Rheumatic Syndromes

	Drug	Syndrome	Estimated Frequency (%)	Reference
Anti-rheumatic and/or immunosuppressive agents	Sulfasalazine	Lupus-like	9.7	9
	Tumor necrosis factor inhibitors	Lupus-like	0.1 to 1.3	39,35-40
		Psoriasis	1.2 to 1.5	44,46
Antimicrobial drugs	Quinolones	Tendinitis	0.02 to 0.5	65-66
		Arthropathy	1.0 to 1.5	50,53-55
	Minoycline	Lupus-like	0.04	123
	Isoniazide	Lupus-like	~1	2
	Interferons	Rheumatoid arthritis	0.2	135
		Sarcoidosis	5	135
Drugs used in oncology	Bacille Calmette-Guerin	Arthritis	0.4 to 0.8	153,157,158,161
	Aromatase inhibitors	Osteoarthritis	5.6 to 6	167,168
		Osteoporosis	5.8	167

Mor A, Pillinger MH, Wortmann RL, Mitnick HJ. Drug-induced arthritic and connective tissue disorders. Semin Arthritis Rheum. 2008 Dec;38(3):249-64.

Travel Medicine and Infectious Disease

Volume 13, Issue 3, May–June 2015, Pages 256–258

Rodriguez-Morales AJ, Cárdenas-Giraldo EV, Montoya-Arias CP, Guerrero-Matituy EA, Bedoya-Arias JE, Ramírez-Jaramillo V, Villamil-Gómez WE. Mapping chikungunya fever in municipalities of one coastal department of Colombia (Sucre) using Geographic information system (GIS) during 2014 outbreak: implications for travel advice. Travel Medicine & Infectious Disease 2015 May-Jun; 13(3):256-258

Table 1 CHIKV incidence rates (cases/100,000pop) by municipalities in Sucre department, Colombia, 2014.

Municipalities	Cases (2014)	% Cumulated	Population (2014)	Rates (cases/100,000pop)
Whole department	14,741	100.00	843,182	1748.26
Palmito	818	5.55	13,427	6092.20
Ovejas	985	12.23	21,142	4658.97
Sincé	1289	20.98	33,361	3863.79
Tolú	1232	29.33	32,731	3764.02
Sincelejo	7349	79.19	271,355	2708.26
Corozal	1351	88.35	61,991	2179.35
Sampues	631	92.63	37,787	1669.89
San Juan de Betulia	172	93.80	12,529	1372.82
Coveñas	105	94.51	13,300	789.47
La Unión	87	95.10	11,073	785.69
Los Palmitos	140	96.05	19,276	726.29
Buenavista	69	96.52	9502	726.16
Tolú Viejo	109	97.26	18,900	576.72
El Roble	44	97.56	10,432	421.78
Morroa	50	97.90	14,263	350.56
San Onofre	149	98.91	49,784	299.29
Coloso	16	99.02	5878	272.20
Chalán	11	99.09	4341	253.40
San Marcos	68	99.55	56,384	120.60
Galeras	20	99.69	19,866	100.67
Majagual	19	99.82	33,077	57.44
San Pedro	8	99.87	16,075	49.77
Sucre municipality	10	99.94	22,374	44.69
Caimito	2	99.95	11,962	16.72
San Benito Abad	3	99.97	25,171	11.92
Guaranda	1	99.98	17,201	5.81
Unknown	3	100.00	–	–

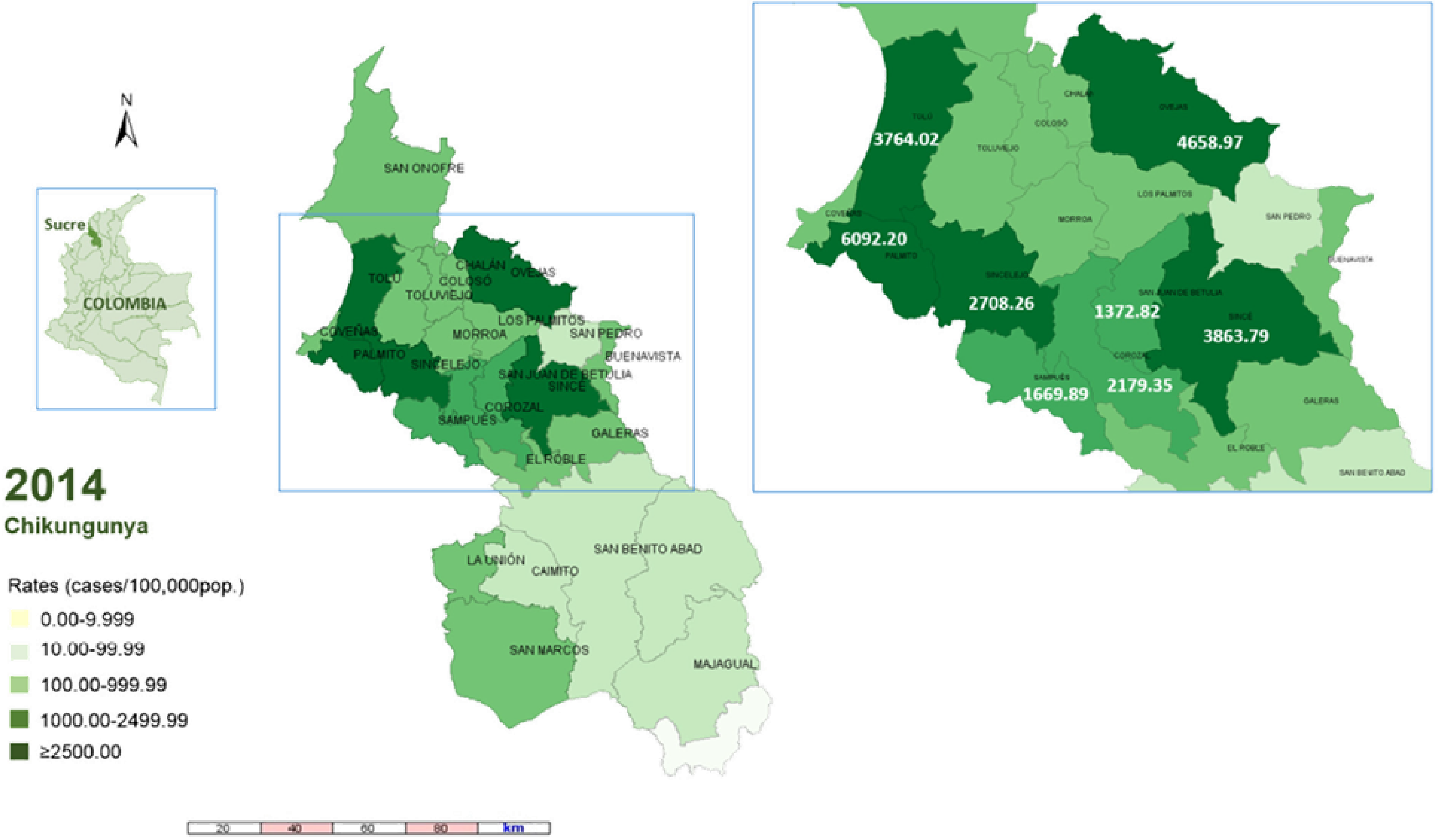


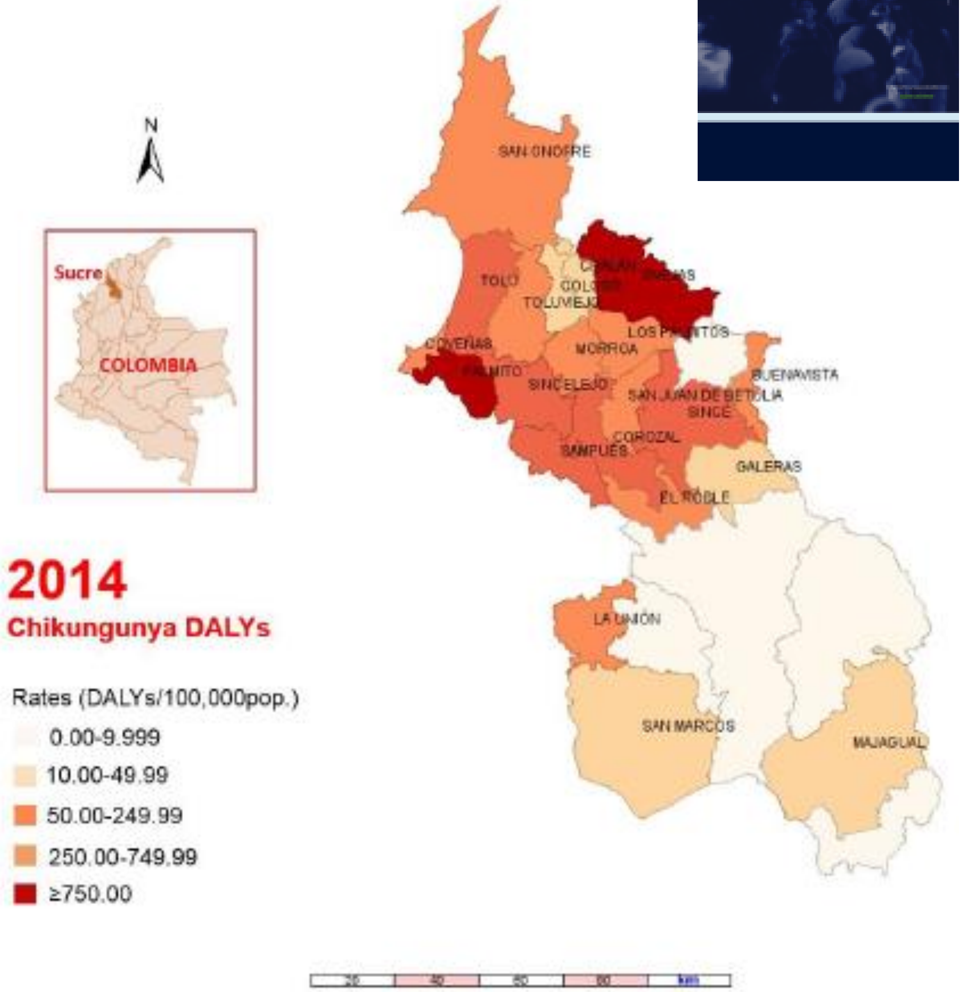
Fig. 1 Geographic distribution of CHIKV incidence rates (cases/100,000pop) in Sucre department, Colombia, 2014.

Table 1 Estimated DALYs (Disability Adjusted Life Years) related to pCHIK-CIR incidence by municipalities in the Sucre department, Colombia, 2014.

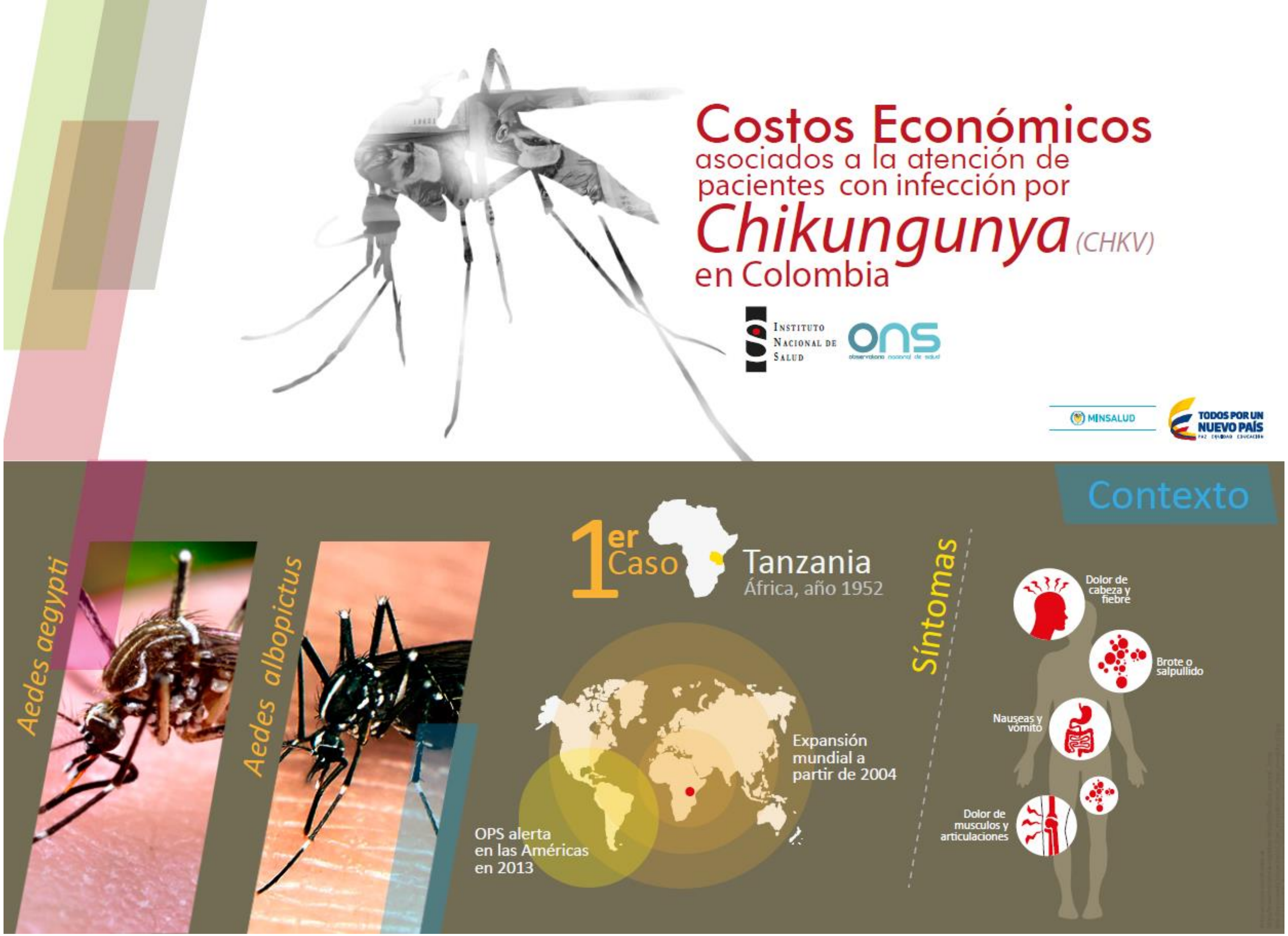
Municipalities	Cases	Population	Projected number of pCHIK-CIR (95%CI)[a]		DALYs (95%CI)		DALYs per 100,000 (95%CI)	
			Low	Upper	Low	Upper	Low	Upper
Palmito	818	13,427	369	410	144	161	1075	1195
Ovejas	985	21,142	444	494	174	193	822	914
Sincé	1289	33,361	581	646	227	253	682	758
Tolú	1232	32,731	555	618	217	242	664	739
Sincelejo	7349	271,355	3313	3684	1297	1442	478	531
Corozal	1351	61,991	609	677	238	265	385	428
Sampues	631	37,787	284	316	111	124	295	328
San Juan de Betulia	172	12,529	78	86	30	34	242	269
Coveñas	105	13,300	47	53	19	21	139	155
La Unión	87	11,073	39	44	15	17	139	154
Los Palmitos	140	19,276	63	70	25	27	128	143
Buenavista	69	9502	31	35	12	14	128	142
Tolú Viejo	109	18,900	49	55	19	21	102	113
El Roble	44	10,432	20	22	8	9	74	83
Morroa	50	14,263	23	25	9	10	62	69
San Onofre	149	49,784	67	75	26	29	53	59
Coloso	16	5878	7	8	3	3	48	53
Chalán	11	4341	5	6	2	2	45	50
San Marcos	68	56,384	31	34	12	13	21	24
Galeras	20	19,866	9	10	4	4	18	20
Majagual	19	33,077	9	10	3	4	10	11
San Pedro	8	16,075	4	4	1	2	9	10
Sucre municipality	10	22,374	5	5	2	2	8	9
Caimito	2	11,962	1	1	0	0	3	3
San Benito Abad	3	25,171	1	2	1	1	2	2
Guaranda	1	17,201	0	1	0	0	1	1
Unknown	3	—	1	2	1	1	—	—
Whole department	14741	843,182	6645	7390	**2601**	**2893**	**308**	**343**
Colombia	83,832	41,445,593	37,791	42,025	**14,793**	**16,450**	**36**	**40**
Latin America	855,890	593,337,955	385,835	429,058	**151,031**	**167,950**	**25**	**28**

[a] 95%CI = 95% confidence interval.

Figure 1. Geographic distribution of pCHIK-CIR-estimated DALYs (lower value for 107 95%CI) by population (DALYs/100,000pop) in Sucre department, Colombia, 2014.



Cardona-Ospina JA, Rodriguez-Morales AJ, Villamil-Gómez W. Burden of chikungunya in one coastal department of Colombia (Sucre): estimates of disability adjusted life years (DALY) lost in 2014 epidemic. J Infect Public Health 2015 EpubAhead Jul 2 Available online at: http://www.sciencedirect.com/science/article/pii/S1876034115001264


Costos Económicos
asociados a la atención de
pacientes con infección por
Chikungunya (CHKV)
en Colombia
Instituto Nacional de Salud
ONS
observatorio nacional de salud
MINSALUD
TODOS POR UN NUEVO PAÍS
PAZ EQUIDAD EDUCACIÓN
Contexto
Aedes aegypti
Aedes albopictus
1er Caso
Tanzania
África, año 1952
Expansión mundial a partir de 2004
OPS alerta en las Américas en 2013
Síntomas
Dolor de cabeza y fiebre
Brote o salpullido
Nauseas y vomito
Dolor de musculos y articulaciones

Estudio

Población

Muestreo

51 casos adultos
Por conveniencia para los casos del HUC y la CC

75 pacientes
Aleatorio para el HM y el HINFP

67 Pediátricos
8 Adultos

Estudio

Costos médicos directos

Fuente de información

Información de facturación de la IPS
Manual Tarifario SOAT
SISMED

Costo por actividad = Frecuencia X Costo unitario

Costo por paciente = Costo actividad 1 + ... + Costo actividad n

Costos indirectos y gastos de bolsillo

Fuente de información

Entrevistas persona a persona

Pérdida de productividad = Salario diario X Número de días con la enfermedad

Costos económicos

Costos directos + Costos indirectos

Resultados

	Mediana COP	RCI COP
Gastos de bolsillo	$12.000	$5.500 - $45.500
Medicamentos	$2.000	$2.000 - $2.000
Transporte	$10.000	$5.000 - $45.000
Costos indirectos	$193.305	$171.827 - $483.263

	Mediana COP	RCI
Costos directos totales	$170.316	$68.467 - $800.104
Costos directos médicos	$158.316	$62.967 - $754.604
Gastos de bolsillo	$12.000	$5.500 - $45.500
Costos indirectos	$193.305	$171.827 - $483.263
Costos económicos	$363.621	$$240.294 - $1.283.367

Resultados

El costo económico de un caso de *CHKV* estimado fue de

$363.621

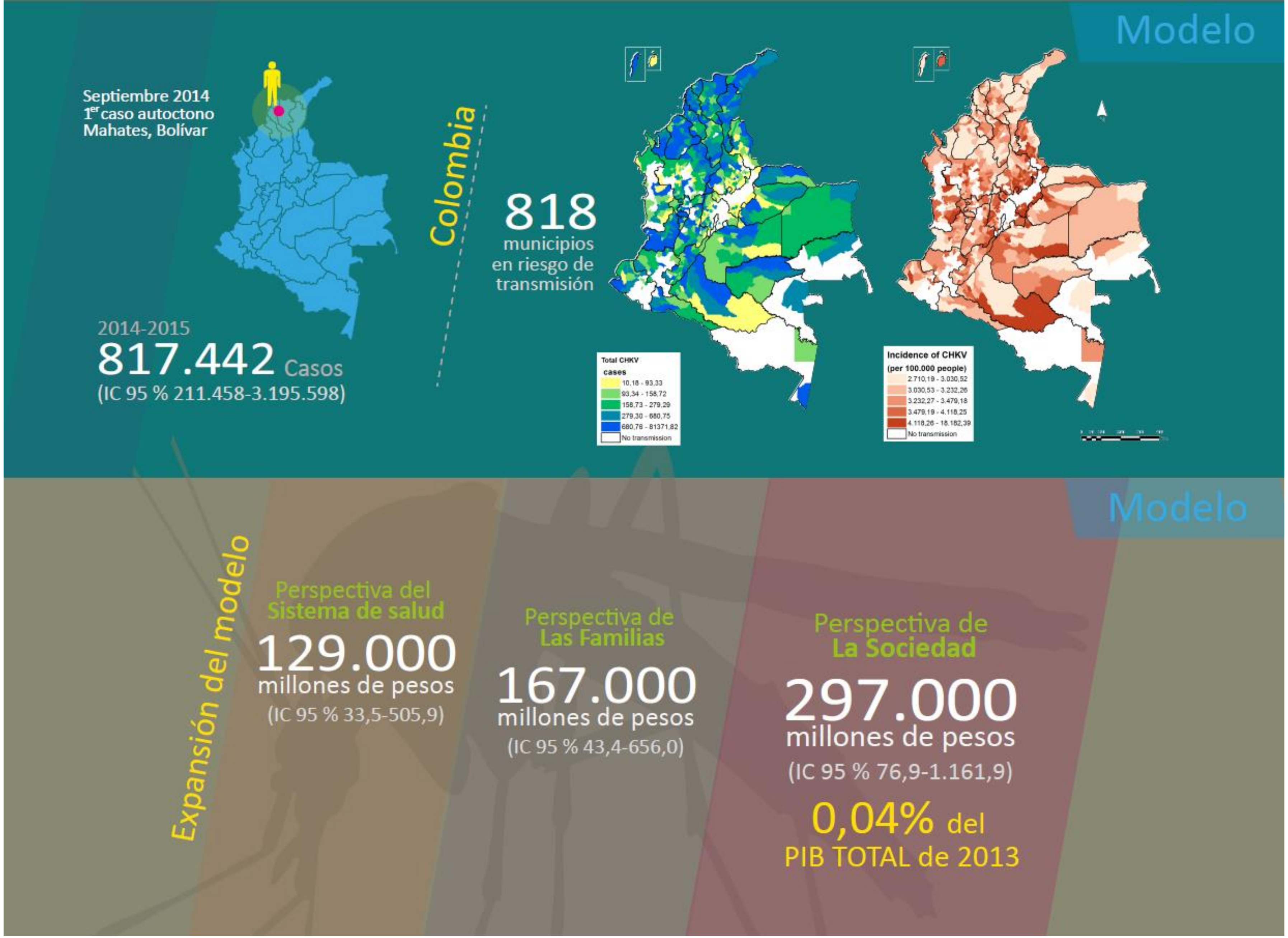
(RIC $240.294-$1.283.367)

Costo por niño hospitalizado 4,5 > Costo por niño ambulatorio

Costo por adulto hospitalizado 10,5 > Costo por adulto ambulatorio

Tasa de ataque de la enfermedad de *CHKV*

81,6%



Modelo
Septiembre 2014
1er caso autoctono
Mahates, Bolívar
2014-2015
817.442 Casos
(IC 95 % 211.458-3.195.598)
Colombia
818
municipios
en riesgo de
transmisión
Total CHKV
cases
10,18 - 93,33
93,34 - 158,72
158,73 - 279,29
279,30 - 680,75
680,78 - 81371,82
No transmission
Incidence of CHKV
(per 100.000 people)
2.710,19 - 3.030,52
3.030,53 - 3.232,26
3.232,27 - 3.479,18
3.479,19 - 4.118,25
4.118,26 - 18.182,39
No transmission
Modelo
Expansión del modelo
Perspectiva del
Sistema de salud
129.000
millones de pesos
(IC 95 % 33,5-505,9)
Perspectiva de
Las Familias
167.000
millones de pesos
(IC 95 % 43,4-656,0)
Perspectiva de
La Sociedad
297.000
millones de pesos
(IC 95 % 76,9-1.161,9)
0,04% del
PIB TOTAL de 2013

Subregistro de casos

- Un estudio reciente concluyó que en un municipio endémico de importancia, Ovejas, Sucre, existe un subregistro de 48%
  - Mendez et al. Biomédica 2015;35(Supl.1):79-147

Table 1

Estimated DALYs related to pCHIK-CIR incidence by country in Latin America, 2014

Country	Cases[a]	pCHIK-CIR[b]		DALYs		DALYs per 100 000	
		Low	Upper	Low	Upper	Low	Upper
Dominican Republic	537 712	242 401	269 555	94 885	105 515	911.04	1013.10
El Salvador	135 383	61 031	67 867	23 890	26 566	376.78	418.99
Puerto Rico	28 619	12 901	14 347	5050	5616	148.23	164.83
Colombia	83 832	37 791	42 025	14 793	16 450	30.61	34.04
Guatemala	22 057	9943	11 057	3892	4328	25.16	27.98
Venezuela	37 015	16 686	18 556	6532	7263	21.48	23.89
Nicaragua	3556	1603	1783	627	698	10.32	11.48
Honduras	4086	1842	2048	721	802	8.90	9.90
Costa Rica	238	107	119	42	47	0.86	0.96
Brazil	3050	1375	1529	538	598	0.27	0.30
Panama	54	24	27	10	11	0.25	0.28
Cuba	40	18	20	7	8	0.04	0.05
Mexico	168	76	84	30	33	0.02	0.03
Paraguay	8	4	4	1	2	0.02	0.02
Chile	19	9	10	3	4	0.02	0.02
Ecuador	10	5	5	2	2	0.01	0.01
Argentina	28	13	14	5	5	0.01	0.01
Bolivia	4	2	2	1	1	0.01	0.01
Peru	11	5	6	2	2	0.01	0.01
Uruguay	0	0	0	0	0	0.00	0.00
Total region	855 890	385 835	429 058	151 031	167 950	25.45	28.31

DALYs, disability-adjusted life-years; CHIK, chikungunya virus disease; pCHIK-CIR, post-CHIK chronic inflammatory rheumatism.

[a] Suspected, confirmed, and imported.

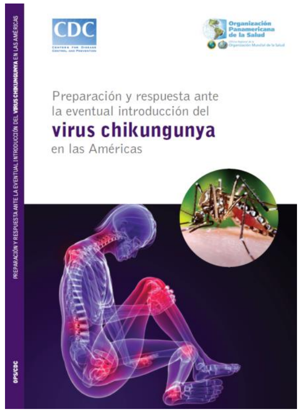
[b] Based on previous estimates.[3]

Cardona-Ospina JA, Diaz-Quijano FA, Rodríguez-Morales AJ. Burden of chikungunya in Latin American countries: estimates of disability adjusted life years (DALY) lost in 2014 epidemic. Int J Infect Dis 2015 Epub Ahead Jul 26; available online at: www.sciencedirect.com/science/article/pii/S1201971215001824 (Indexed on Medline/Index Medicus)

Tabla 2. **Manifestaciones atípicas de la infección por CHIKV.**

Sistema	Manifestaciones clínicas
Neurológico	Meningoencefalitis, encefalopatía, convulsiones, síndrome de Guillain-Barré, síndrome cerebeloso, paresia, parálisis, neuropatía
Ocular	Neuritis óptica, iridociclitis, epiescleritis, retinitis, uveitis
Cardiovascular	Miocarditis, pericarditis, insuficiencia cardíaca, arritmias, inestabilidad hemodinámica
Dermatológico	Hiperpigmentación fotosensible, úlceras intertriginosas similares a úlceras aftosas, dermatosis vesiculobulosas
Renal	Nefritis, insuficiencia renal aguda
Otros	Discrasias sangrantes, neumonía, insuficiencia respiratoria, hepatitis, pancreatitis, síndrome de secreción inadecuada de hormona antidiurética (SIADH), hipoadrenalismo

Adaptado de Rajapakse et al. [20]



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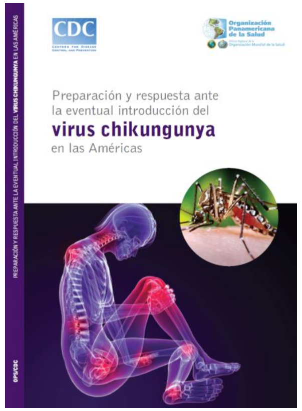

Fig. 1 – Case of chikungunya infection with ocular manifestations: retinitis (38-years-old female patient from Chapainawabgonj, Bangladesh with severe arthralgia and myalgia for 1 month, visual acuity was 6/9, found positive for anti-Chikungunya IgM antibody). Picture took by Fazle Rabbi Chowdhury.

Fig. 2 – Case of chikungunya infection with ocular manifestations: retinitis (30-years-old female patient from Sylhet, Bangladesh with severe arthralgia for 6 weeks, visual acuity was 6/12 on both eye, found positive for anti-Chikungunya IgM antibody). Picture took by Fazle Rabbi Chowdhury.

Martínez-Pulgarín DF, Chowdhury FR, Villamil-Gomez WE, Rodriguez-Morales AJ.
Ophthalmologic aspects of Chikungunya infection. 2015 (submitted, on consideration).

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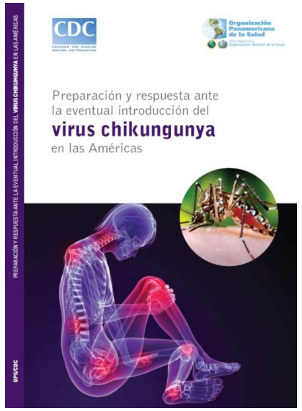

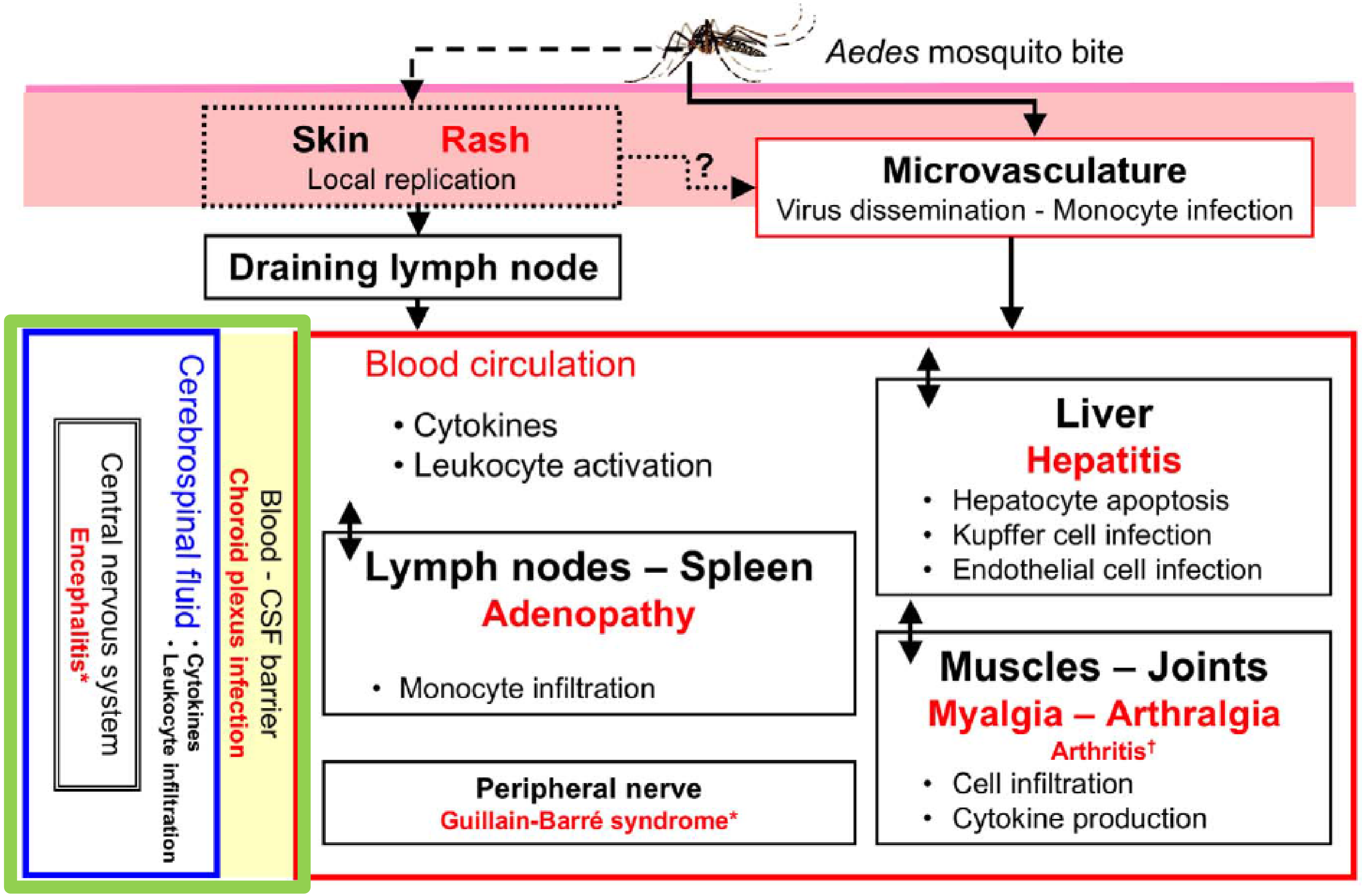

Dupuis-Maguiraga L, Noret M, Brun S, Le Grand R, Gras G, et al. (2012) Chikungunya Disease: Infection-Associated Markers from the Acute to the Chronic Phase of Arbovirus-Induced Arthralgia. PLoS Negl Trop Dis 6(3): e1446. doi:10.1371/journal.pntd.0001446

Figure 1. Virus dissemination and target organs. Following inoculation with CHIKV through a mosquito bite, the virus directly enters the subcutaneous capillaries, with some viruses infecting susceptible cells in the skin, such as macrophages or fibroblasts and endothelial cells. Local viral replication seems to be minor and limited in time, with the locally produced virus probably being transported to secondary lymphoid organs close to the site of inoculation. The blood carries most viruses, as free virions or in the form of infected monocytes, to the target organs, the liver, muscle, joints, and remote lymphoid organs. In these tissues, infection is associated with a marked infiltration of mononuclear cells, including macrophages, particularly when viral replication occurs. The pathological events associated with tissue infection are mostly subclinical in the liver (hepatocyte apoptosis) and lymphoid organs (adenopathy), whereas mononuclear cell infiltration and viral replication in the muscles and joints are associated with very strong pain, with some of the patients presenting arthritis. * Guillain-Barré syndrome and encephalitis are very rare events. † True arthritis remains a rare event (from 2% to 10%); see Table 2.
doi:10.1371/journal.pntd.0001446.g001

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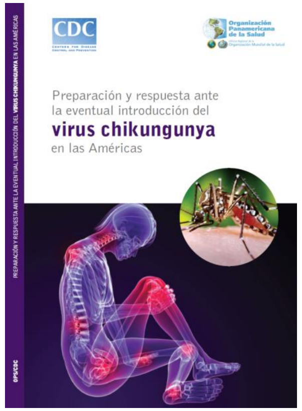
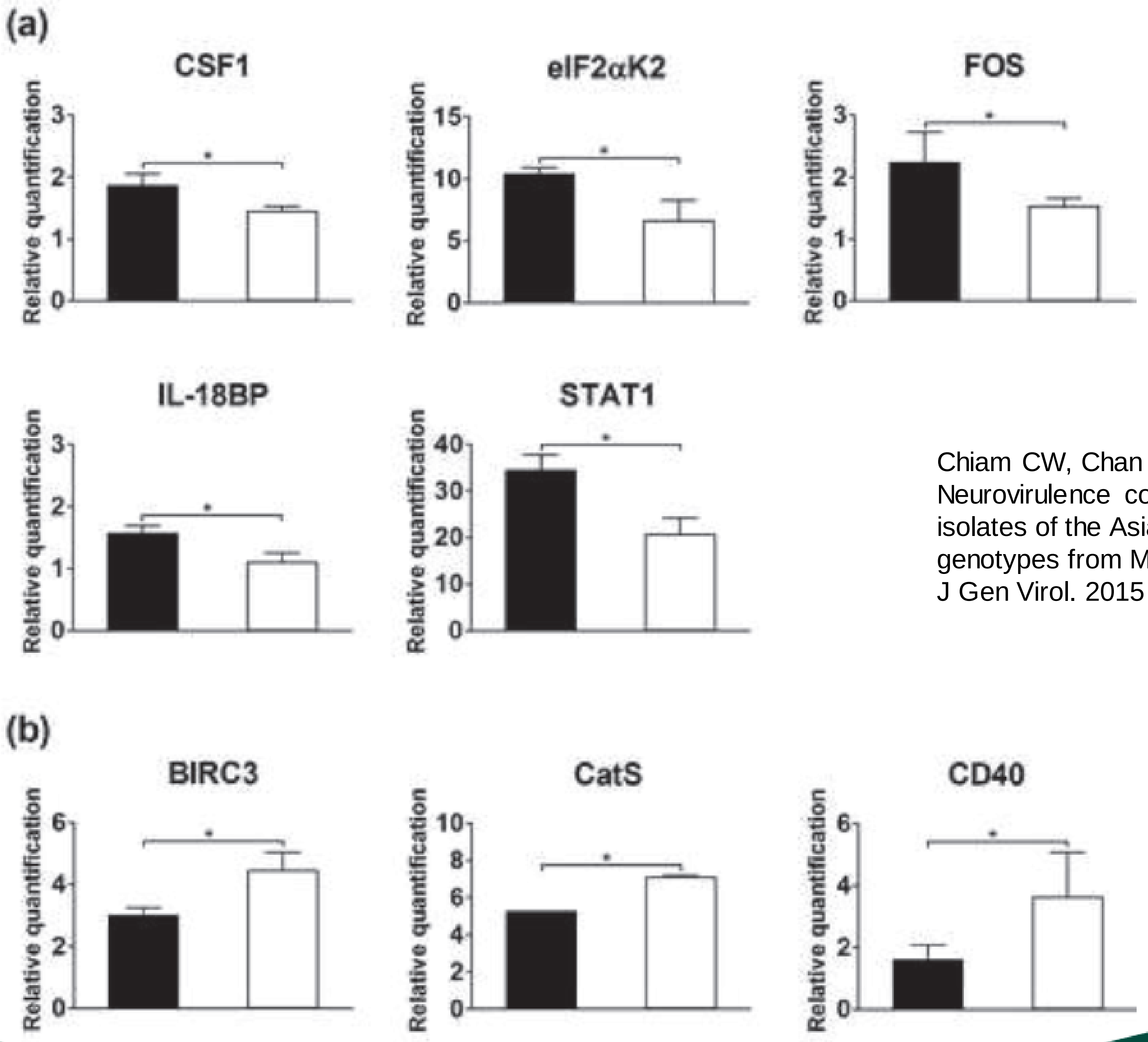


¿Neurovirulencia debida a expresión diferenciada de genes inducida por CHIKV?



Chiam CW, Chan YF, Ong KC, Wong KT, Sam IC.
Neurovirulence comparison of chikungunya virus isolates of the Asian and East/Central/South African genotypes from Malaysia.
J Gen Virol. 2015 Aug 12. doi: 10.1099/jgv.0.000263.

Table 1 **Table 1 Chikungunya case definitions proposed during the consultation of experts held in Managua, Nicaragua on 20–21 May 2015**
Tableau 1 **Définitions de cas de chikungunya proposées lors de la consultation d'experts qui s'est tenue à Managua (Nicaragua), les 20 et 21 mai 2015**

(i) Acute clinical case – i) Cas aigu clinique 1) Clinical criterion: Fever >38.5 °C (101.3 °F) and joint pain[a] (usually incapacitating[b]) with acute onset – 1) Critère clinique: température >38,5 °C (101,3 °F) et douleurs articulaires[a] (habituellement incapacitantes[b]) d'apparition soudaine
and – et 2) Epidemiological criterion: resident or visitor in areas with local transmission of Chikungunya on the last 15 days. (*suspect case* for epidemiological surveillance) – 2) Critère épidémiologique: personne résidant ou s'étant rendue dans des zones où s'opérait une transmission locale du Chikungunya au cours des 15 derniers jours (cas suspect pour la surveillance épidémiologique)
or – 3) Laboratory criterion: confirmation by laboratory: PCR, serology, or viral culture (confirmed case for epidemiological surveillance) – 3) Critère biologique: confirmation en laboratoire par PCR, sérologie ou culture virale (cas confirmé pour la surveillance épidémiologique)
(ii) Atypical case – ii) Cas atypique Clinical case of laboratory-confirmed chikungunya accompanied by other manifestations: neurological, cardiovascular, dermatological, ophthalmological, hepatic, renal, respiratory, or hematological, among others. – Cas clinique de chikungunya confirmé en laboratoire, accompagné d'autres manifestations: neurologiques, cardiovasculaires, dermatologiques, ophtalmologiques, hépatiques, rénales, respiratoires ou hématologiques, notamment.
(iii) Severe acute case – iii) Cas aigu sévère Clinical case of laboratory-confirmed chikungunya presenting dysfunction of at least one organ or system that threatens life and requires hospitalization. – Cas clinique de chikungunya confirmé en laboratoire, présentant un dysfonctionnement qui touche au moins un organe ou un système, menace le pronostic vital et nécessite une hospitalisation.
(iv) Suspect and confirmed chronic cases – iv) Cas chronique suspecté ou confirmé
Suspect chronic case – Cas chronique suspecté Person with previous clinical diagnosis of chikungunya after 12 weeks of the onset of the symptoms presenting with at least one of the following articular manifestations: pain, rigidity, or edema, continuously or recurrently. – Personne antérieurement diagnostiquée comme porteuse d'un chikungunya, qui présente, au delà de 12 semaines après l'apparition initiale des symptômes, au moins une des manifestations articulaires suivantes: douleur, rigidité ou œdème, de manière continue ou récurrente.
Confirmed chronic case – Cas chronique confirmé au niveau régional Every chronic case with a positive chikungunya laboratory test – Tout cas chronique donnant une analyse de laboratoire positive pour le chikungunya.

[a] Usually accompanied by exanthema, myalgia, back pain, headache and, occasionally, vomiting and diarrhea (pediatric age group). – Habituellement accompagné d'exanthème, de myalgie, de douleurs dorsales, de céphalées et occasionnellement de vomissements ou de diarrhée (tranche d'âge pédiatrique).

[b] In children aged <3 years, joint pain is expressed as inconsolable crying, irritability, rejection to mobilization and/or walking. – Chez les enfants de <3 ans, les douleurs articulaires s'expriment par des pleurs inconsolables, de l'irritabilité et un rejet de la mobilisation et/ou de la marche.

Weekly epidemiological record
Relevé épidémiologique hebdomadaire

14 AUGUST 2015, 90th YEAR / 14 AOÛT 2015, 90e ANNÉE
No. 33, 2015, 90, 409–420
http://www.who.int/wer

2015, **90**, 409-420

World Health Organization
Organisation mondiale de la Santé

International Journal of Antimicrobial Agents

Available online 7 July 2015

In Press, Corrected Proof — Note to users

Letter to the Editor

Emerging role of doxycycline in vector-borne diseases

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ELSEVIER

Chikungunya virus: an update on antiviral development and challenges

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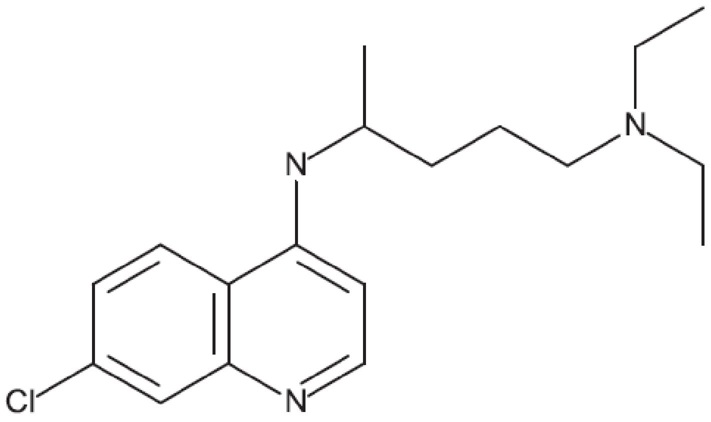
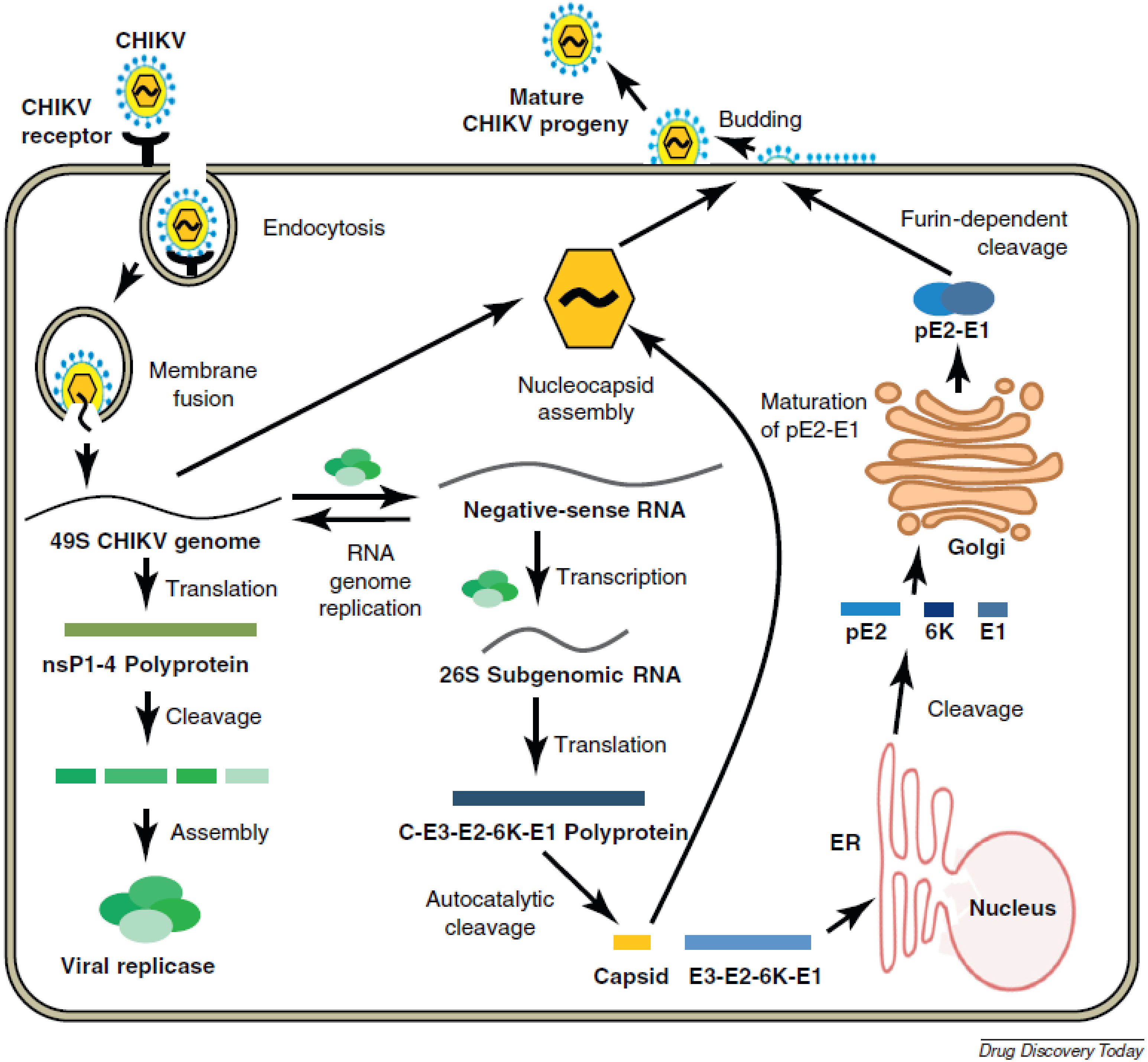
TABLE 1

Compounds with inhibitory activities against CHIKV

Compound	Structure	EC_{50} (μM; unless stated otherwise)	CC_{50} (μM; unless stated otherwise)	Refs
Inhibitors of viral entry				
Chloroquine		7.0[a] 10.0[b] 17.2[c]	~260[d]	[31]



Inhibitors of viral entry
- Chloroquine
- Arbidol
- Chlorpromazine
- Perphenazine
- Ethopropazine
- Thiethylperazine
- Thioridazine
- Methdilazine

Inhibitors of viral protein translation
- Harringtonine
- Homoharringtonine

Inhibitors of viral replicase
- Apigenin

Inhibitors of viral genome replication
- Ribavirin
- Mycophenolic acid

Inhibitor of viral glycoprotein maturation

Journal of Infection and Public Health

Volume 8, Issue 4, July–August 2015, Pages 386–388

Table 1 Top 20 countries with scientific production on chikungunya research at SCI, Scopus and/or Medline (up to December 1, 2014).

Rank	Country	Number of articles	Database with highest number of articles
1	United States	430	SCI
2	India	425	Scopus
3	France	388	SCI
4	Réunion Island	244	Scopus
5	Italy	137	Scopus
6	Singapore	92	SCI
7	Australia	82	SCI
8	United Kingdom	82	SCI
9	Germany	79	SCI
10	Thailand	74	Scopus
11	Malaysia	61	Scopus
12	Congo	57	Scopus
13	Netherlands	41	SCI
14	Spain	39	SCI
15	Indonesia	39	Scopus
16	Sri Lanka	35	Scopus
17	Mauritius	34	Scopus
18	Sweden	33	SCI
19	Japan	32	SCI
20	Comoros	32	Scopus

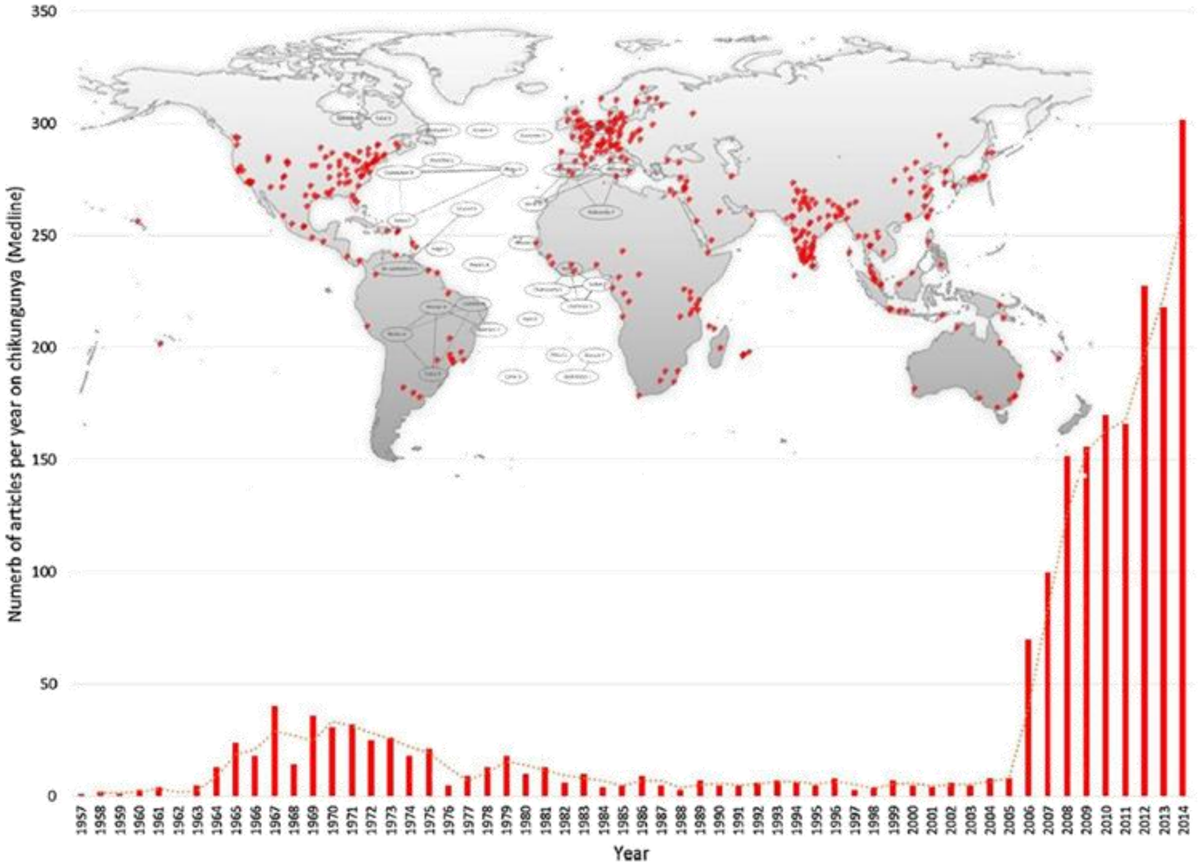


Figure 1 Major international research cooperation networks and trends in time of publication on chikungunya, 1957–2014
Source: from GoPubMed®.

Vera-Polania F, Muñoz-Urbano M, Bañol-Giraldo AM, Jimenez-Rincón M, Granados-Álvarez S, Rodriguez-Morales AJ. Bibliometric assessment of scientific production of literature on chikungunya. J Infect Public Health 2015 Jul-Ago; 8(4):386-388. Available online at: http://www.sciencedirect.com/science/article/pii/S1876034115000672

¿Vacunas?

Vaccine xxx (2015) xxx–xxx

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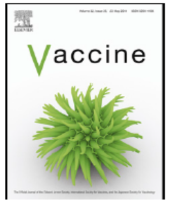

Effective cutaneous vaccination using an inactivated chikungunya virus vaccine delivered by Foroderm

Penny A. Rudd[a,1], Anthony P. Raphael[c], Miko Yamada[c], Kaitlin L. Nufer[c], Joy Gardner[a], Thuy T.T. Le[a], Natalie A. Prow[a,b], Nhung Dang[c], Wayne A. Schroder[a], Tarl W. Prow[c,*,2], Andreas Suhrbier[a,b,2]

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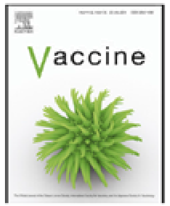

Review

Chikungunya virus vaccines: Current strategies and prospects for developing plant-made vaccines

Jorge A. Salazar-González[a], Carlos Angulo[b], Sergio Rosales-Mendoza[a,*]

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[b] Grupo de Inmunología y Vacunología, Centro de Investigaciones Biológicas del Noroeste, SC., Instituto Politécnico Nacional 195, Playa Palo de Santa Rita Sur, La Paz, B.C.S., C.P. 23096 Mexico City, Mexico

Fischer *et al. International Journal of Health Geographics* 2013, **12**:51
http://www.ij-healthgeographics.com/content/12/1/51

INTERNATIONAL JOURNAL OF HEALTH GEOGRAPHICS

RESEARCH Open Access

Climate change effects on Chikungunya transmission in Europe: geospatial analysis of vector's climatic suitability and virus' temperature requirements

Dominik Fischer[1,2], Stephanie M Thomas[1], Jonathan E Suk[3], Bertrand Sudre[3], Andrea Hess[1], Nils B Tjaden[1], Carl Beierkuhnlein[1] and Jan C Semenza[3*]

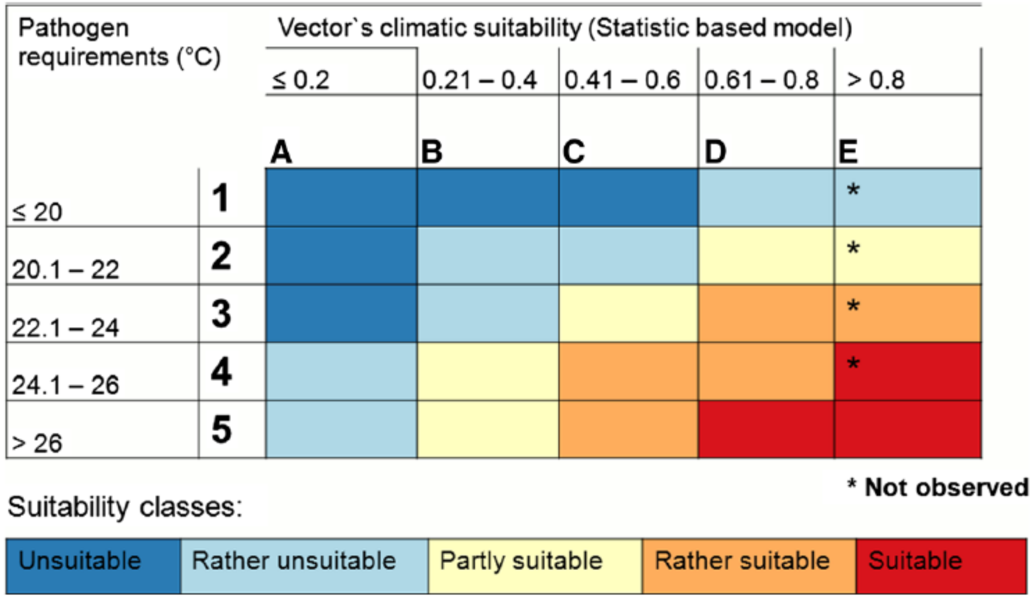


Figure 1 Climatic-derived risk classes for Chikungunya transmission. Temperature requirements for the occurrence of Chikungunya virus were obtained from the analysis of Tilston et al. [29]. Chikungunya virus occurrences are observed for values of the mean monthly temperature in different regions. Virus information is combined with the spatial climatic suitability of the vector *Aedes albopictus* from Fischer et al. [27].

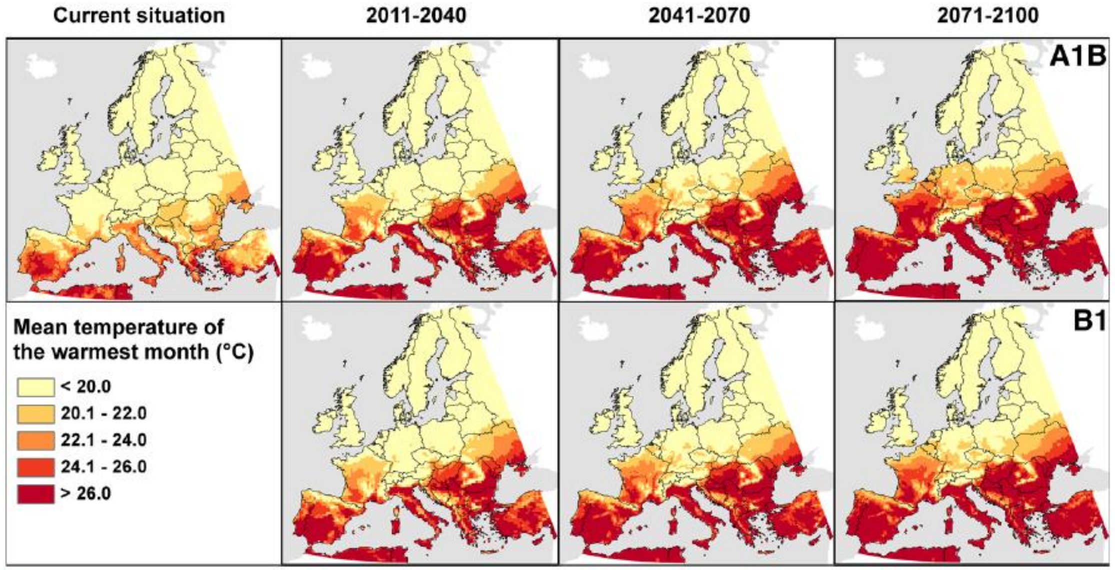


Figure 2 Fulfilling of temperature requirements for the Chikungunya virus in Europe. Projections for different time-frames are based on two emission scenarios (A1B and B1) from the Intergovernmental Panel on Climate Change, implemented in the regional climate model COSMO-CLM.

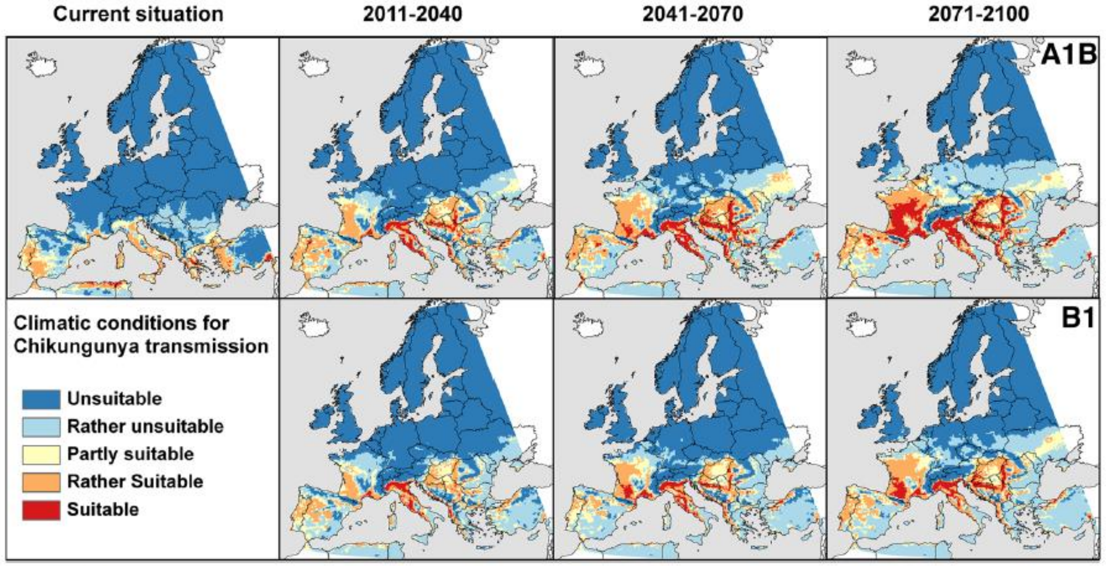


Figure 3 Risk map for Chikungunya transmission in Europe generated by combining temperature requirements of the Chikungunya virus with the climatic suitability of the vector *Aedes albopictus*. Projections for different time-frames are based on two emission scenarios (A1B and B1) from the Intergovernmental Panel on Climate Change, implemented in the regional climate model COSMO-CLM.

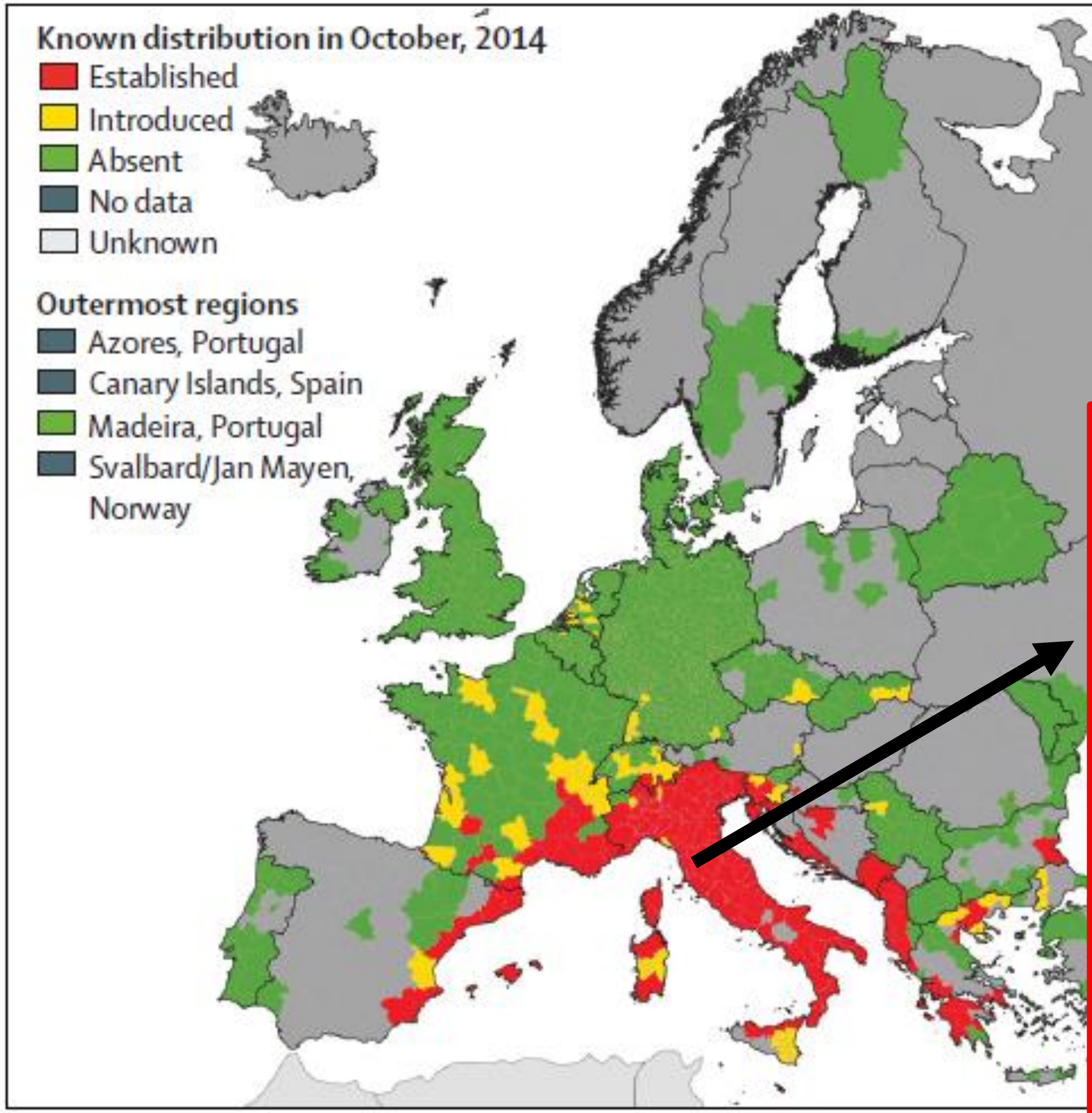
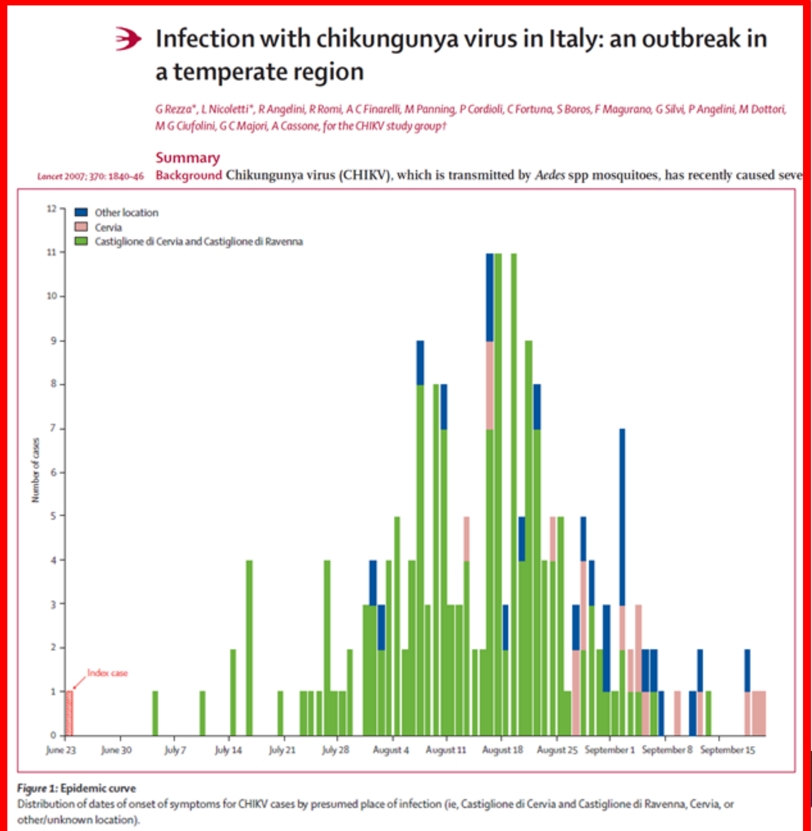


Figure 1: Distribution of *Aedes albopictus* in Europe, October, 2014
Source: ECDC-EFSA/VECTORNET.

Figure 2: Blood-feeding female *Aedes albopictus* mosquito
© CDC/PHIL/CORBIS.



Infection with chikungunya virus in Italy: an outbreak in a temperate region

G Rezza*, L Nicoletti*, R Angelini, R Romi, A C Finarelli, M Panning, P Cordioli, C Fortuna, S Boros, F Magurano, G Silvi, P Angelini, M Dottori, M G Ciufolini, G C Majori, A Cassone, for the CHIKV study group†

Lancet 2007; 370: 1840–46

Summary

Background Chikungunya virus (CHIKV), which is transmitted by *Aedes* spp mosquitoes, has recently caused seve

Figure 1: **Epidemic curve**
Distribution of dates of onset of symptoms for CHIKV cases by presumed place of infection (ie, Castiglione di Cervia and Castiglione di Ravenna, Cervia, or other/unknown location).

PLOS | NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Autochthonous Chikungunya Transmission and Extreme Climate Events in Southern France

David Roiz[1]*, Philippe Boussès[1], Frédéric Simard[1], Christophe Paupy[1], Didier Fontenille[1,2]

1 MIVEGEC (Infectious Diseases and Vectors: Ecology, Genetics, Evolution and Control), UMR IRD224-CNRS5290-UM, Institut de Recherche pour le Développement (IRD), BP 64501, Montpellier, France,
2 Institut Pasteur du Cambodge, Phnom Penh, Cambodia

* davidroiz@gmail.com

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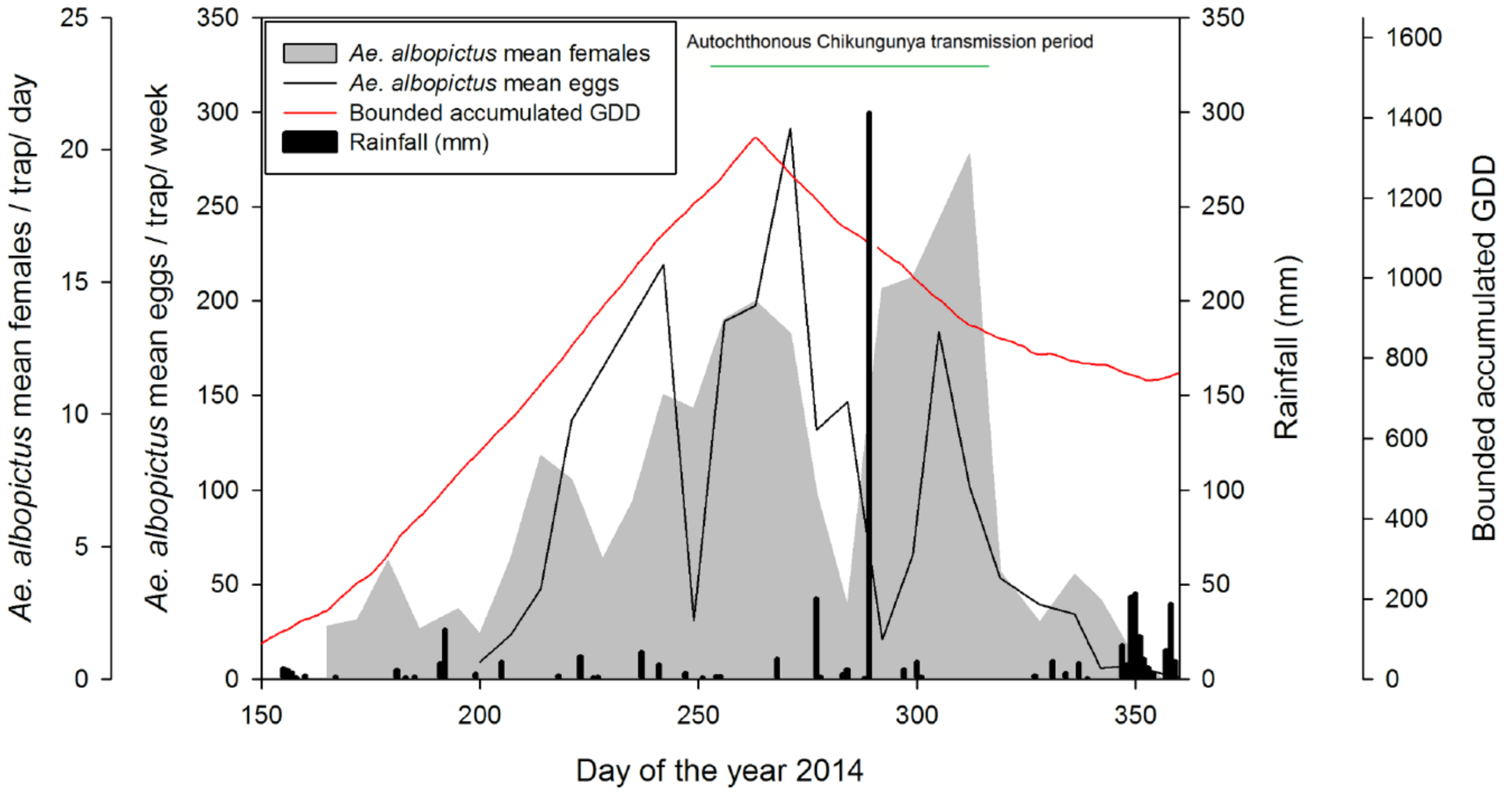
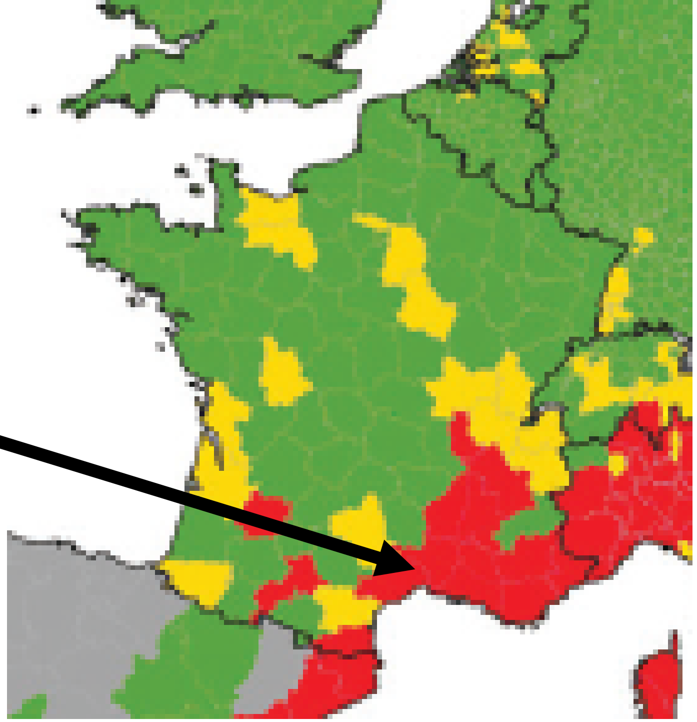


Fig 1. Mean number of *Ae. albopictus* eggs per trap per week (black line), *Ae. albopictus* females per trap per day (grey area) in 24 BGs and 24 ovitraps positioned in 8 locations in Montpellier in 2014. Autochthonous chikungunya transmission period (green line); weekly bounded accumulated Growing Degree Days (red line); weekly rainfall (black bars).



Latest Posts on ProMED-mail

23 Aug 2015 Malaria - South Sudan: (WR)
23 Aug 2015 Leishmaniasis - Bolivia (TR)
23 Aug 2015 **Invasive mosquito - Europe: France (VP)**
23 Aug 2015 Eastern equine encephalitis - Panama: (DA)
23 Aug 2015 Gastroenteritis - Brazil: USA rowers, RFI
22 Aug 2015 Plague - USA (11): (GA) ex CA, comments
22 Aug 2015 Anthrax - Moldova (02): (TE) human, ovine exposure
22 Aug 2015 Rabies - USA (28): (MS) bat strain in a cat
22 Aug 2015 Toxic algae - USA (04): (KS) water, alert
22 Aug 2015 Plague - USA (10): (NM)
22 Aug 2015 MERS-CoV (113): Saudi Arabia, experimental vaccine, inc. cases
22 Aug 2015 Equine infectious anemia - Canada (02): (SK) comment
22 Aug 2015 Cyanide, water - China: (TJ)
22 Aug 2015 Measles update (33)
22 Aug 2015 Theileria, bovine - Australia (02): (WA)
22 Aug 2015 African swine fever - Europe (18): Ukraine, Russia, Baltic, Poland, spread
21 Aug 2015 MERS-CoV (112): Saudi Arabia, WHO

ProMED-mail alerts on HealthMap

Published Date: 2015-08-23 14:08:45
Subject: PRO/AH/EDR> Invasive mosquito - Europe: France (VP)
Archive Number: 20150823.3596512

INVASIVE MOSQUITO - EUROPE: FRANCE (VILLE DE PARIS)
****

A ProMED-mail post
http://www.promedmail.org
ProMED-mail is a program of the
International Society for Infectious Diseases
http://www.isid.org

Date: 20 Aug 2015
Source: New York Post [edited]
http://nypost.com/2015/08/20/dengue-fever-spreading-asian-tiger-mosquitoes-return-to-paris/

Asian tiger mosquitoes [_Aedes albopictus_], known to carry serious diseases including dengue fever and chikungunya, were spotted in Paris for the 2nd year running this summer [2015], a local French health agency said.

The striped insects were detected by a visitor to the Parc Floral botanical garden in the east of the French capital. Tests by the health agency and city authorities confirmed they were Asian tiger mosquitoes.

The park was closed on Wednesday [19 Aug 2015] night for an anti-mosquito operation, the city of Paris said in a statement. Authorities said the presence of the mosquitoes in the park was recent and confined to ponds away from homes and that no other green space in the city had been affected.

The Asian tiger mosquito, which can bite dozens of times a minute and originates from Asia, was spotted for the 1st time in the Paris region last year [2014], 10 years after the 1st specimen was found in France in the southeast of the country.

Diseases transmitted by insects such as mosquitoes are on the rise and have spread across new parts of Europe, including Greece, Italy and France, over the past decade. However, no indigenous case of dengue fever or chikungunya has been found in the Paris region to date, the health agency said.

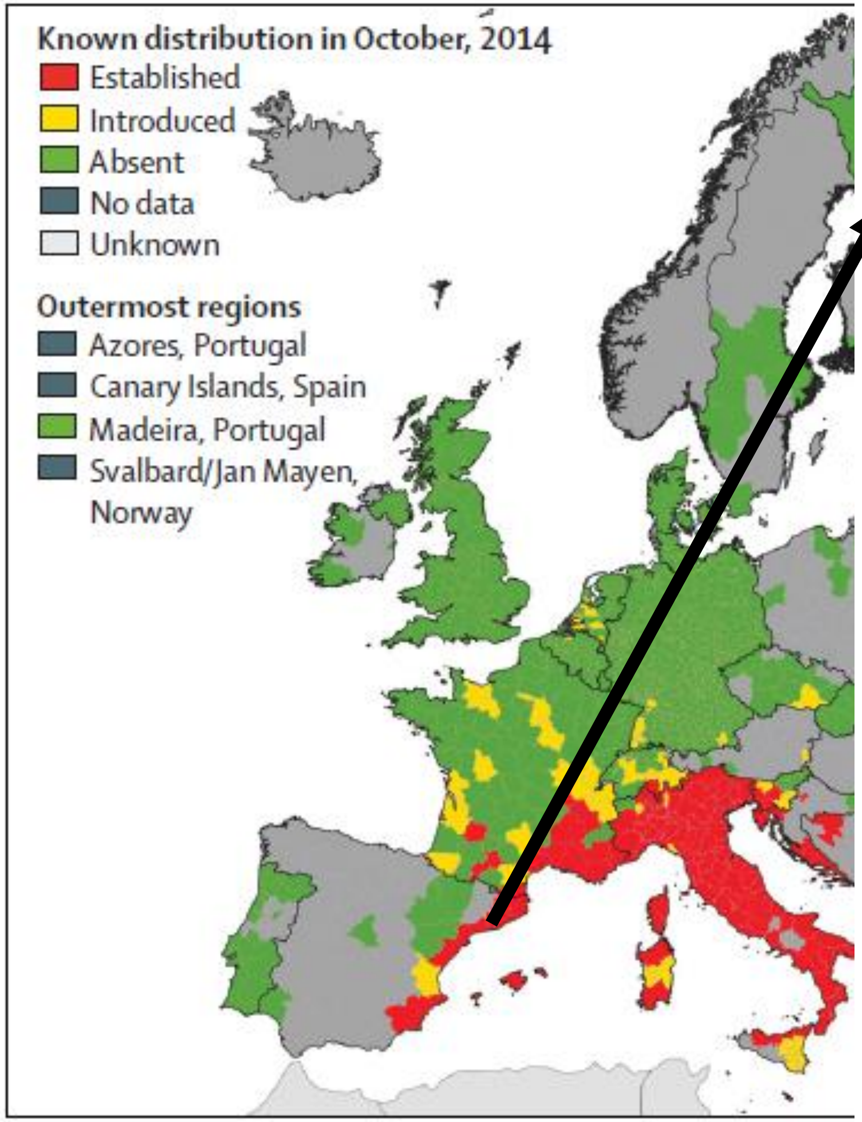


Figure 1: Distribution of *Aedes albopictus* in Europe, Octob
Source: ECDC-EFSA/VECTORNET.

OUTBREAK NEWS

Chikungunya, Spain

On 3 August 2015, WHO was notified by the national IHR focal point for Spain of a case of chikungunya virus infection in the city of Gandia, Valencian Community. This is the first time that an individual with no history of travel to a chikungunya-endemic area has tested positive for the disease in Spain.

Details of the case

The patient, a 60-year-old man, developed symptoms on 7 July in France and sought medical care on 8 July while still in France. Following his return to Spain, the patient was hospitalized on 11 July and discharged on 16 July. Patient blood samples were collected on 23 July. On 31 July, he was laboratory confirmed as positive for chikungunya by identification of IgM in serum by ELISA testing. During his probable incubation period and while symptomatic – the period when a patient can acquire and transmit the infection to others – the patient stayed in the Valencian Community, Spain and in the Languedoc-Roussillon (Southern France), where the competent vector *Aedes albopictus* has been shown to be present.

Public health response

Spanish health authorities are conducting epidemiological and entomological investigations as well as establishing vector control measures. National health authorities in France have informed local health authorities, which are implementing vector control activities in the areas visited by the patient.

WHO advice

WHO encourages countries to develop and maintain the clinical and laboratory capacity to detect and confirm cases, manage patients and implement social communication strategies to engage the community in reducing the presence of the mosquito vectors. ■

LE POINT SUR LES ÉPIDÉMIES

Chikungunya, Espagne

Le 3 août 2015, le point focal national RSI pour l'Espagne la notifié à l'OMS un cas d' infection par le virus chikungunya dans la ville de Gandia (Communauté valencienne). C'est la première fois en Espagne qu'un individu qui ne s'est pas rendu dans une zone où la maladie est endémique donne un test positif pour le chikungunya.

Informations détaillées sur le cas

Il s'agit d'un homme âgé de 60 ans, qui a présenté des symptômes le 7 juillet alors qu'il se trouvait en France et qui a consulté localement le 8. De retour en Espagne, il a été hospitalisé le 11 juillet et il est sorti de l'hôpital le 16. Le 23, on lui a fait des prélèvements sanguins et le 31 juillet, il a été confirmé comme étant positif au chikungunya après identification des anticorps IgM dans le sérum par ELISA au laboratoire. Au cours de la période probable d'incubation et pendant qu'il présentait des symptômes – période au cours de laquelle un patient peut contracter ou transmettre l'infection – il a séjourné dans la Communauté valencienne et en Languedoc-Roussillon (sud de la France) où la présence d'*Aedes albopictus*, le principal vecteur du chikunguny, est avérée.

Action de santé publique

Les autorités sanitaires espagnoles procèdent à une enquête épidémiologique et entomologique et ont pris des mesures de lutte antivectorielle. Les autorités sanitaires nationales françaises ont quant à elles informé les autorités sanitaires régionales, qui mettent également en œuvre des activités de lutte antivectorielle dans les zones visitées par le patient.

Recommandations de l'OMS

L'OMS encourage les pays à développer et à maintenir les moyens cliniques et les capacités de laboratoire pour dépister et confirmer les cas, prendre les patients en charge et mettre en œuvre des stratégies de communication visant à impliquer les communautés pour réduire la présence du moustique vecteur. ■

Weekly epidemiological record
Relevé épidémiologique hebdomadaire
14 AUGUST 2015, 90th YEAR / 14 AOÛT 2015, 90e ANNÉE
No. 33, 2015, 90, 409–420
http://www.who.int/wer

2015, **90**, 409-420

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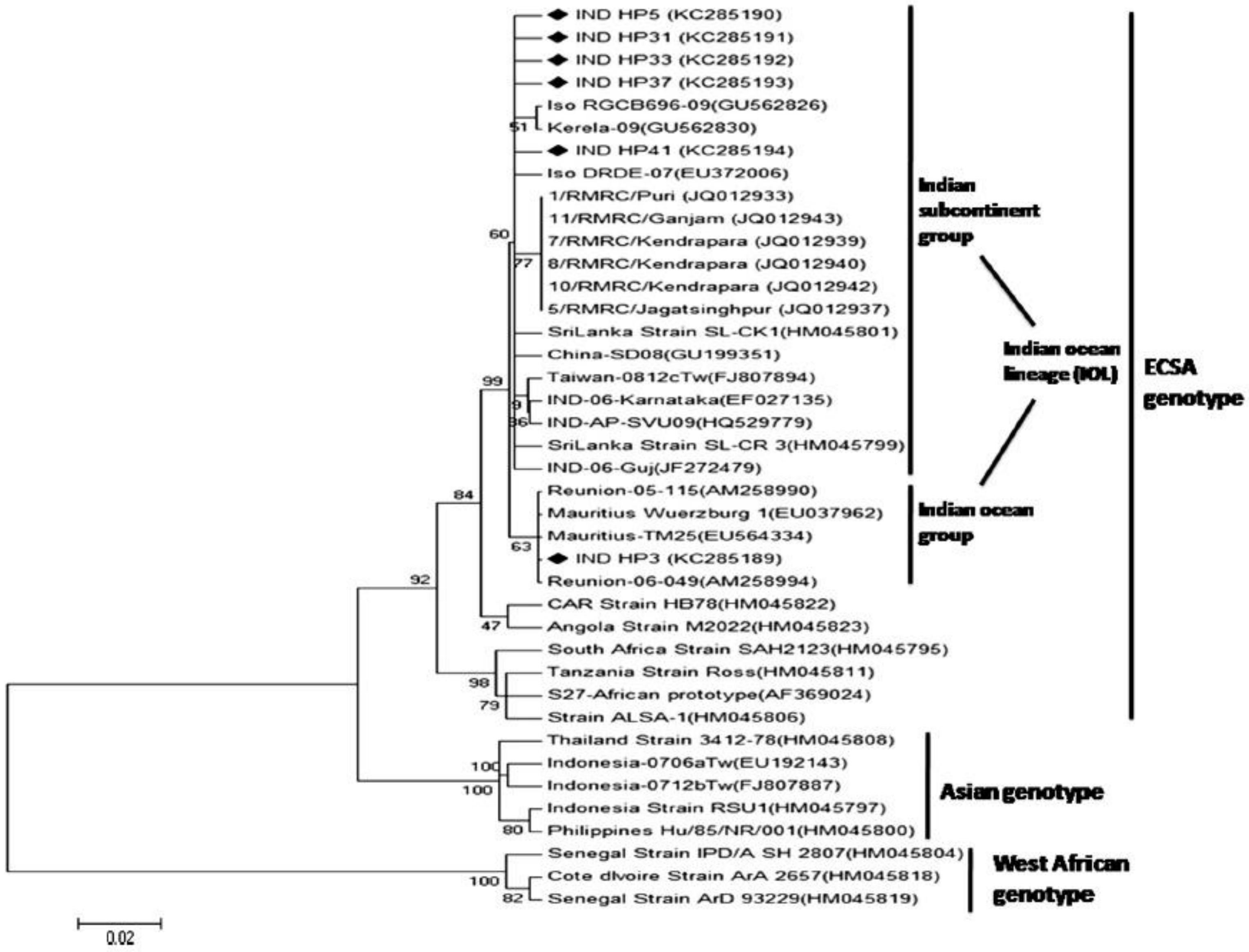


Fig. 1. Phylogenetic tree of CHIKV generated by neighbour joining method based on E2 region (720 nt) of Odisha isolates and other diverse CHIKV sequences derived from GenBank. Each strain is identified by its name followed by GenBank accession numbers in parentheses. Solid diamonds denote viral RNAs isolated and sequenced in this study. The Odisha isolates grouped within Indian Ocean lineage (IOL) of the ECSA genotype, which was subdivided into two groups: Indian subcontinent group (most CHIKV isolates of Odisha belonged to this group) and Indian Ocean group (IND-HP3 belonged to this group). Numbers to the left of nodes indicate bootstrap values (1000 replicates).

Sahu et al. Infect Genet Evol. 2013 Aug;18:113-24.

Genotipos en Colombia

- Varios estudios concluyen que el genotipo circulante es el asiático
  - Camacho et al. Biomédica 2015;35(Supl.1):79-147
  - Aponte et al. Biomédica 2015;35(Supl.1):79-147
  - Laiton-Donato et al. Biomédica 2015;35(Supl.1):79-147

Chikungunya como Zoonosis

EMERGING INFECTIOUS DISEASES®

Chikungunya Virus in Macaques, Malaysia

I-Ching Sam, Chong Long Chua, Jeffrine J. Rovie-Ryan, Jolene Y.L. Fu, Charmaine Tong, Frankie Thomas Sitam, Yoke Fun Chan

Author affiliations: University Malaya, Kuala Lumpur, Malaysia (I-C. Sam, C.L. Chua, J.Y.L. Fu, C. Tong, Y.F. Chan); Department of Wildlife and National Parks Peninsular Malaysia, Kuala Lumpur (J.J. Rovie-Ryan, T. Sitam)

DOI: http://dx.doi.org/10.3201/eid2109.150439

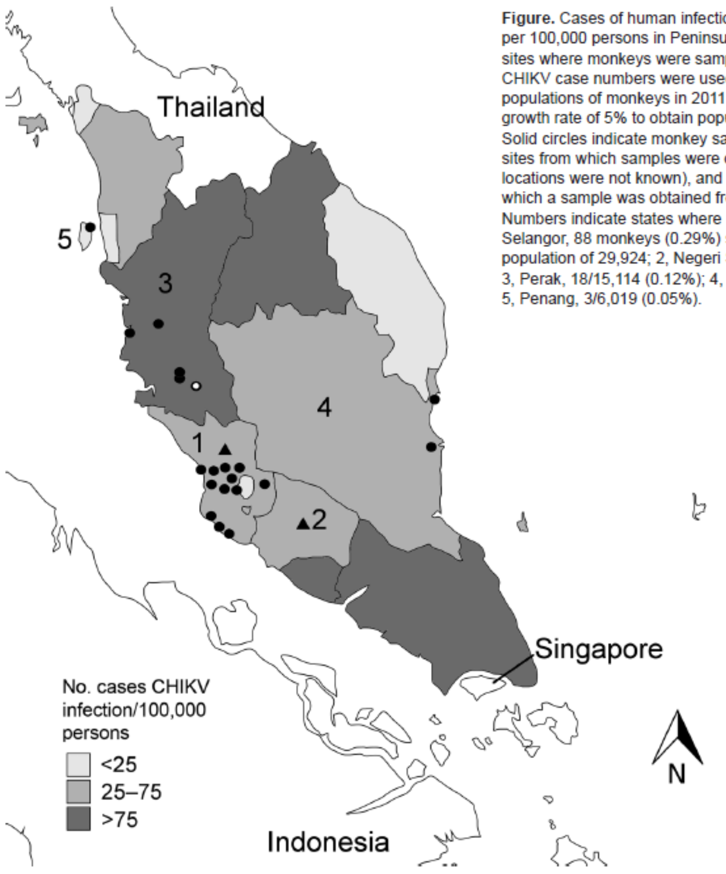


Figure. Cases of human infection with chikungunya virus (CHIKV) per 100,000 persons in Peninsular Malaysia, 2008–2009, and sites where monkeys were sampled in 2009–2010. Published CHIKV case numbers were used (*4*), and published estimated populations of monkeys in 2011 were reduced by an annual growth rate of 5% to obtain population estimates for 2010 (*3*). Solid circles indicate monkey sampling sites, triangles indicates sites from which samples were obtained (where the specific locations were not known), and open circle indicates site from which a sample was obtained from a seropositive macaque. Numbers indicate states where monkeys were sampled. 1, Selangor, 88 monkeys (0.29%) sampled of an estimated population of 29,924; 2, Negeri Sembilan, 21/10,133 (0.21%); 3, Perak, 18/15,114 (0.12%); 4, Pahang, 17/12,590 (0.14%); 5, Penang, 3/6,019 (0.05%).

0.7%

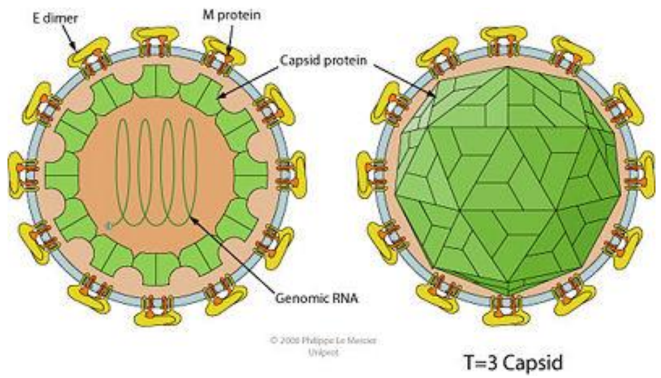
Studies in Mauritius, Thailand, Malaysia: 0.7-**3.8%**.

Journal of General and Molecular Virology. 2009

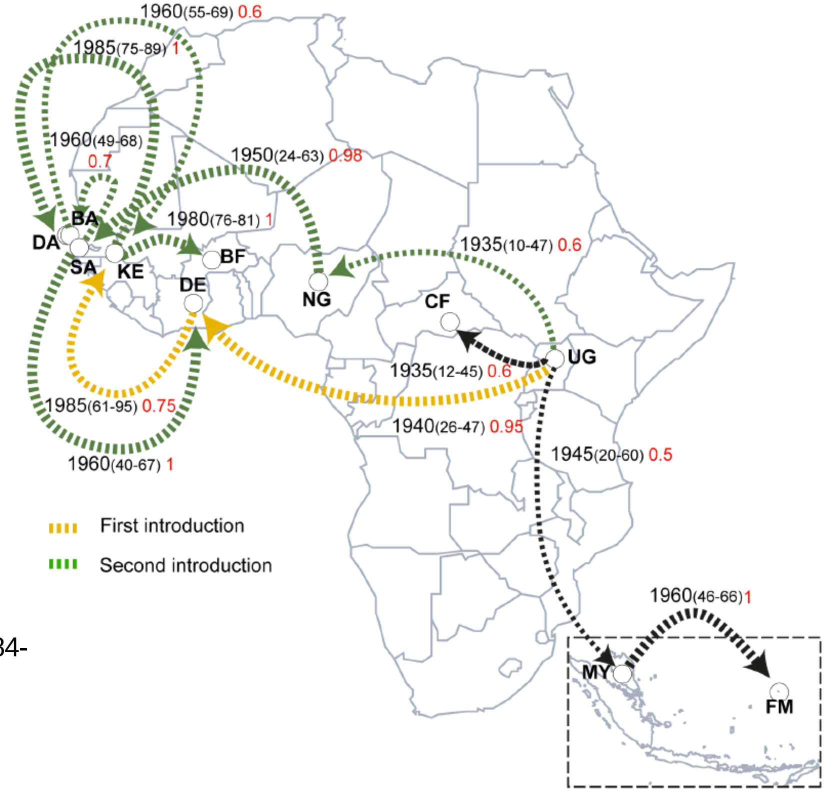
Contenido de la presentación

1. El contexto del dengue en las Américas y Colombia antes de 2013
2. ¿Qué impacto está teniendo y podrá tener chikungunya en adición a dengue?
3. **Otros arbovirus tropicales emergentes en la región: Zika y Mayaro**

Zika virus



- Zika is an arbovirus from the Flaviviridae family (genus Flavivirus) that carries the name of a forest close to Kampala, Uganda, where in 1947 was identified in rhesus monkeys, through a sylvatic yellow fever surveillance network in that country.
- It was first isolated in humans in 1952, in Uganda and in Tanzania.



JIDC THE JOURNAL OF INFECTION IN DEVELOPING COUNTRIES

Rodríguez-Morales AJ. Zika: the new arbovirus threat for Latin America. J Infect Dev Ctries 2015 Jun; 9(6):684-685 (Indexed on Medline/Index Medicus)

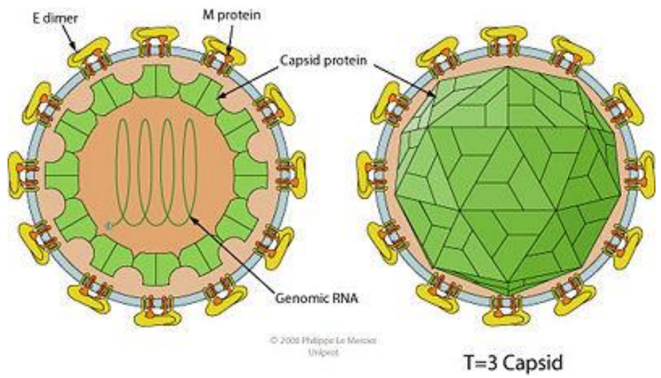
Ioos S, Mallet HP, Leparc Goffart I, Gauthier V, Cardoso T, Herida M (2014) Current Zika virus epidemiology and recent epidemics. Med Mal Infect 44: 302-307.

Dick GW, Kitchen SF, Haddow AJ (1952) Zika virus. I. Isolations and serologicalspecificity. Trans R Soc Trop Med Hyg 46: 509-520.

Dick GW (1952) Zika virus. II. Pathogenicity and physical properties. Trans RSoc Trop Med Hyg 46: 521-534.

Faye O, Freire CC, Iamarino A, Faye O, de Oliveira JV, Diallo M, Zanotto PM, Sall AA. Molecular evolution of Zika virus during its emergence in the 20(th) century. PLoS Negl Trop Dis. 2014 Jan 9;8(1):e2636.

Zika virus



- Incubación: entre **3 - 12 días** después de la picadura de un mosquito infectado, los pacientes presentan los síntomas.
- Síntomas: **fiebre** leve, sarpullidos, **conjuntivitis**, dolores de cabeza y en las **articulaciones**.
- Una de cada cuatro personas (25%) no desarrolla los síntomas de la enfermedad y en quienes sí **(75%) son afectados**
- La enfermedad es usualmente leve y puede durar de entre **2-7días**.
- Al parecer la respuesta inmune protege de por vida.

V · T · E

Zoonotic viral diseases (A80–B34, 042–079) [hide]

Arthropod-borne	Mosquito-borne	*Bunyaviridae*	Arbovirus encephalitides: La Crosse encephalitis (LACV) · California encephalitis (CEV) Viral hemorrhagic fevers: Rift Valley fever (RVFV)
		Flaviviridae	Arbovirus encephalitides: Japanese encephalitis (JEV) · Australian encephalitis (MVEV · KUNV) · Saint Louis encephalitis (SLEV) · West Nile fever (WNV) Viral hemorrhagic fevers: Dengue fever (DENV-1-4) · Yellow fever (YFV) · ZIKV
		Togaviridae	Arbovirus encephalitides: Eastern equine encephalomyelitis (EEEV) · Western equine encephalomyelitis (WEEV) · Venezuelan equine encephalomyelitis (VEEV) · Chikungunya (CHIKV) · O'Nyong-nyong fever (ONNV) · Ross River fever (RRV) · Semliki Forest virus · Sindbis fever
		Reoviridae	Banna virus encephalitis
	Tick-borne	*Bunyaviridae*	Viral hemorrhagic fevers: Crimean–Congo hemorrhagic fever (CCHFV)
		Flaviviridae	Arbovirus encephalitides: Tick-borne encephalitis (TBEV) · Powassan encephalitis (POWV) Viral hemorrhagic fevers: Omsk hemorrhagic fever (OHFV) · Kyasanur forest disease (KFDV · AHFV) · Langat virus (LGTV)
		Reoviridae	Colorado tick fever (CTFV) · Kemerovo tickborne viral fever
Mammal-borne	Rodent-borne	*Arenaviridae*	Viral hemorrhagic fevers: Lassa fever (LASV) · Venezuelan hemorrhagic fever (GTOV) · Argentine hemorrhagic fever (JUNV) · Brazilian hemorrhagic fever (SABV) · Bolivian hemorrhagic fever (MACV) · LUJV · CHPV
		Bunyaviridae	Hemorrhagic fever with renal syndrome (DOBV · HTNV · PUUV · SEOV · AMRV) Hantavirus pulmonary syndrome (ANDV · SNV)
	Bat-borne	*Filoviridae*	Viral hemorrhagic fevers: Ebola virus disease · BDBV · EBOV · SUDV · TAFV · Marburg virus disease · MARV · RAVV
		Rhabdoviridae	Rabies (ABLV · MOKV · DUVV · LBV) · CHPV
		Paramyxoviridae	Henipavirus encephalitis (HeV · NiV)
	Primate-borne	*Herpesviridae*	Herpes B virus
		Retroviridae	Simian foamy virus · HTLV-1 · HTLV-2
		Poxviridae	Tanapox · Yaba monkey tumor virus
	Multiple vectors	*Rhabdoviridae*	Rabies (RABV)
		Poxviridae	Monkeypox

Togaviridae *Click on organism name to get more information.*

Alphavirus (arboviruses group A) *Click on organism name to get more information.*

- Aura virus
- Barmah Forest virus
- EEEV complex
  - Eastern equine encephalitis virus
    - Eastern equine encephalitis virus (strain Florida 91-469)
    - Eastern equine encephalitis virus (strain PE-0.0155)
    - Eastern equine encephalitis virus (strain PE-3.0815)
    - Eastern equine encephalitis virus (STRAIN VA33[TEN BROECK])
- Eilat virus
- Madariaga virus
- Middelburg virus
- Ndumu virus
- Rio Negro virus
  - Rio Negro virus (strain Ag80-663)
- Salmon pancreas disease virus
  - Salmonid alphavirus subtype 3
  - Sleeping disease virus
- SFV complex
  - Bebaru virus
  - Chikungunya virus
    - Chikungunya virus CHIKV/IRL/2007
    - Chikungunya virus CHIKV/IRL/2009
    - Chikungunya virus strain Nagpur
    - Chikungunya virus strain S27-African prototype
    - Chikungunya virus strain Senegal 37997
    - Chikungunya virus Wuerzburg 1
  - Getah virus
  - Mayaro virus
    - Mayaro virus (strain Brazil)

- Flaviviridae
  - Flavivirus (arboviruses group B)

Genus: *Flavivirus* (53 Species) history

- Species: *Apoi virus* history
- Species: *Aroa virus* history
- Species: *Bagaza virus* history
- Species: *Banzi virus* history
- Species: *Bouboui virus* history
- Species: *Bukalasa bat virus* history
- Species: *Cacipacore virus* history
- Species: *Carey Island virus* history
- Species: *Cowbone Ridge virus* history
- Species: *Dakar bat virus* history
- Species: *Dengue virus* history — **Dengue**
- Species: *Edge Hill virus* history
- Species: *Entebbe bat virus* history
- Species: *Gadgets Gully virus* history
- Species: *Ilheus virus* history
- Species: *Israel turkey meningoencephalomyelitis virus* history
- Species: *Japanese encephalitis virus* history
- Species: *Jugra virus* history
- Species: *Jutiapa virus* history
- Species: *Kadam virus* history
- Species: *Kedougou virus* history
- Species: *Kokobera virus* history
- Species: *Koutango virus* history
- Species: *Kyasanur Forest disease virus* history
- Species: *Langat virus* history
- Species: *Louping ill virus* history
- Species: *Meaban virus* history
- Species: *Modoc virus* history
- Species: *Montana myotis leukoencephalitis virus* history
- Species: *Murray Valley encephalitis virus* history
- Species: *Ntaya virus* history
- Species: *Omsk hemorrhagic fever virus* history
- Species: *Phnom Penh bat virus* history
- Species: *Powassan virus* history
- Species: *Rio Bravo virus* history
- Species: *Royal Farm virus* history
- Species: *Saboya virus* history
- Species: *Sal Vieja virus* history
- Species: *San Perlita virus* history
- Species: *Saumarez Reef virus* history
- Species: *Sepik virus* history
- Species: *St. Louis encephalitis virus* history
- Species: *Tembusu virus* history
- Species: *Tick-borne encephalitis virus* history
- Species: *Tyuleniy virus* history
- Species: *Uganda S virus* history
- Species: *Usutu virus* history
- Species: *Wesselsbron virus* history
- Species: *West Nile virus* history — **West Nile Virus**
- Species: *Yaounde virus* history
- Species: *Yellow fever virus* history — **Yellow Fever**
- Species: *Yokose virus* history
- Species: *Zika virus* history — **Zika**

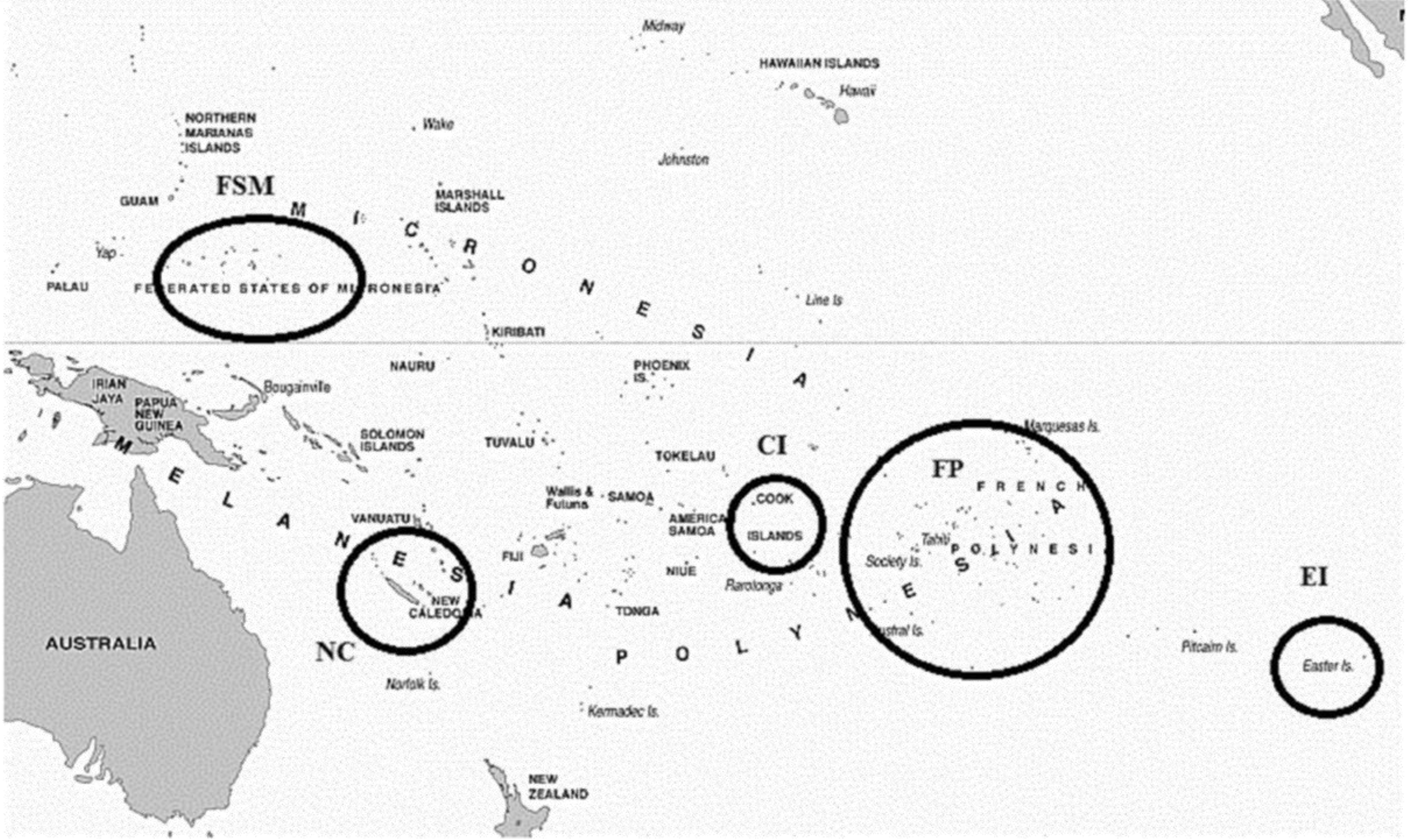
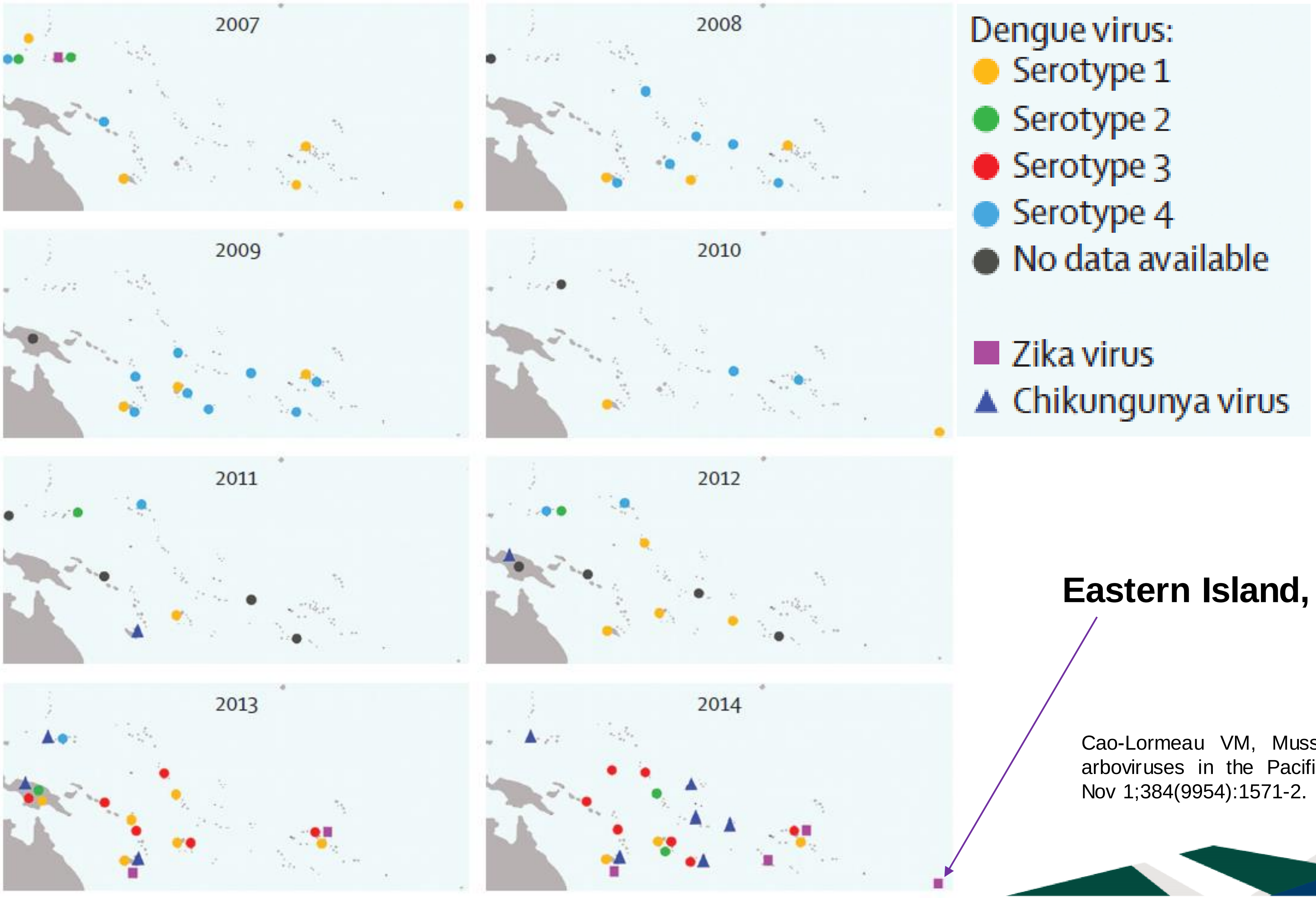


FIG. 1. Circulation of Zika virus in the Pacific: FSM (Federated States of Micronesia, 2007), FP (French Polynesia, 2013/2014), NC (New Caledonia, 2014), CI (Cook Islands, 2014), EI (Ester Island, 2014).

Musso D, Nilles EJ, Cao-Lormeau VM. Rapid spread of emerging Zika virus in the Pacific area. Clin Microbiol Infect. 2014 Oct;20(10):O595-6.

Table 2
Seroprevalence surveys, entomological survey, or sporadic case reports for the Zika virus.
Études de séroprévalence, entomologique ou rapports de cas sporadiques humains de Zika.

Countries and territories	Population countries (Number)	Sporadic cases/epidemics		Seroprevalence survey		Comments
		Number of cases (*n*)	Year	Percentage	Year	
Australia	21,527,000	1	2013	–	–	Imported cases (ex–Thailand)
Cambodia	14,701,717	1	2010	–	–	Sporadic human cases
Ivory Coast	23,202,000	1	1999	–	–	Sporadic human cases Isolation in mosquitoes
Indonesia	244,968,342	1	2013	–	–	Exported cases in Australia in 2013
		17	1977–1978 [9]	–	1977–1978	Serologic study – Java +
		–		13%	1963	Serologic study – Lombok
Malaysia	28,250,000	1	–	–	1969	Serologic study Isolation in mosquitoes [24]
Micronesia, Yap [20]	7391	185 including 108 confirmed and probable	2007	73% (in population)	2007	Epidemic Study seroprevalence in population
Nigeria	170,123,740	2	1975	31%	1968	Study serologic Isolation in mosquitoes sporadic human cases
New-Caledonia	254,000	114 32	2014 2013–2014	–	–	Autochthonous cases (Dumbea) Imported cases (e.g. FP)
Uganda	34,131,400	–	–	6.1%	1952	Serologic study [25]
French Polynesia (FP)	268,270	8510 clinical cases 29,000 estimated cases (preliminary figures)	2013–2014	–	–	Epidemic [26]



Eastern Island, Chile

Cao-Lormeau VM, Musso D. Emerging arboviruses in the Pacific. Lancet. 2014 Nov 1;384(9954):1571-2.

Tu-Xuan Nhan[a,*], Van-Mai Cao-Lormeau[b], Didier Musso[a,b]

Figure 2 – Émergence du ZIKV dans la région Pacifique.

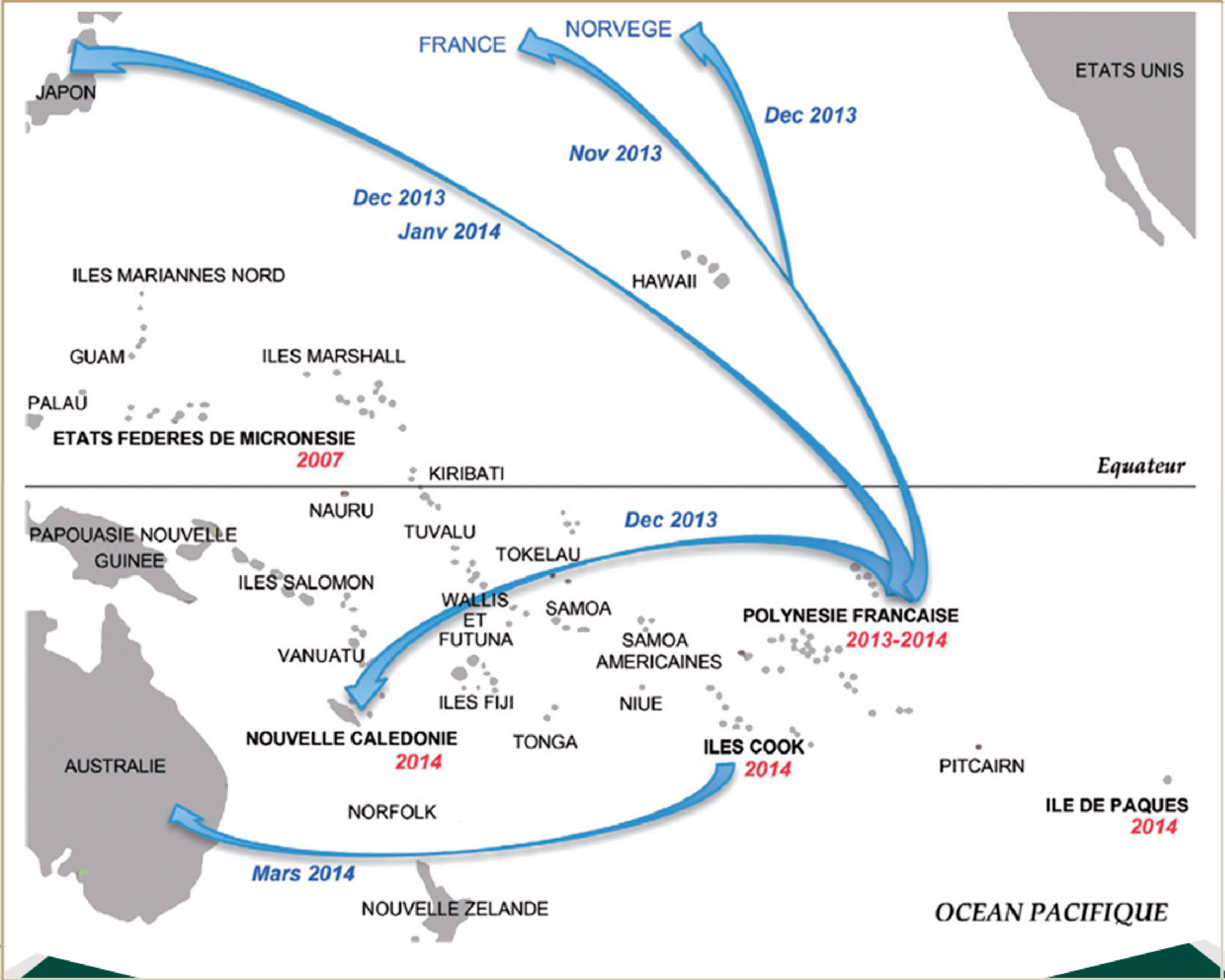


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Figura 1 Mapa de Sur América, destacando Brasil y sus estados, y los territorios donde se han reportado casos confirmados de Zika (2014-2015).

No era suficiente con dengue y chikungunya: llegó también Zika

Dengue and chikungunya were not enough: now also Zika arrived

Rodriguez-Morales, A. J.

Facultad de Ciencias de la Salud, Universidad Tecnológica de Pereira, Pereira, Risaralda, Colombia

Correspondencia:
Alfonso J. Rodriguez-Morales

Actualmente las autoridades de salud pública de Brasil están investigando la transmisión de virus Zika en el nordeste en el país así como en São Paulo (**Figura 1**). El día 15 de mayo de 2015 el Ministerio de Salud de Brasil y el Instituto Evandro Chagas (laboratorio nacional de referencia) confirmaron 16 casos positivos, 8 en el estado de Bahía y 8 en Río Grande do Norte (**Figura 1**) [8]. Cuatro días más tarde, el Instituto Adolfo Lutz confirmó por RT-PCR un caso positivo para Zika en São Paulo [9], con lo cual hasta la fecha del presente editorial se han identificado 17 casos confirmados en 3 estados de Brasil (**Figura 1**), además con la evaluación de casos sospechosos en los mismos estados y en otros estados del país.

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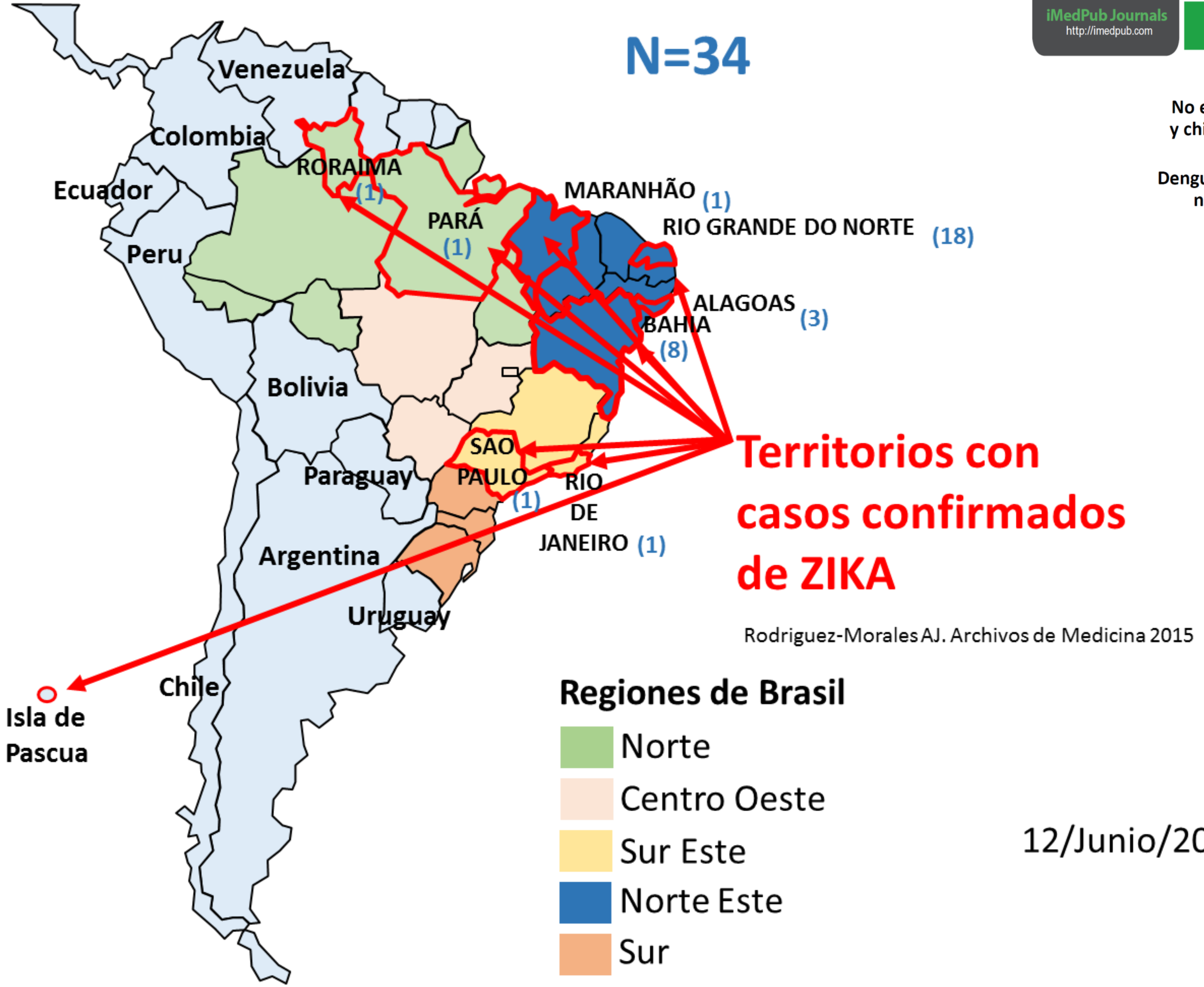

12/Junio/2015

Rodriguez-Morales AJ. Archivos de Medicina 2015

12/Junio/2015

Eurosurveillance

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Eurosurveillance, Volume 20, Issue 23, 11 June 2015

Rapid communications

ZIKA VIRUS INFECTION IN A TRAVELLER RETURNING TO EUROPE FROM BRAZIL, MARCH 2015

L Zammarchi[1], D Tappe[2], C Fortuna[3], M E Remoli[3], S Günther[2], G Venturi[3], A Bartoloni (alessandro.bartoloni@unifi.it)[1], J Schmidt-Chanasit[2]

1. Clinica Malattie Infettive, Dipartimento di Medicina Sperimentale e Clinica, Università Degli Studi di Firenze, Florence, Italy
2. Bernhard Nocht Institute for Tropical Medicine, WHO Collaborating Centre for Arbovirus and Haemorrhagic Fever Reference and Research, National Reference Centre for Tropical Infectious Diseases, Hamburg, Germany
3. Department of Infectious, Parasitic and Immune-Mediate Diseases, Istituto Superiore di Sanità, Rome, Italy

Citation style for this article: Zammarchi L, Tappe D, Fortuna C, Remoli ME, Günther S, Venturi G, Bartoloni A, Schmidt-Chanasit J. Zika virus infection in a traveller returning to Europe from Brazil, March 2015. Euro Surveill. 2015;20(23):pii=21153. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21153

Date of submission: 05 June 2015

A male Italian traveller in his early 60s presented to the Infectious and Tropical Diseases Unit, Azienda Ospedaliero Universitaria Careggi, Florence (Italy), four days after his return from a 12-day holiday in Salvador de Bahia, Brazil at the end of March 2015. The patient had a four-day history of confluent slightly-pruritic erythematous rash, diffused on the face, trunk, arms, and legs, accompanied by fever (maximum temperature 38°C), conjunctivitis, general weakness, and painful oedema of both hands and feet.

Rodriguez-Morales AJ. Archivos de Medicina 2015

12/Junio/2015

Table

Serological test results and virological data of a case of Zika virus infection imported from Brazil into Italy, March 2015

Antibody or antigen tested	Serum samples taken after symptom onset (days)	
	4	26
Anti-ZIKV-IgG[a]	1:160	1:1,280
Anti-ZIKV-IgM[a]	1:160	1:1,280
ZIKV NAb[b]	ND	1:640
Anti-DENV-IgG[a]	<1:20	1:20
Anti-DENV-IgM[a]	<1:20	<1:20
DENV-2 NAb[b]	ND	<1:20
DENV-4 NAb[b]	ND	<1:20
DENV NS1[c]	Negative (0.1 arbitrary units)	Negative (0.1 arbitrary units)
Anti-JEV-IgG[a]	<1:20	<1:20
Anti-JEV-IgM[a]	<1:20	<1:20
Anti-WNV-IgG[a]	<1:20	<1:20
Anti-WNV-IgM[a]	<1:20	<1:20
Anti-YFV-IgG[a]	<1:20	<1:20
Anti-YFV-IgM[a]	<1:20	<1:20
Anti-CHIKV-IgG[a]	<1:20	<1:20
Anti-CHIKV-IgM[a]	<1:20	<1:20

CHIKV: chikungunya virus; DENV: dengue virus; DENV-2: dengue virus serotype 2; DENV-4: dengue virus serotype 4; JEV: Japanese encephalitis virus; NAb: neutralising antibodies; ND: not done; NS1: nonstructural protein-1; WNV: West Nile virus; YFV: yellow fever virus; ZIKV: Zika virus.

[a] Indirect immunofluorescence assay (IIFA) titres <1:20 for serum were considered negative [1].

[b] Virus neutralisation test (VNT) titres <1:20 for serum were considered negative [1].

[c] SD BIOLINE Dengue Duo NS1 Ag + Ab Combo and Bio-Rad Platelia Dengue NS1 Ag.

Journal of Clinical Virology 63 (2015) 32–35

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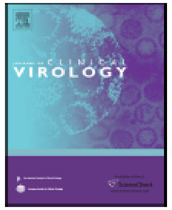

Case report

Zika virus infections imported to Italy: Clinical, immunological and virological findings, and public health implications

Table 1
Serological and virological data of two Italian travelers with acute Zika virus infection.

Case 1 (female)	08/01/2014 (day 3[a])		12/02/2014 (day 35[a])		11/03/2014 (day 62[a])	
Test used	IIFA[b]	ELISA	IIFA[b]	ELISA	IIFA[b]	ELISA
Anti-DENV-IgG	<1:20	3.93[c]	**1:20**	**11.8**[c]	**1:40**	**11.9**[c]
Anti-DENV-IgM	<1:20	1.77[c]	**1:80**	**19.7**[c]	<1:20	**49**[c]
DENV–NS1 Ag	NA	Negative	NA	ND	NA	ND
Anti-ZIKV-IgG	<1:20	NA	**1:1280**	NA	**1:640**	NA
Anti-ZIKV-IgM	<1:20	NA	**1:160**	NA	**1:160**	NA
ZIKV–RT-PCR	**Positive**					
Case 2 (male)	08/01/2014 (day 3[a])		10/02/2014 (day 33[a])		11/03/2014 (day 62[a])	
Test used	IIFA[b]	ELISA	IIFA[b]	ELISA	IIFA[b]	ELISA
Anti-DENV-IgG	<1:20	4.54[c]	<1:20	**18.5**[c]	<1:20	**11.8**[c]
Anti-DENV-IgM	<1:20	3.1[c]	<1:20	3.12[c]	<1:20	8.74[c]
DENV–NS1 Ag	NA	Negative	NA	ND	NA	ND
Anti-ZIKV-IgG	<1:20	NA	**1:640**	NA	**1:640**	NA
Anti-ZIKV-IgM	<1:20	NA	**1:160**	NA	**1:160**	NA
ZIKV–RT-PCR	**Negative**					

DENV: dengue virus; NS1 Ag: nonstructural-1 antigen; ZIKV: Zika virus; RT-PCR: Reverse transcription polymerase chain reaction; ND: not done; NA: not applicable.

[a] Days after the onset of symptoms (05/01/2014).

[b] Indirect immunofluorescence assay. Reference values (titre): <1:20 = negative; ≥1:20 = positive. Positive results are highlighted in **bold**.

[c] Commercial ELISA (VIRCELL Granada-Spain). Reference values (index): >11 = positive; 9–11 in doubt; <9 = negative. Positive results are highlighted in **bold**.

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No era suficiente con dengue y chikungunya: llegó también Zika

Dengue and chikungunya were not enough: now also Zika arrived

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Correspondencia:
Alfonso J. Rodriguez-Morales

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Perspectives

Zika: the new arbovirus threat for Latin America

Alfonso J Rodríguez-Morales

The Journal of Infection in Developing Countries

Key words: Zika; arbovirus; emerging; Latin America.

J Infect Dev Ctries 2015; 9(6):684-685. doi:10.3855/jidc.7230

EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

RAPID RISK ASSESSMENT

Zika virus infection outbreak, Brazil and the Pacific region

25 May 2015

Travelers' Health

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Zika in Brazil
Find a Clinic
Disease Directory
Information Centers
For Travelers
For Clinicians
Travel Industry
Yellow Book
Mobile Apps
RSS Feeds

CDC > Home > Travel Notices

Zika in Brazil

Warning - Level 3, Avoid Nonessential Travel
Alert - Level 2, Practice Enhanced Precautions
Watch - Level 1, Practice Usual Precautions

What is the current situation?

On May 14, 2015, the Ministry of Health in Brazil confirmed 16 locally transmitted cases of Zika. Local transmission means that mosquitoes in Brazil have been infected with Zika and are spreading it to people. Cases have been reported in several states throughout the country.

CDC recommends that travelers to Brazil protect themselves from mosquito bites.

What can travelers do to prevent Zika?

There is no vaccine or medicine to prevent Zika. Travelers can protect themselves by preventing mosquito bites.

Learn more about Zika.

Prevent mosquito bites:

- Cover exposed skin by wearing long-sleeved shirts, long pants, and hats.
- Use an approved insect repellent as directed.
- Higher percentages of active ingredients provide longer protection. Use products with the following active ingredients:
  - DEET (Products containing DEET include Off!, Cutter, Sawyer, and Ultrathon.)

First report of autochthonous transmission of Zika virus in Brazil

Camila Zanluca[1], Vanessa Campos Andrade de Melo[2], Ana Luiza Pamplona Mosimann[1], Glauco Igor Viana dos Santos[2], Claudia Nunes Duarte dos Santos[1]/+, Kleber Luz[3]/+

[1]Laboratório de Virologia Molecular, Instituto Carlos Chagas, Fundação Oswaldo Cruz, Curitiba, PR, Brasil
[2]Secretaria Estadual de Saúde do Rio Grande do Norte, Natal, RN, Brasil
[3]Instituto de Medicina Tropical, Universidade Federal do Rio Grande do Norte, Natal, RN, Brasil

In the early 2015, several cases of patients presenting symptoms of mild fever, rash, conjunctivitis and arthralgia were reported in the northeastern Brazil. Although all patients lived in a dengue endemic area, molecular and serological diagnosis for dengue resulted negative. Chikungunya virus infection was also discarded. Subsequently, Zika virus (ZIKV) was detected by reverse transcription-polymerase chain reaction from the sera of eight patients and the result was confirmed by DNA sequencing. Phylogenetic analysis suggests that the ZIKV identified belongs to the Asian clade. This is the first report of ZIKV infection in Brazil.

Key words: Zika virus - "dengue-like syndrome" - Brazil

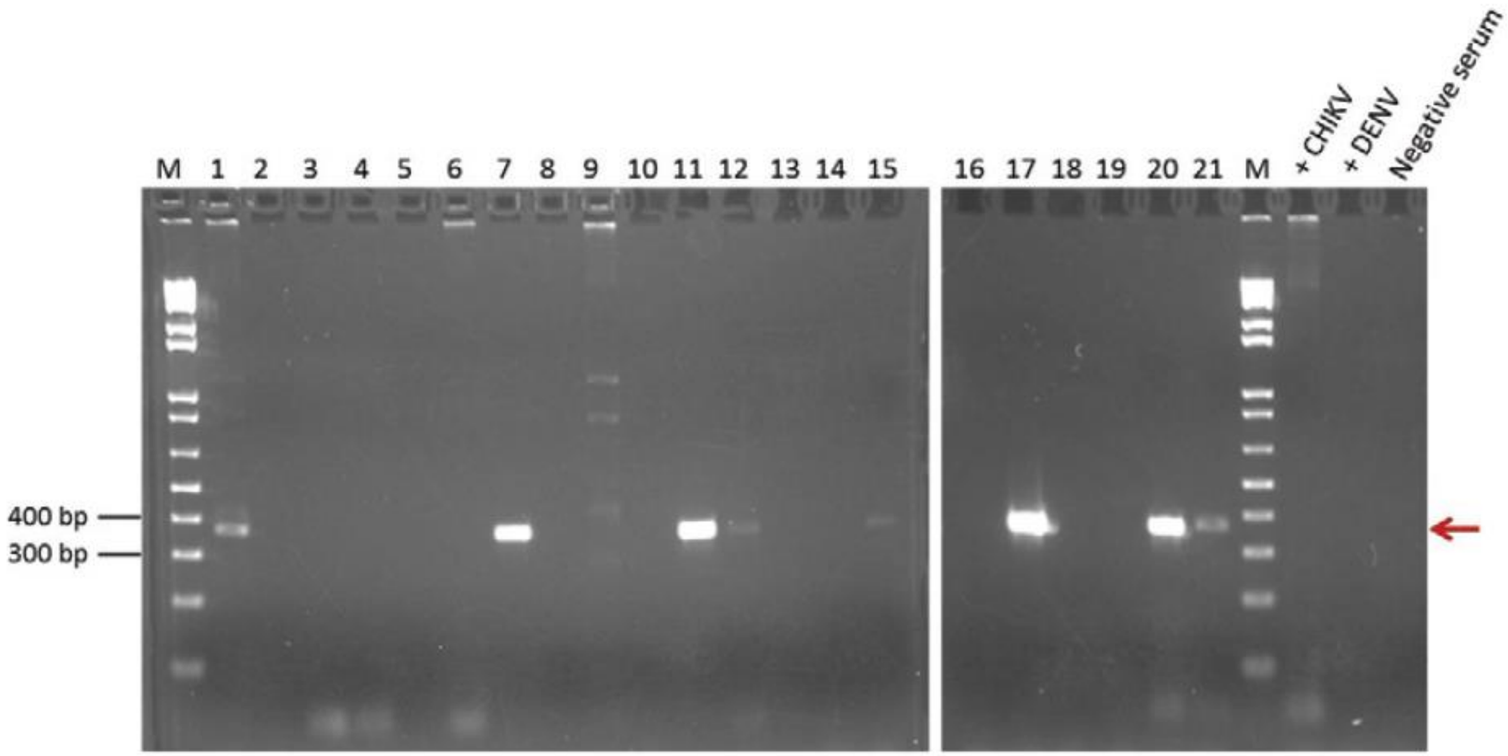


Fig. 1: agarose gel electrophoresis of reverse transcription-polymerase chain reaction assays for Zika virus (ZIKV) detection. The arrow indicates the 364 bp amplicon expected for ZIKV. RNA extracted from serum samples of patients in acute-phase of dengue fever and Chikungunya fever and a negative serum sample were included as negative controls. CHIKV: Chikungunya virus; M: molecular size marker; 1-21: serum samples.

Zika Virus Infection after Travel to Tahiti, December 2013

Torgun Wæhre, Anne Maagard, Dennis Tappe,[1] Daniel Cadar,[1] and Jonas Schmidt-Chanasit[1]

Author affiliations: Oslo University Hospital, Oslo, Norway (T. Wæhre, A. Maagard); WHO Collaborating Centre for Arbovirus and Haemorrhagic Fever Reference and Research, Hamburg, Germany (D. Tappe, D. Cadar, J. Schmidt-Chanasit); and German Centre for Infection Research, Hamburg (J. Schmidt-Chanasit)

DOI: http://dx.doi.org/10.3201/eid2008.140302

[1]These authors contributed equally to this article.

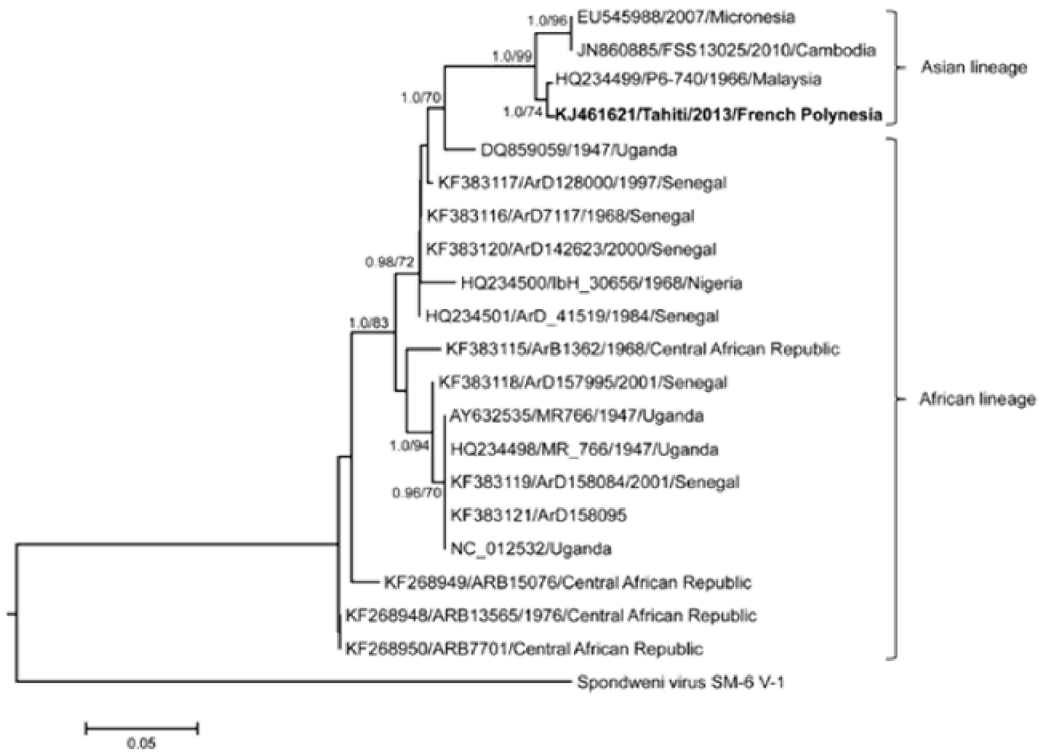
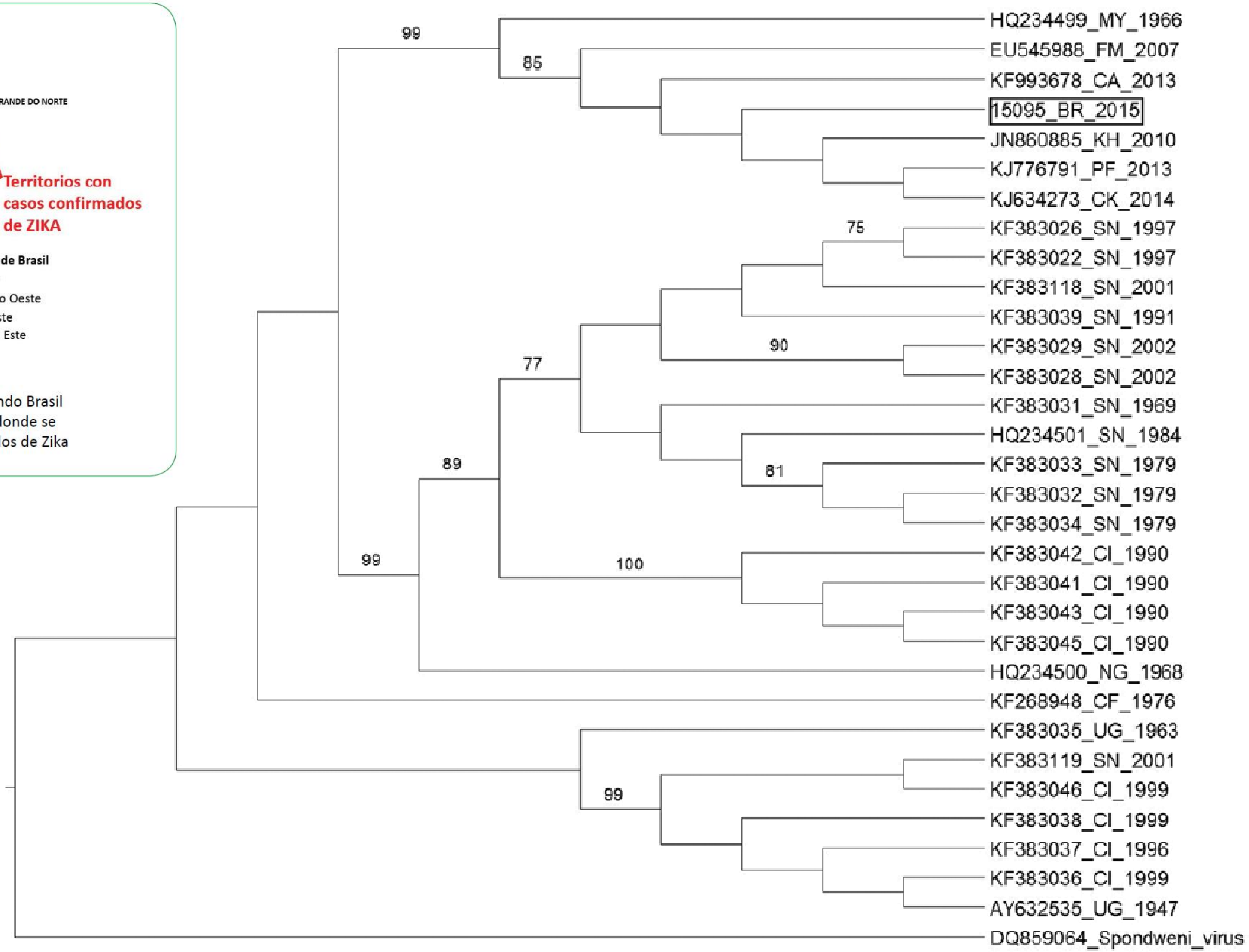


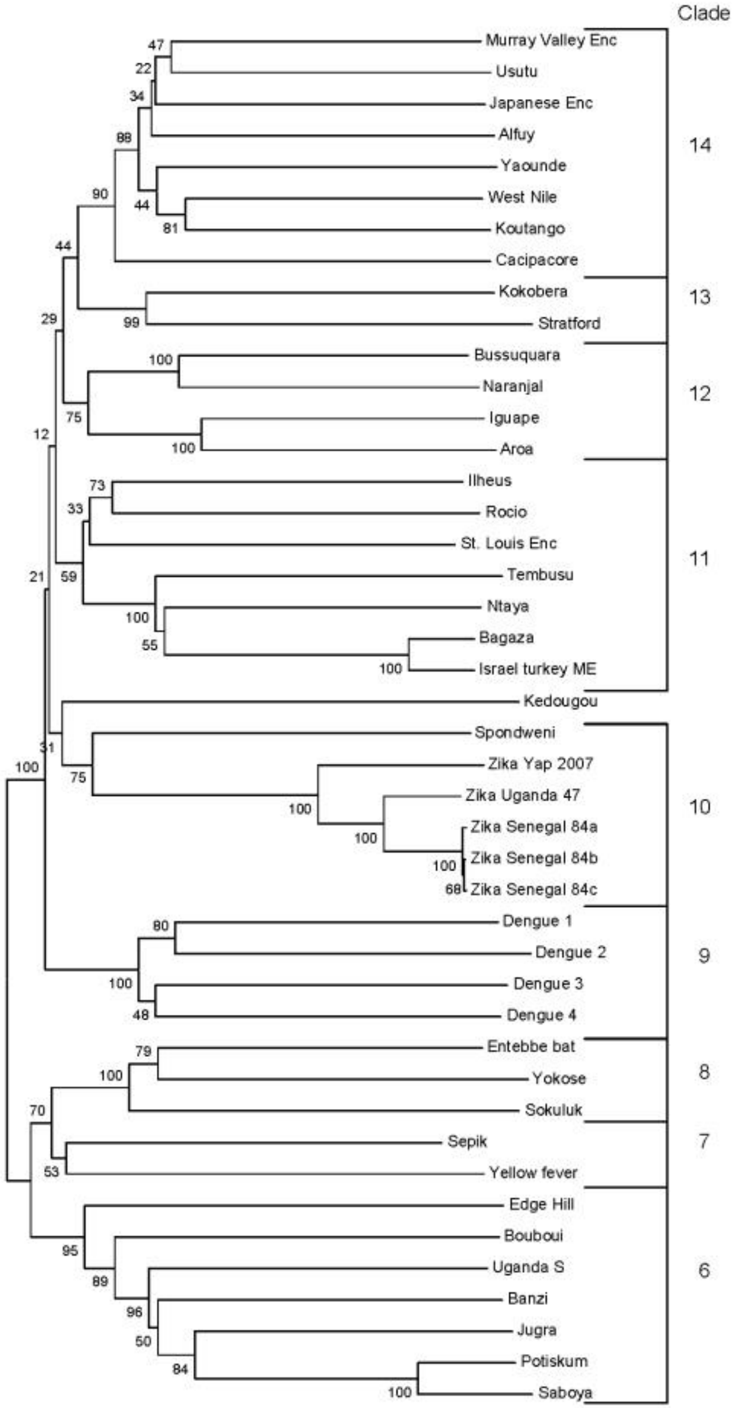
Figure. Phylogenetic analysis of partial (≈200 bp) nonstructural protein 3 gene sequences of Zika virus strains performed by using maximum-likelihood and Bayesian methods. A substitution model was based on a general time-reversible model with gamma-distributed rate variation and a proportion of invariant sites. Numbers at the nodes represent posterior probability values (clade credibilities ≥90%) and percentage bootstrap support values (≥70%) based on 1,000 replicates. GenBank accession numbers, strain name, year of isolation, and country of origin for sequences used to construct the tree are indicated on the branches. The tree was rooted with Spondweni virus (GenBank accession no. DQ859064). Strain Tahiti (from patient who had traveled to Tahiti, this study) is indicated in boldface. The scale bar represents genetic distance in nucleotide substitutions per site. The lineage of each virus is indicated to the right of the tree.

Figura 1 Mapa de Sur América, destacando Brasil y sus estados, y los territorios donde se han reportado casos confirmados de Zika (2014-2015).



Asian lineage

Fig. 2: phylogenetic analysis based on partial *E* gene nucleic acid sequence (nt 1655-1984 according to AY632535) of a 2015 Brazilian strain of Zika virus. The tree was inferred using the maximum likelihood algorithm based on the Kimura two-parameter model with invariant sites as implemented in MEGA 6.05. The numbers shown to the left of the nodes represent bootstrap support values > 70 (1,000 replicates). The tree was rooted with Spondoweni virus and branch lengths do not represent genetic distance. Strains were labelled according to GenBank accession /country 2-letter acronym/year of isolation.



Genetic and Serologic Properties of Zika Virus Associated with an Epidemic, Yap State, Micronesia, 2007

Robert S. Lanciotti,* Olga L. Kosoy,* Janeen J. Laven,* Jason O. Velez,* Amy J. Lambert,* Alison J. Johnson,* Stephanie M. Stanfield,* and Mark R. Duffy*

Table 3. Description and performance characteristics of Zika virus real-time RT-PCR primer/probe sets*

Primer	Genome position†	Sequence (5′ → 3′)	Sensitivity, no. copies	Specificity‡
ZIKV 835	835–857	TTGGTCATGATACTGCTGATTGC		
ZIKV 911c	911–890	CCTTCCACAAAGTCCCTATTGC	100	ZIKV
ZIKV 860-FAM	860–886	CGGCATACAGCATCAGGTGCATAGGAG		
ZIKV 1086	1086–1102	CCGCTGCCCAACACAAG		
ZIKV 1162c	1162–1139	CCACTAACGTTCTTTTGCAGACAT	25	ZIKV
ZIKV 1107-FAM	1107–1137	AGCCTACCTTGACAAGCAGTCAGACACTCAA		

*RT-PCR, reverse transcription–PCR; ZIKV, Zika virus.
†Based on ZIKV MR 766 GenBank accession no. AY632535.
‡ZIKV specificity indicates a positive result with ZIKV only and no reactivity with dengue virus-1 (DENV-1), DENV-2, DENV-3, DENV-4, West Nile virus, St. Louis encephalitis virus, yellow fever virus, Powassan virus, Semliki Forest virus, o'nyong-nyong virus, chikungunya virus, and Spondweni virus.

Encuesta Post

Am. J. Trop. Med. Hyg., 89(3), 2013, pp. 516–517
doi:10.4269/ajtmh.13-0029

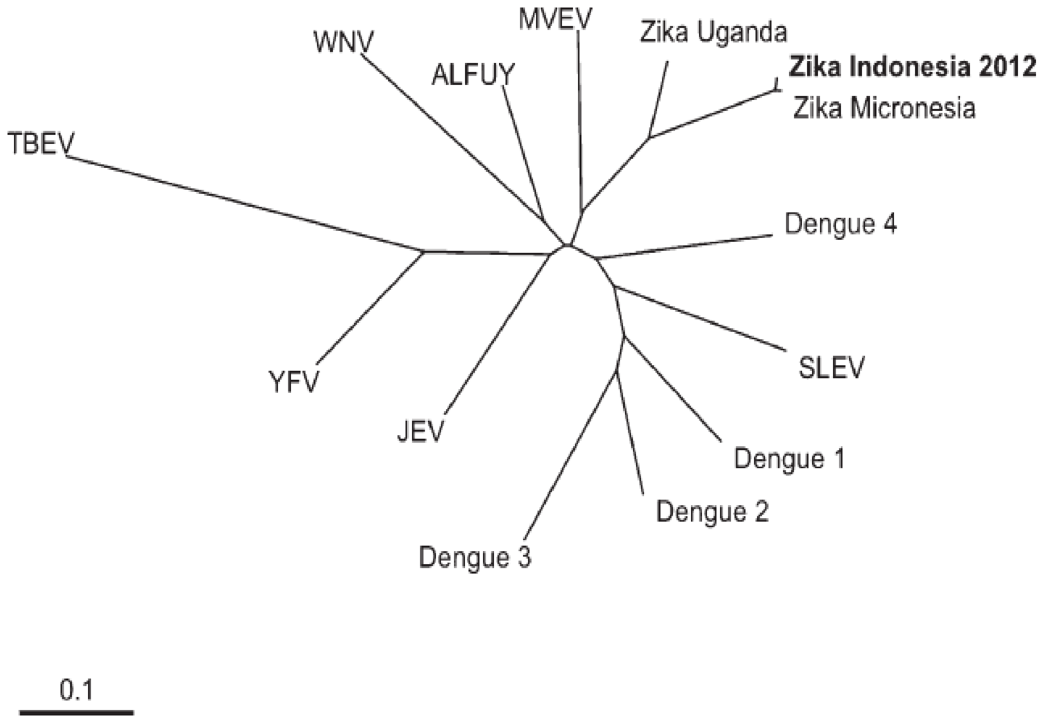


FIGURE 1. Phylogenetic tree showing relationships of Zika virus to other flaviviruses. **Bold** indicates virus isolated in this study. Scale bar indicates nucleotide substitutions per site. WNV = West Nile virus; ALFUV = subtype of MVEV; MVEV = Murray Valley encephalitis virus; SLEV = St. Louis encephalitis virus; JEV = Japanese encephalitis virus; YFV = yellow fever virus; TBEV = tick-borne encephalitis virus.

Les infections à virus Zika

Tu-Xuan Nhan[a,*], Van-Mai Cao-Lormeau[b], Didier Musso[a,b]

Figure 1 – Arbre phylogénétique montrant le positionnement des différentes lignées du ZIKV par rapport à d'autres arbovirus (flavivirus et alphavirus).

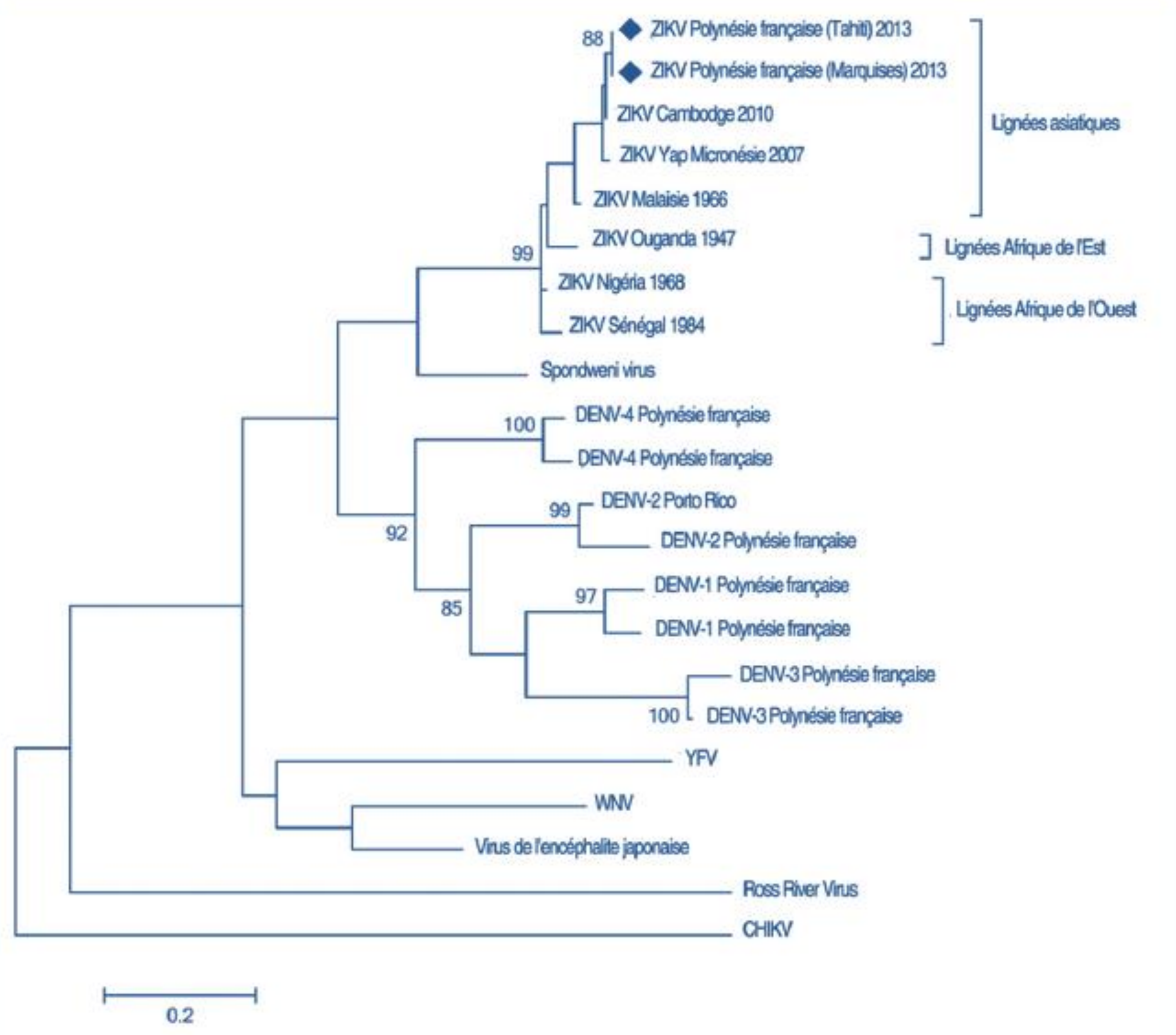
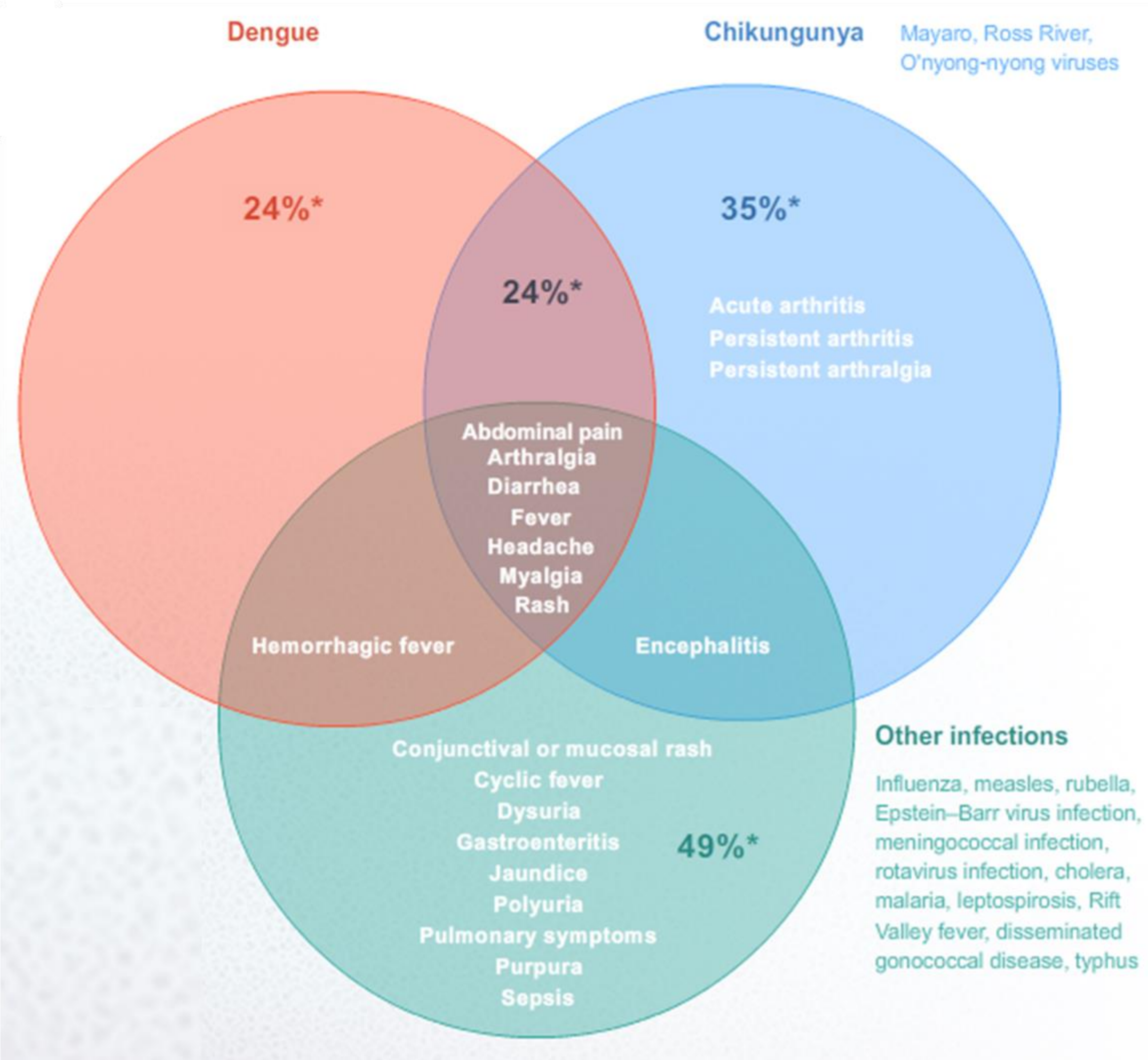


Fig. 3: Zika virus clinical findings in patients from Natal, state of Rio Grande do Norte, Brazil. A: lymphadenopathy; B: maculopapular rash; C: periarticular swelling.



Zika

Scott C. Weaver, Ph.D., and Marc Lecuit, M.D., Ph.D.
N Engl J Med 2015; 372:1231-1239

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2015
Vol. 11 No. 2:3
doi: 10.3823/1245

Tabla 1 Comparación de síntomas entre DEN, CHIK y Zika [11]

Síntomas	Dengue	Chikungunya	Zika
Fiebre	++++	+++	+++
Mialgia/artralgia	+++	++++	++
Edema de extremidades	0	0	++
Rash maculopapular	++	++	+++
Dolor retro-orbital	++	+	++
Conjuntivitis	0	+	+++
Linfadenopatías	++	++	+
Hepatomegalia	0	+++	0
Leucopenia/trombocitopenia	+++	+++	0
Hemorragias	+	0	0

Tabla 1. Comparación de síntomas entre DEN, CHIK y Zika [11].

Síntomas	**Dengue**	**Chikungunya**	**Zika**
Fiebre	++++	+++	+++
Mialgia/artralgia	+++	++++	++
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Rash maculopapular	++	++	**+++**
Dolor retro-orbital	++	+	++
Conjuntivitis	0	+	**+++**
Linfadenopatías	++	++	+
Hepatomegalia	0	+++	0
Leucopenia/trombocitopenia	+++	+++	0
Hemorragias	+	0	0

Rodriguez-Morales AJ. No era suficiente con dengue y chikungunya: llegó también Zika. Archivos de Medicina 2015; 11(2):e3. Available online at: http://archivosdemedicina.com/medicina-de-familia/no-era-suficiente-con-dengueychikungunya-lleg-tambinzika.pdf

Zika Fever Symptoms

Conjunctivitis

Maculopapular
Rash on Arm

Summers DJ, Acosta RW, Acosta AM. Zika Virus in an American Recreational Traveler. J Travel Med. 2015 May 21. doi: 10.1111/jtm.12208.

Jim Broyhill
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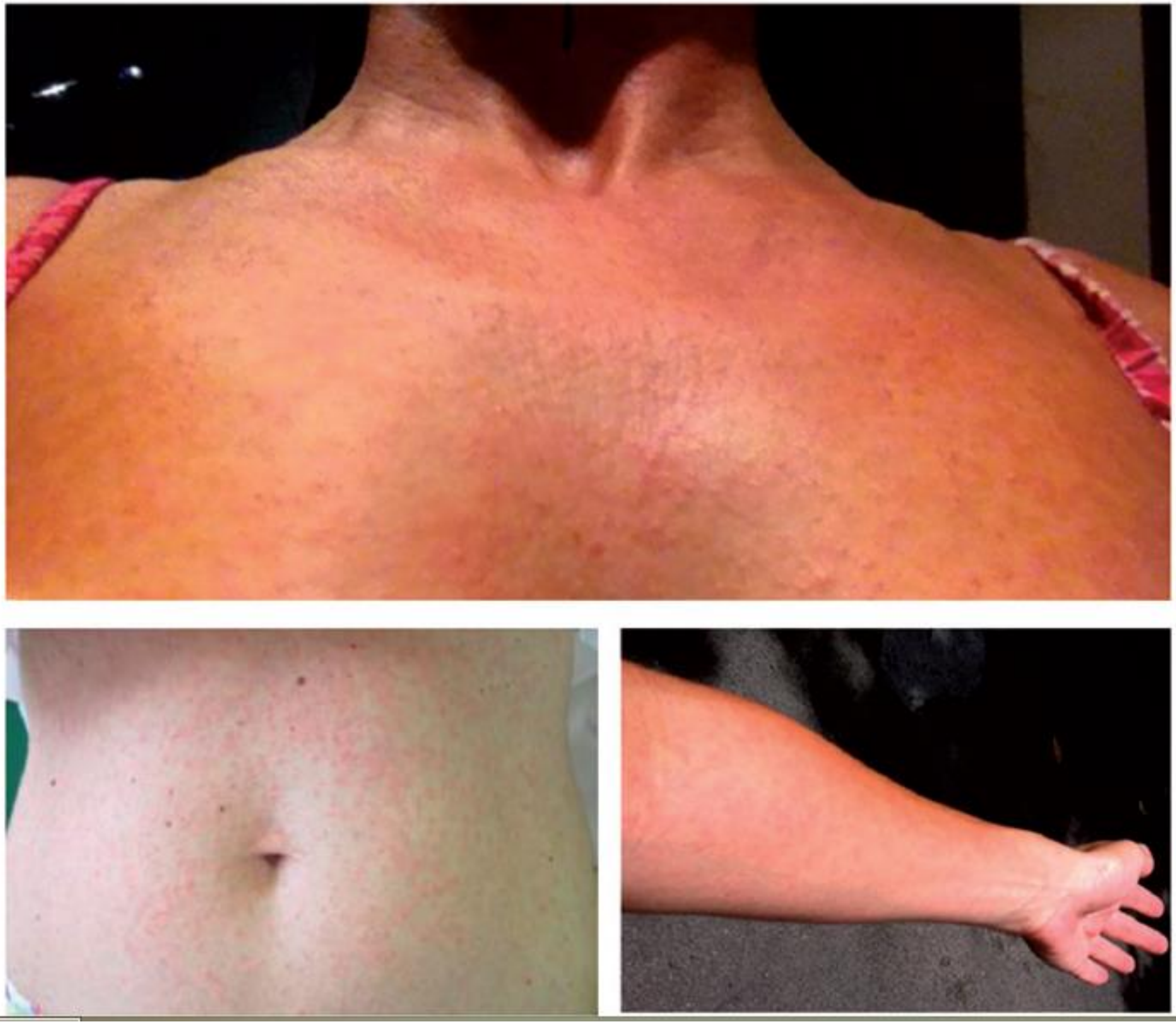
VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Tu-Xuan Nhan[a,*], Van-Mai Cao-Lormeau[b], Didier Musso[a,b]

Figure 3 – Éruption cutanée dans une infection à ZIKV.



IDCases 1 (2014) 95–96

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Case Report

Trouble in paradise

Karen B. Brust [a,*], Whitney S. Prince [b], Robert C. Fader [c]

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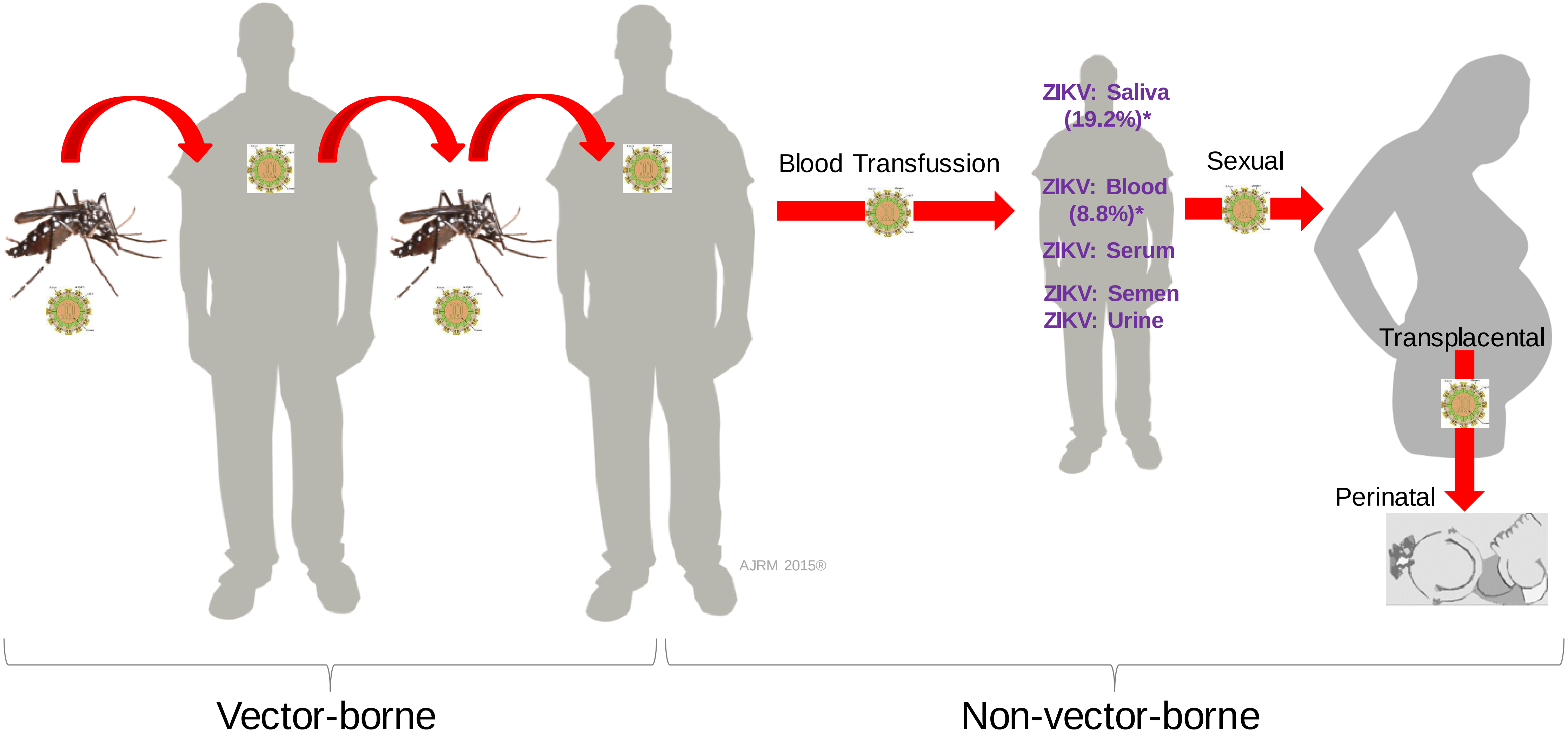
Fig. 1. Petechial eruption, leg.

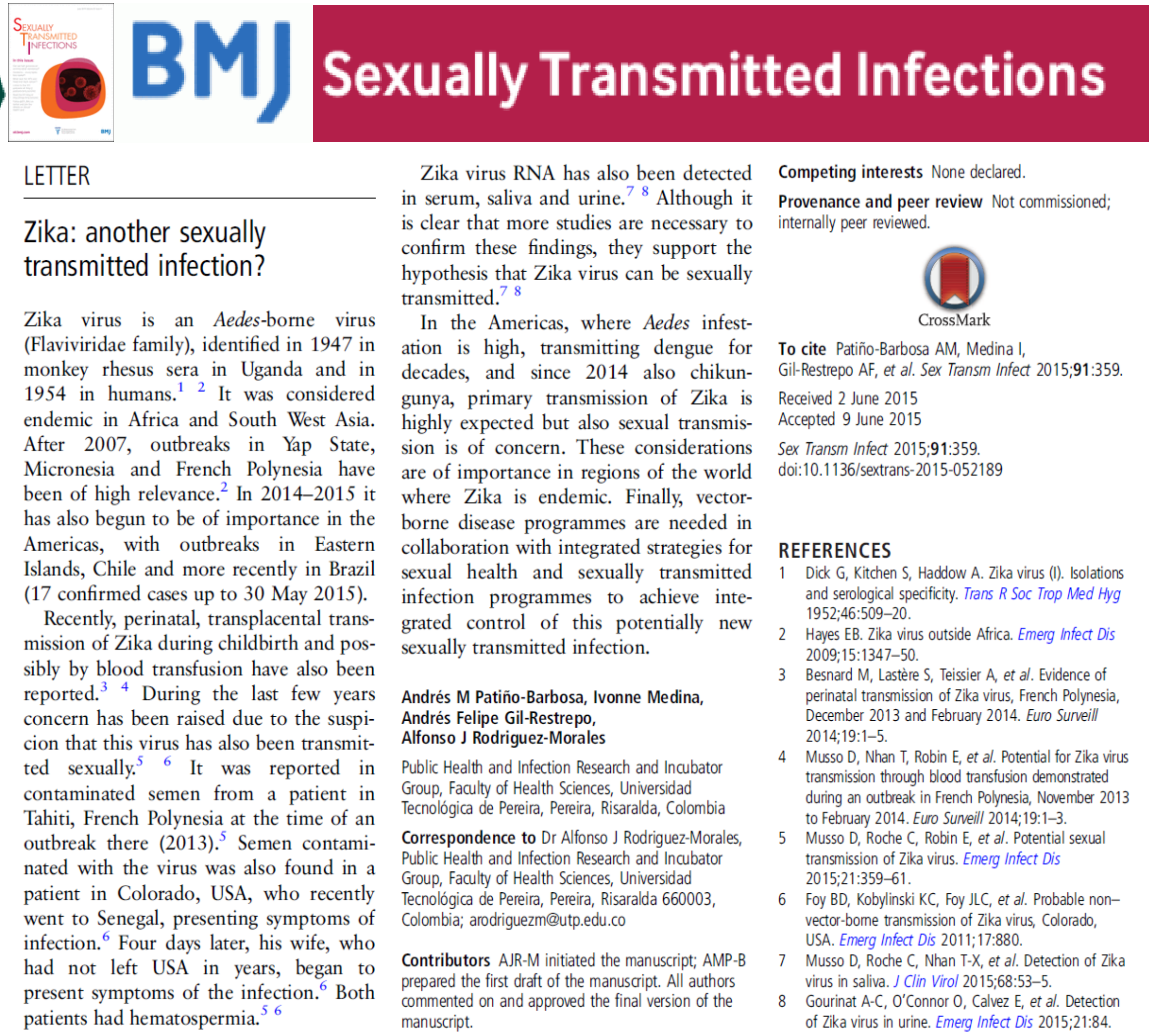
Transmission of Zika virus



Rodríguez-Morales AJ. Zika: the new arbovirus threat for Latin America. J Infect Dev Ctries 2015 Jul; 9(6):684-685.
Patiño-Barbosa AM, Medina I, Gil-Restrepo AF, **Rodriguez-Morales AJ**. Zika: another sexually transmitted infection? Sex Transm Infect 2015 Aug; 91(5):359.
Musso D, Roche C, Robin E, Nhan T, Teissier A, Cao-Lormeau V-M. Potential Sexual Transmission of Zika Virus. Emerg Infect Dis 2015;21:359-61.

Foy BD, Kobylinski KC, Foy JLC, Blitvich BJ, da Rosa AT, Haddow AD, et al. Probable non–vector-borne transmission of Zika virus, Colorado, USA. Emerg Infect Dis 2011;17:880.
*Musso D, Roche C, Nhan T-X, Robin E, Teissier A, Cao-Lormeau V-M. Detection of Zika virus in saliva. J Clin Virol 2015;68:53-5.
Gourinat A-C, O'Connor O, Calvez E, Goarant C, Dupont-Rouzeyrol M. Detection of Zika Virus in Urine. Emerg Infect Dis 2015;21:84.

Transmission of Zika virus



Sexually Transmitted Infections

BMJ Sexually Transmitted Infections

LETTER

Zika: another sexually transmitted infection?

Zika virus is an *Aedes*-borne virus (Flaviviridae family), identified in 1947 in monkey rhesus sera in Uganda and in 1954 in humans.[1 2] It was considered endemic in Africa and South West Asia. After 2007, outbreaks in Yap State, Micronesia and French Polynesia have been of high relevance.[2] In 2014–2015 it has also begun to be of importance in the Americas, with outbreaks in Eastern Islands, Chile and more recently in Brazil (17 confirmed cases up to 30 May 2015).

Recently, perinatal, transplacental transmission of Zika during childbirth and possibly by blood transfusion have also been reported.[3 4] During the last few years concern has been raised due to the suspicion that this virus has also been transmitted sexually.[5 6] It was reported in contaminated semen from a patient in Tahiti, French Polynesia at the time of an outbreak there (2013).[5] Semen contaminated with the virus was also found in a patient in Colorado, USA, who recently went to Senegal, presenting symptoms of infection.[6] Four days later, his wife, who had not left USA in years, began to present symptoms of the infection.[6] Both patients had hematospermia.[5 6]

Zika virus RNA has also been detected in serum, saliva and urine.[7 8] Although it is clear that more studies are necessary to confirm these findings, they support the hypothesis that Zika virus can be sexually transmitted.[7 8]

In the Americas, where *Aedes* infestation is high, transmitting dengue for decades, and since 2014 also chikungunya, primary transmission of Zika is highly expected but also sexual transmission is of concern. These considerations are of importance in regions of the world where Zika is endemic. Finally, vector-borne disease programmes are needed in collaboration with integrated strategies for sexual health and sexually transmitted infection programmes to achieve integrated control of this potentially new sexually transmitted infection.

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Contributors AJR-M initiated the manuscript; AMP-B prepared the first draft of the manuscript. All authors commented on and approved the final version of the manuscript.

Competing interests None declared.

Provenance and peer review Not commissioned; internally peer reviewed.

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4. Musso D, Nhan T, Robin E, *et al*. Potential for Zika virus transmission through blood transfusion demonstrated during an outbreak in French Polynesia, November 2013 to February 2014. *Euro Surveill* 2014;19:1–3.
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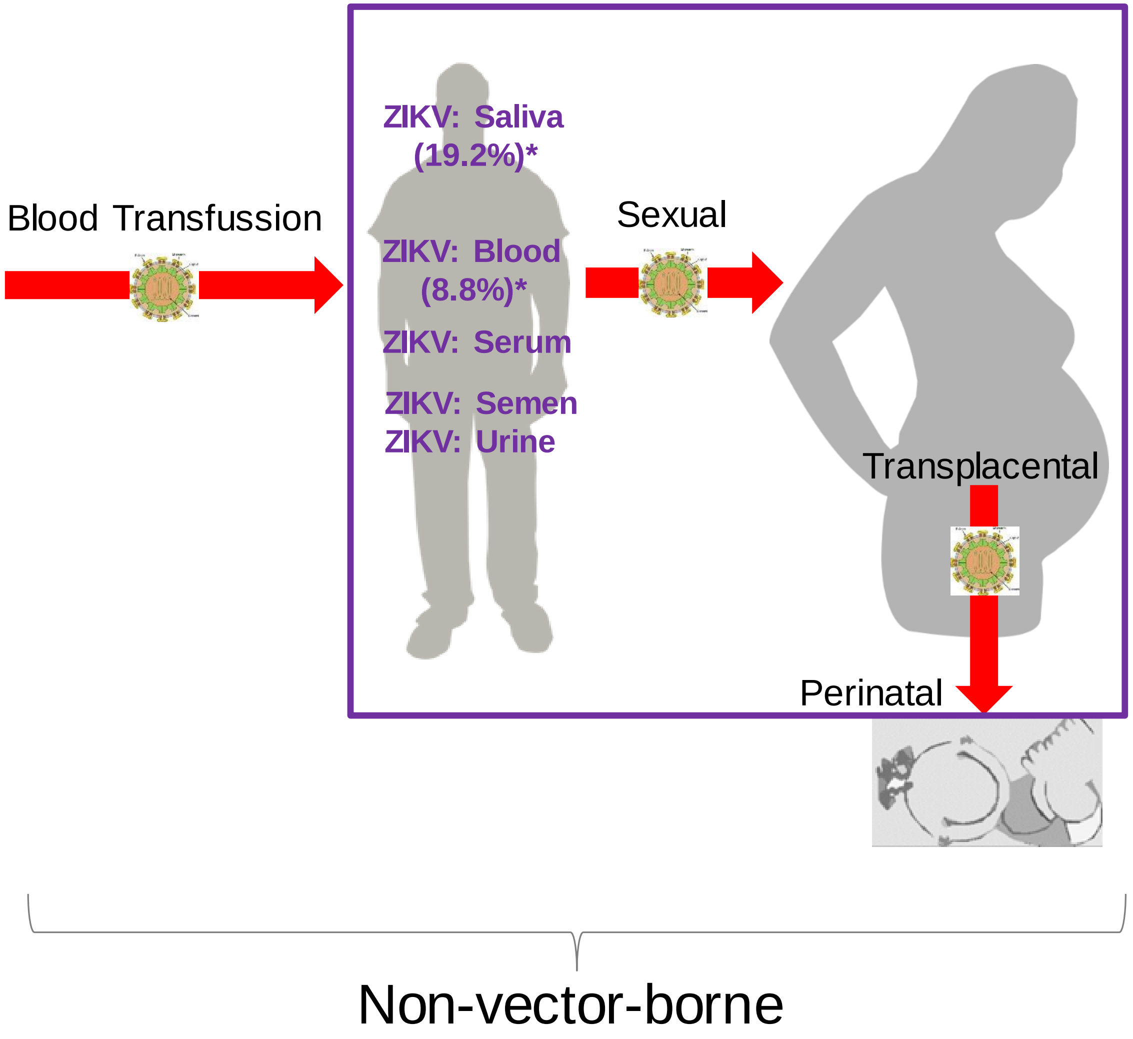

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Faye et al. Virology Journal 2013, 10:311
http://www.virologyj.com/content/10/1/311

VIROLOGY JOURNAL

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Quantitative real-time PCR detection of Zika virus and evaluation with field-caught Mosquitoes

Oumar Faye[1], Ousmane Faye[1], Diawo Diallo[2], Mawlouth Diallo[2], Manfred Weidmann[3] and Amadou Alpha Sall[1*]

Table 1 Zika strains used in this study

Reference	Hosts	Countries	Year of isolation
ArD 7117	*Aedes luteocephalus*	Senegal	1968
ArD 9957	*Aedes furcifer*	Senegal	1969
ArD30101	*Aedes luteocephalus*	Senegal	1979
ArD 30156	*Aedes furcifer*	Senegal	1979
AnD 30332	*Cercopithecus aethiops*	Senegal	1979
HD 78788	Humain	Senegal	1991
ArD 127707	*Aedes furcifer*	Senegal	1997
ArD 127710	*Aedes taylori*	Senegal	1997
ArD 127984	*Aedes furcifer*	Senegal	1997
ArD 127987	*Aedes luteocephalus*	Senegal	1997
ArD 127988	*Aedes furcifer*	Senegal	1997
ArD 127994	*Aedes taylori*	Senegal	1997
ArD 128000	*Aedes luteocephalus*	Senegal	1997
ArD 132912	*Aedes dalzieli*	Senegal	1998
ArD 132915	*Aedes dalzieli*	Senegal	1998
ArD 141170	*Aedes dalzieli*	Senegal	2000
ArD 142623	*Anopheles coustani*	Senegal	2000
ArD 149917	*Aedes dalzieli*	Senegal	2001

Faye et al. Virology Journal 2013, 10:311
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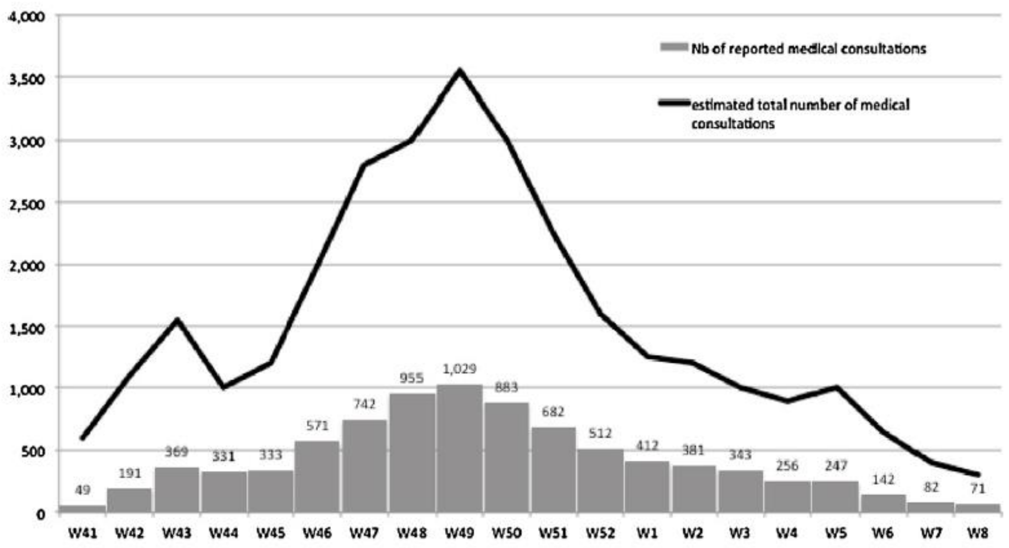
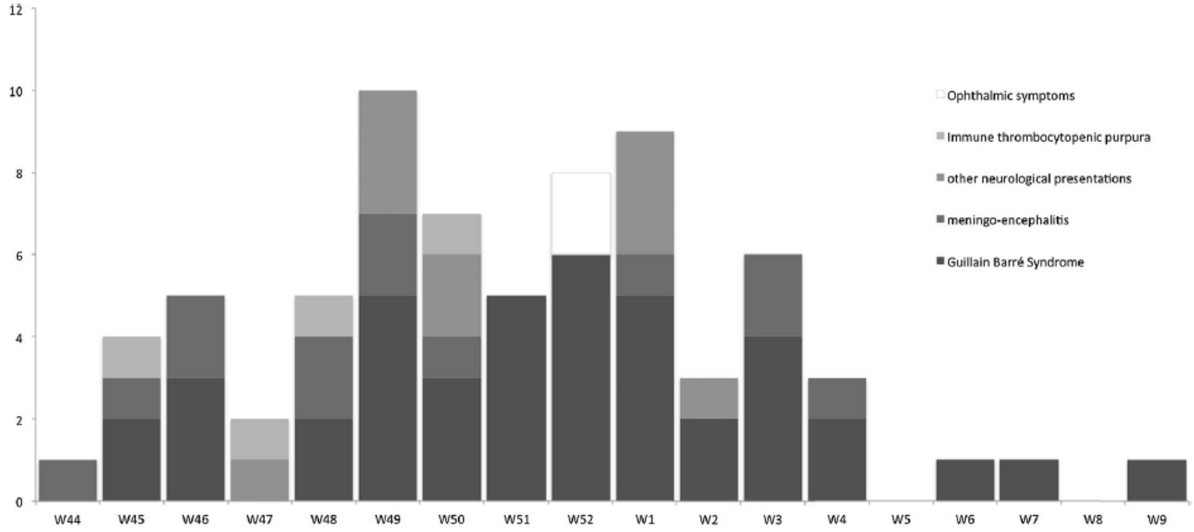
ArD 149917	*Aedes dalzieli*	Senegal	2001
ArD 149810	*Aedes dalzieli*	Senegal	2001
ArD 149938	*Aedes dalzieli*	Senegal	2001
ArD 157995	*Aedes dalzieli*	Senegal	2001
ArD 158084	*Aedes dalzieli*	Senegal	2001
ArD 165522	*Aedes vittatus*	Senegal	2002
ArD 165531	*Aedes dalzieli*	Senegal	2002
ArA 1465	*Aedes africanus*	Côte d'Ivoire	1980
ArA 27101	*Aedes opok*	Côte d'Ivoire	1990
ArA 27290	*Aedes opok*	Côte d'Ivoire	1990
ArA 27106	*Aedes luteocephalus*	Côte d'Ivoire	1990
ArA 27096	*Aedes africanus*	Côte d'Ivoire	1990
ArA 27407	*Aedes africanus*	Côte d'Ivoire	1990
ArA 27443	*Muci graham*	Côte d'Ivoire	1990
ArA 506/96	*Aedes vittatus*	Côte d'Ivoire	1996
ArA 975-99	*Aedes aegypti*	Côte d'Ivoire	1999
ArA 982-99	*Aedes vittatus*	Côte d'Ivoire	1999
ArA 986-99	*Aedes furcifer*	Côte d'Ivoire	1999
ArA 2718	*Aedes luteocephalus*	Burkina Faso	1981
ArB 1362	*Aedes africanus*	Republic Center Africa	1968
P6-740	*Aedes aegypti*	Malaysia	1966

Vigilancia en el Síndrome de Guillain-Barré



Source: Bulletin de Veille Sanitaire, bureau de veille sanitaire de Polynésie française, week 8, 2014

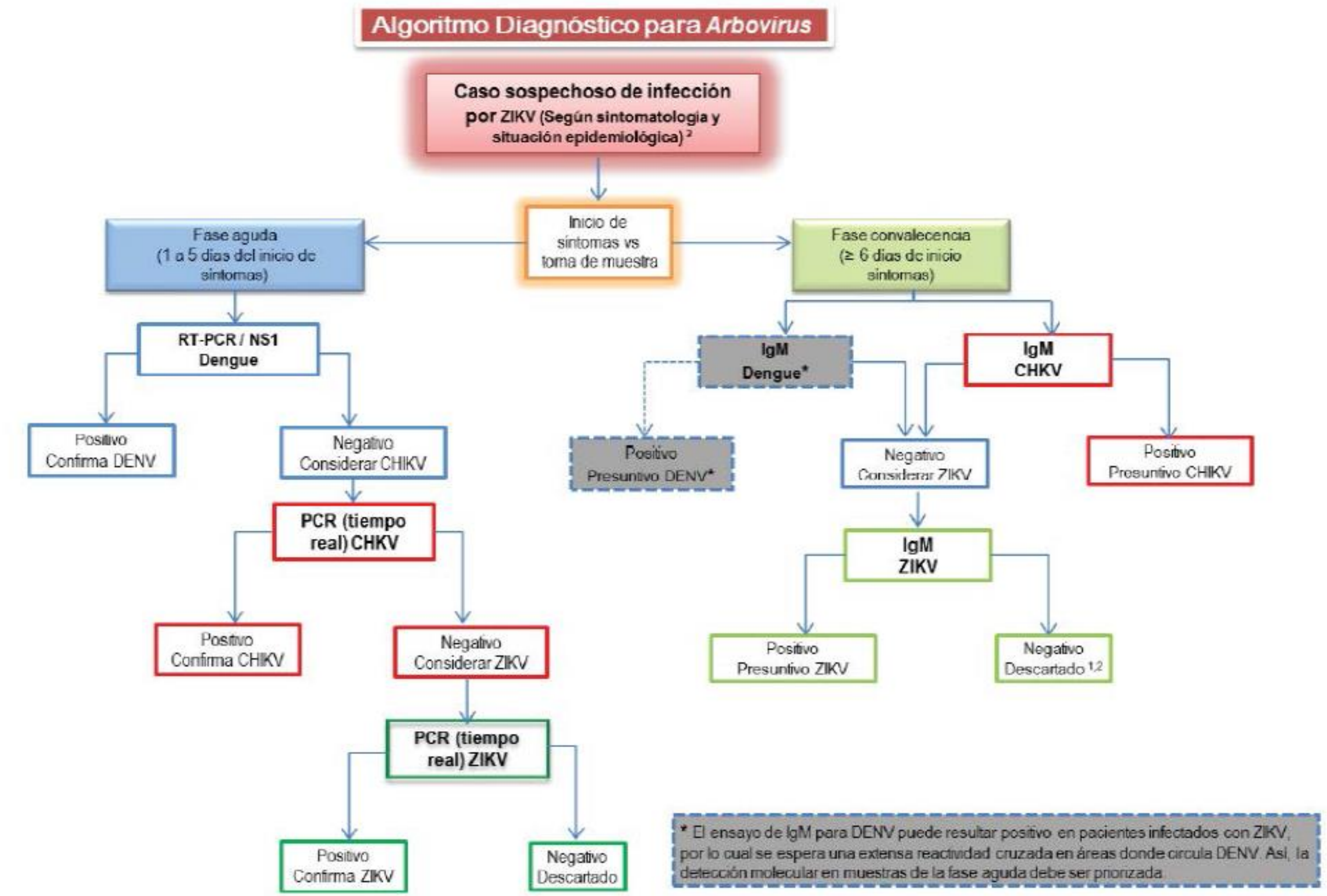
Fig. 1. Evolution of the weekly number of suspected Zika cases in French Polynesia, October 30, 2013 to February 14, 2014 (epidemic still ongoing).
Évolution du nombre hebdomadaire de cas suspects de Zika en Polynésie française, du 30 octobre 2013 au 14 février 2014 (épidémie toujours en cours).



*** Guillain-Barré Syndrome (GBS), immune thrombocytopenic purpura (ITP), meningo-encephalitis (ME)**
Source: Bulletin de Veille Sanitaire, bureau de veille sanitaire, week 8- 2014

Fig. 2. Number of cases with neurological complications by hospital admission day in French Polynesia, 2013–2014 ($n = 73$).
Nombre de cas avec complications neurologiques/auto-immunes par jour d'admission au centre hospitalier de Polynésie française, 2013–2014 ($n = 73$).

Distribución de Zika hasta Junio 2015



[1] Según el perfil epidemiológico del país y teniendo en cuenta las características clínicas de la infección, se debe considerar la inclusión de otros Arbovirus como parte del algoritmo diferencial para virus Zika.

[2] Éstas recomendaciones son provisionales y están sujetas a modificaciones posteriores en función de los avances en el conocimiento sobre la enfermedad y el agente etiológico.

Figura 2 Algoritmo para detección de virus Zika (ZIKV) [12].

Rodriguez-Morales AJ. No era suficiente con dengue y chikungunya: llegó también Zika. Archivos de Medicina 2015 Epub Ahead Jun 5; available online at: http://archivosdemedicina.com/medicina-de-familia/no-era-suficiente-con-denguey-chikungunya-lleg-tambinzika.pdf

Faye et al. Virology Journal 2013, 10:311
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VIROLOGY JOURNAL

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Quantitative real-time PCR detection of Zika virus and evaluation with field-caught Mosquitoes

Oumar Faye[1], Ousmane Faye[1], Diawo Diallo[2], Mawlouth Diallo[2], Manfred Weidmann[3] and Amadou Alpha Sall[1*]

Table 3 Nucleotide sequences of primers and probe used in the qRT-PCR assay

	Sequence 5′ – 3′	Nucleotide position
Probe	FAM-CTYAGACCAGCTGAAR-BBQ	9304–9320
Forward primer	AARTACACATACCARAACAAAGTG GT	9271–9297
Reverse primer	TCCRCTCCCYCTYTGGTCTTG	9352–9373

FAM, 6-carboxyfluorescein; *BBQ*, Black Berry Quencher. Y = T or C, R = A or G.

Table 5 Sensitivity of the qRT-PCR assay for Zika virus detection

PFU/ml	Ct	
	serum	L15 medium
50 000	25.60 ± 1.138	25.70 ± 1.138
5000	28.88 ± 1.443	28.58 ± 1.443
500	32.23 ± 1.604	31.92 ± 1.604
50	36.24 ± 1.61	35.36 ± 1.61
5	ND	ND
0.5	ND	ND

Posibles coinfecciones DENV-CHIKV-ZIKV

Co-infection with Zika and Dengue Viruses in 2 Patients, New Caledonia, 2014

Myrielle Dupont-Rouzeyrol, Olivia O'Connor, Elodie Calvez, Maguy Daures, Michèle John, Jean-Paul Grangeon, Ann-Claire Gourinat

Authors affiliations: Institut Pasteur, Noumea, New Caledonia (M. Dupont-Rouzeyrol, O. O'Connor, E. Calvez, A.-C. Gourinat); Direction des Affaires Sanitaires et Sociales, Noumea (M. Daurès, M. John, J.-P. Grangeon)

DOI: http://dx.doi.org/10.3201/eid2102.141553

Chikungunya, Dengue, and Malaria Co-Infection after Travel to Nigeria, India

C.G. Raut, N.M. Rao, D.P. Sinha, H. Hanumaiah, M.J. Manjunatha

Author affiliation: National Institute of Virology–Bangalore Unit, Bengaluru, India

DOI: http://dx.doi.org/10.3201/eid2105.141804

Diagnósticos diferenciales

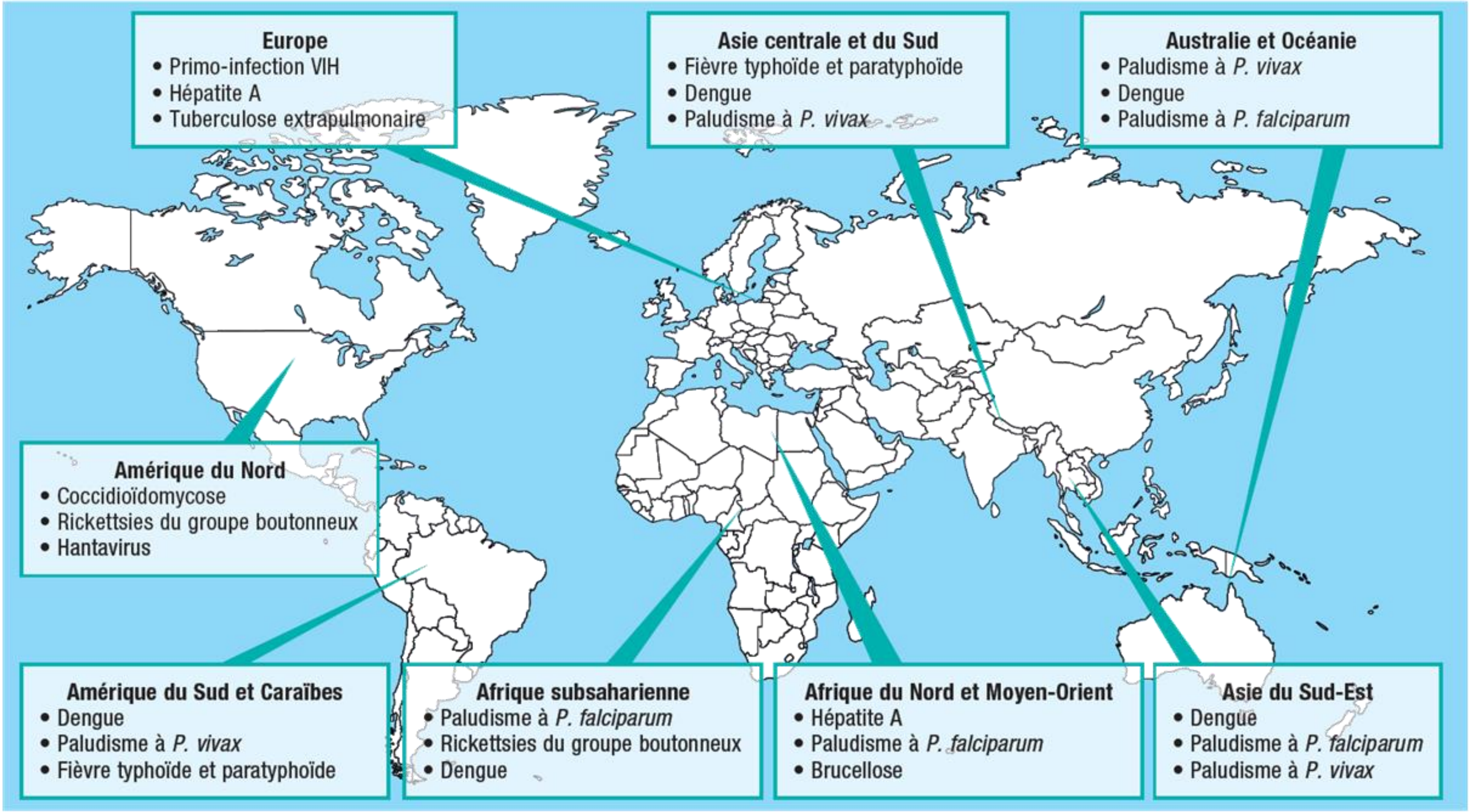
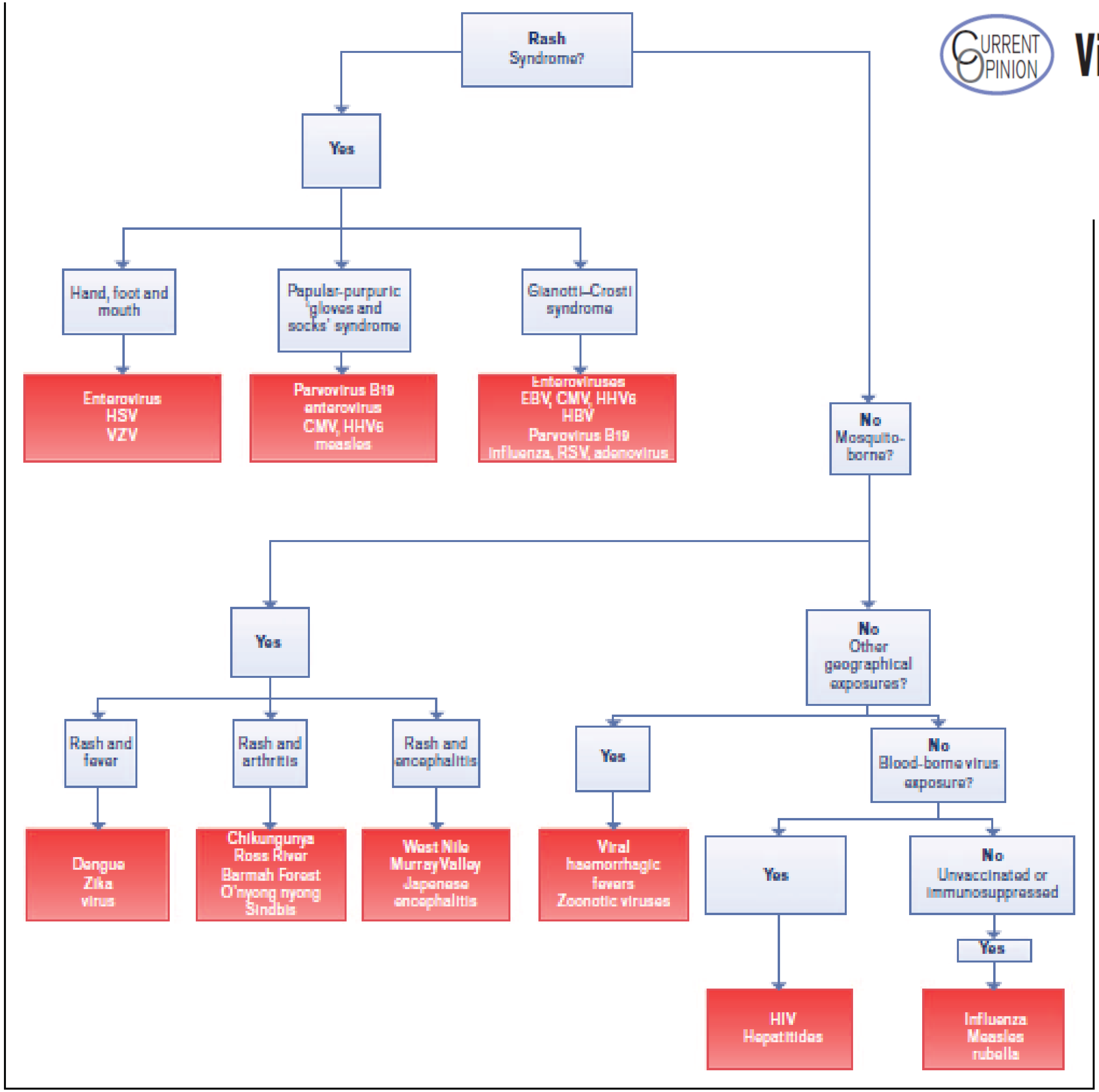


FIGURE 1 **Top 3 des causes de syndrome fébrile les plus fréquentes au retour, par région du monde sur 42 173 patients du réseau GeoSentinel entre 2007 et 2011.**
VIH : virus de l'immunodéficience humaine. D'après la réf. 7.

Carole Eldin,
Philippe Gautret,
Philippe Parola

LA REVUE DU PRATICIEN VOL. 65
Avril 2015

FIGURE 1. Flow chart of a practical clinical approach used to determine possible viral aetiologies of exanthems.



CURRENT OPINION

Viral exanthems

Caitlin L. Keighley[a,b], Rebecca B. Saunderson[a], Jen Kok[a,c,d], and Dominic E. Dwyer[a,c,d]

JIDC | THE JOURNAL OF INFECTION IN DEVELOPING COUNTRIES

Letter to the Editor

Healthcare students and workers' knowledge about epidemiology and symptoms of chikungunya fever in two cities of Colombia

Juan Esteban Bedoya-Arias[1], David Ricardo Murillo-García[1], Erika Bolaños-Muñoz[1], Natalia Hurtado-Hurtado[1], Valeria Ramírez-Jaramillo[1], Santiago Granados-Álvarez[1], Alfonso J Rodríguez-Morales[1,2]

[1] *Public Health and Infection Research Incubator and Group, Faculty of Health Sciences, Universidad Tecnologica de Pereira, Pereira, Risaralda, Colombia*
[2] *Committee on Zoonoses and Haemorrhagic Fevers, Asociación Colombiana de Infectología, Bogotá, DC, Colombia*

Bedoya-Arias JE, Murillo-García DR, Bolaños-Muñoz E, Hurtado-Hurtado N, Ramírez-Jaramillo V, Granados-Álvarez S, Rodríguez-Morales AJ. Healthcare students and workers' knowledge about epidemiology and symptoms of chikungunya fever in two cities of Colombia. J Infect Dev Ctries 2015 Mar; 9(3):330-332

Table 1. Results of questions about knowledge about transmission, epidemiology and symptoms of chikungunya fever in two cities of Colombia

	Cities											
	Pereira					Cartagena					Pereira versus Cartagena	
	Pre		Post			Pre		Post			Pre	Post
Questions	n	%	n	%	p	n	%	n	%	p	p	p
1. Chikungunya fever is a disease transmitted by (answer: mosquito bite)												
Correct	96	97.0	85	97.7	0.8835	99	92.5	144	98.6	**0.0327**	0.2678	0.9946
Incorrect	3	3.0	2	2.3		8	7.5	2	1.4			
Total	99	100.0	87	100.0		107	100.0	146	100.0			
2. Regard symptoms, which proportion of patients present them? (answer: 72-95%)												
Correct	39	39.4	71	81.6	**<0.0001**	34	31.8	95	65.1	**<0.0001**	0.3191	**0.0108**
Incorrect	60	60.6	16	18.4		73	68.2	51	34.9			
Total	99	100.0	87	100.0		107	100.0	146	100.0			
3. Usual incubation period is (answer: 3-7 days)												
Correct	46	46.5	76	87.4	**<0.0001**	57	53.3	112	76.7	**0.0002**	0.4028	0.0689
Incorrect	53	53.5	11	12.6		50	46.7	34	23.3			
Total	99	100.0	87	100.0		107	100.0	146	100.0			
4. More frequent symptoms are (answer: polyarthralgia and fever)												
Correct	91	91.9	86	98.9	0.0635	93	86.9	144	98.6	**0.0004**	0.3493	0.6482
Incorrect	8	8.1	1	1.1		14	13.1	2	1.4			
Total	99	100.0	87	100.0		107	100.0	146	100.0			
5. In order to prevent disease spread in communities, is necessary to (answer: to reduce mosquito bite exposure)												
Correct	91	91.9	81	93.1	0.9785	90	84.1	135	92.5	0.0538	0.1334	0.9368
Incorrect	8	8.1	6	6.9		17	15.9	11	7.5			
Total	99	100.0	87	100.0		107	100.0	146	100.0			

Bedoya-Arias JE, Murillo-García DR, Bolaños-Muñoz E, Hurtado-Hurtado N, Ramírez-Jaramillo V, Granados-Álvarez S, Rodríguez-Morales AJ. Healthcare students and workers' knowledge about epidemiology and symptoms of chikungunya fever in two cities of Colombia. J Infect Dev Ctries 2015 Mar; 9(3):330-332

CARTA AL EDITOR / LETTER

Rev Med Hered. 2015; 26:60-61.

Algunas consideraciones sobre la Fiebre de Chikungunya: Experiencia en Colombia

Some considerations about Chikungunya fever: experience in Colombia

Alfonso J. Rodriguez-Morales[1,2,a]; Wilmer E. Villamil-Gómez[2,3,b]

de Salud y sus Institutos Nacionales de Salud. Estos indicadores debe ser socializados con los diferentes actores involucrados en la política, haciendo énfasis que a la luz del conocimiento actual se deben fortalecer los programas así como la investigación, tendientes a hacer seguimiento de los pacientes mínimo por 5 años y contar con un grupo interdisciplinario de especialidades, epidemiólogos, tropicalistas, reumatólogos, ginecólogos, pediatras, infectólogos, fisioterapeutas, inmunólogos, entre otros. Que se hagan verdaderos ajustes en las guías de manejos, y trabajar en conjunto con las comunidades, intervenirlas y romper los paradigmas en ellas, tendiendo a un mejor conocimiento de la enfermedad y así de esta manera poder impactar una verdadera política orientada a disminuir la morbilidad y la letalidad en nuestro países.

Rodriguez-Morales AJ, Villamil-Gómez WE. Algunas consideraciones sobre la Fiebre de Chikungunya: experiencia en Colombia. Revista Médica Herediana 2015; 26(2):60-62.

Journal of Infection and Public Health

Volume 8, Issue 4, July–August 2015, Pages 386–388

Table 1 Top 20 countries with scientific production on chikungunya research at SCI, Scopus and/or Medline (up to December 1, 2014).

Rank	Country	Number of articles	Database with highest number of articles
1	United States	430	SCI
2	India	425	Scopus
3	France	388	SCI
4	Réunion Island	244	Scopus
5	Italy	137	Scopus
6	Singapore	92	SCI
7	Australia	82	SCI
8	United Kingdom	82	SCI
9	Germany	79	SCI
10	Thailand	74	Scopus
11	Malaysia	61	Scopus
12	Congo	57	Scopus
13	Netherlands	41	SCI
14	Spain	39	SCI
15	Indonesia	39	Scopus
16	Sri Lanka	35	Scopus
17	Mauritius	34	Scopus
18	Sweden	33	SCI
19	Japan	32	SCI
20	Comoros	32	Scopus

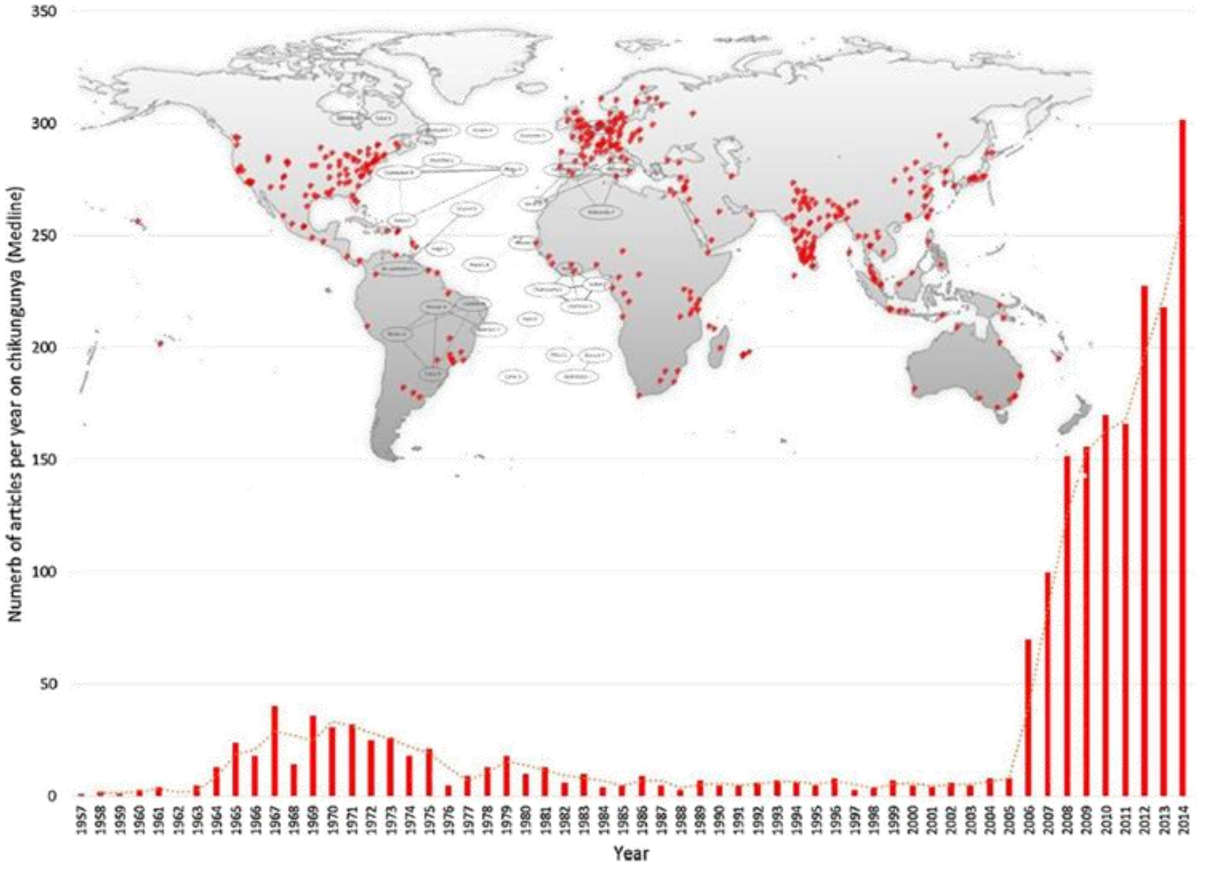


Figure 1 Major international research cooperation networks and trends in time of publication on chikungunya, 1957–2014
Source: from GoPubMed®.

Vera-Polania F, Muñoz-Urbano M, Bañol-Giraldo AM, Jimenez-Rincón M, Granados-Álvarez S, Rodriguez-Morales AJ. Bibliometric assessment of scientific production of literature on chikungunya. J Infect Public Health 2015 Jul-Ago; 8(4):386-388. Available online at: http://www.sciencedirect.com/science/article/pii/S1876034115000672

Travel Medicine and Infectious Disease (2015) xx, 1—3

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Available online at www.sciencedirect.com

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journal homepage: www.elsevierhealth.com/journals/tmid

TRAVEL MEDICINE and INFECTIOUS DISEASE

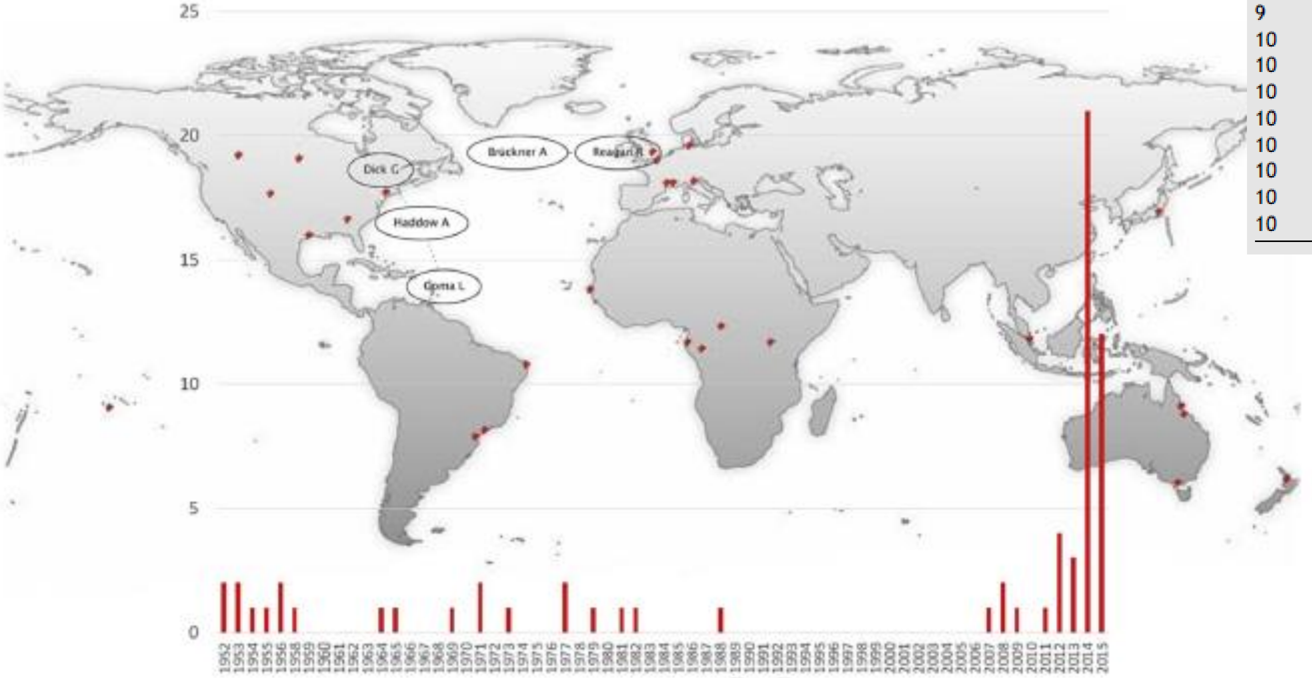

Figure 1 Major international research cooperation networks on Zika (from GoPubMed®), including also trends in time for scientific production (1952—2015).

Table 1 Top twenty countries with scientific production on Zika research at SCI, Scopus and/or Medline (up to June 1, 2015).

Rank	Country	Number of articles	Database with highest number of articles
1	Uganda	34	Scopus
2	United States	24	SCI
3	French Polynesia	17	Scopus
3	Germany	17	SCI
4	France	13	SCI
5	Nigeria	10	Scopus
6	Senegal	9	SCI
7	Malaysia	6	Scopus
7	New Zealand	6	Scopus
8	Australia	5	Scopus
8	Indonesia	5	Scopus
8	South Africa	5	Scopus
8	New Caledonia	5	SCI
9	Congo	4	Scopus
9	Cote d'Ivoire	4	Scopus
9	Thailand	4	Scopus
9	Czech Republic	4	SCI
10	Cameroon	3	Scopus
10	Canada	3	Scopus
10	Gabon	3	Scopus
10	India	3	Scopus
10	Singapore	3	Scopus
10	Cambodia	3	Medline
10	Switzerland	3	SCI
10	Federated States of Micronesia	3	SCI

Martinez-Pulgarin DF, Acevedo-Mendoza WF, Cardona-Ospina JA, Rodríguez-Morales AJ, Paniz-Mondolfi AE. A bibliometric analysis of global Zika research. Travel Medicine & Infectious Disease 2015 Epub Ahead Jul 29; available online at: http://www.sciencedirect.com/science/article/pii/S1477893915001209

MAYV was originally isolated in Trinidad in 1954 from the serum of febrile patients

Anderson CR, Downs WG, Wattley GH, Ahin NH, Reese AA. Mayaro virus: a new human disease agent. II Isolation from blood of patients in Trinidad. Am J Trop Med Hyg 1957; 6:1012-1016.

de Figueiredo ML, Figueiredo LT. Emerging alphaviruses in the Americas: Chikungunya and Mayaro. Rev Soc Bras Med Trop. 2014 Nov-Dec;47(6):677-83.

Biomédica 2012;32:286-302

REVISIÓN DE TEMA

Virus Mayaro: un arbovirus reemergente en Venezuela y Latinoamérica

Manuel Muñoz, Juan Carlos Navarro

Instituto de Zoología y Ecología Tropical, Laboratorio Biología de Vectores y Parásitos, Centro de Ecología y Evolución, Universidad Central de Venezuela, Caracas, Venezuela

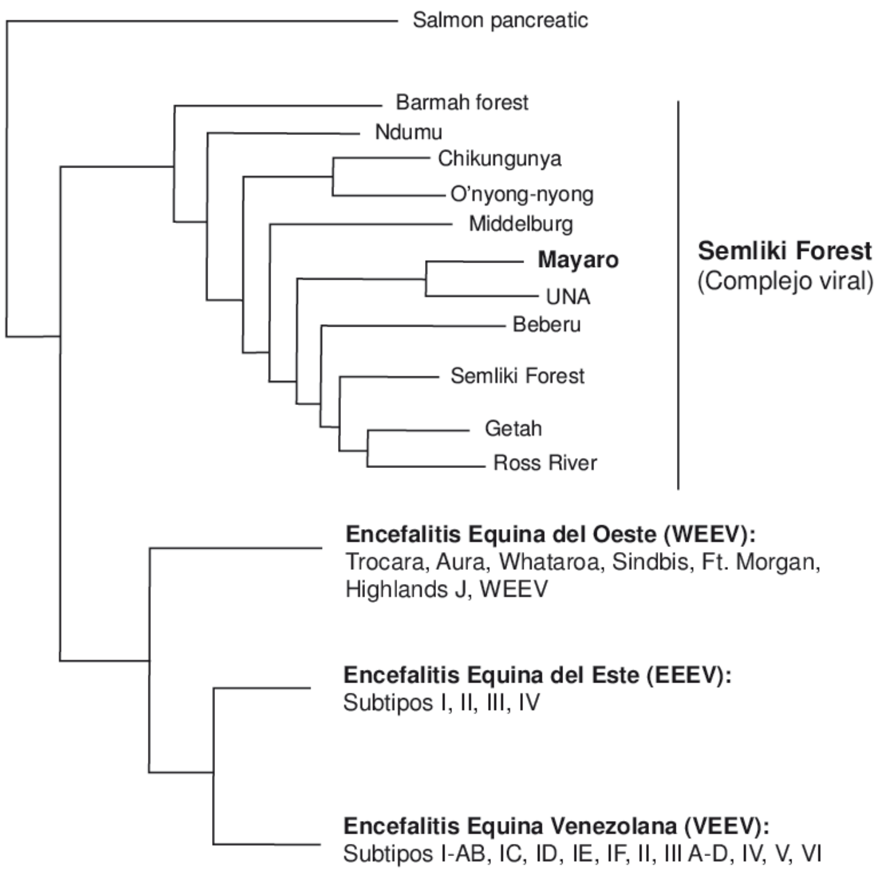

Figura 2. Filogenia de alfavirus. Se presenta un árbol esquemático basado en Weaver, *et al.* (61). Se observa el "clado" (*clade*) del complejo del virus Semliki Forest y, en él, a los grupos de virus hermanos, Mayaro y UNA (en negrilla). Los "clados" (*clades*) derivados o internos están asociados a los complejos de encefalitis equinas del oeste, del este y venezolana.

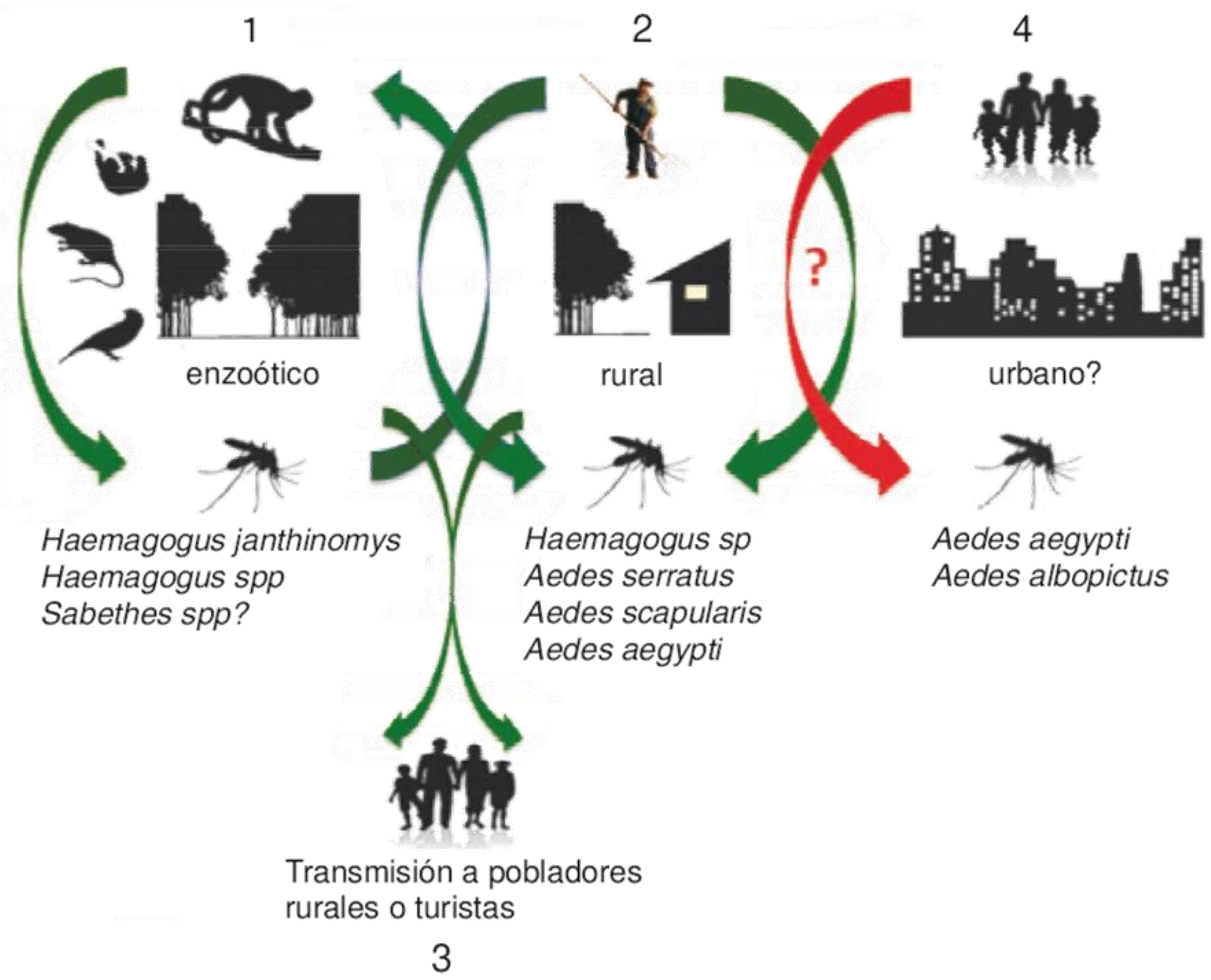

Figura 3. Ciclo de transmisión del virus Mayaro basado en los hallazgos en vectores y vertebrados. En verde, se muestran los ciclos (1, 2 y 3) más probables en zonas enzoóticas y rurales. En rojo (4), se muestra un ciclo hipotético urbano basado en paralelismo con los cambios ocurridos en un virus cercano filogenéticamente (Chikungunya) y en los posibles cambios eco-epidemiológicos con la presencia de vectores potenciales como *Aedes aegypti* y *Ae. albopictus*.

Biomédica 2012;32:286-302

Cuadro 2. Vertebrados que han sido reportados con aislamiento, altos niveles de seroprevalencia o infección efectiva por alimentación de vectores por el virus Mayaro (10-12,27,30,33,39-41,72)

Vertebrados silvestres potencialmente involucrados en la trasmisión del virus Mayaro		
Mamíferos del orden Primata: Mono (*Callithrix argentata*)	**Mamíferos del orden Primata:** *Callithrix* sp. *Alouatta seniculus,* *Pithecia pithecia,* *Saimiri sciureus,* *Saguinus midas*	**Hallazgo en laboratorio** *Callithrix argentata,* *Callithrix humeralifer,* *Cebus* sp., *Cynomolgus* sp., *Rhesus* sp.
Reptiles Lagarto (*Tropidurus hispidus*)	**Orden Xenarthra:** *Choloepus didactylus,* *Dasypus novemcinctus,* *Tamandua tetradactyla.* *Coendu prehensilis,* *Coendu melanurus*	
Aves Oropéndola americana (*Icterus spurius*)	**Orden Marsupialia** *Philander opossum,* *Caluromyis philander*	
	Orden Rodentia: *Agutíes* sp., *Oryzomys* sp., *Proechimys* sp., *Nectomys,* *Dasyprocta leporina*	
	Aves *Collumbigallina* sp.	

Cuadro 3. Localidades donde se han reportado aislamientos, alta seroprevalencia y brotes del virus Mayaro (8,11,12,22,33,39,52, 71,72,75,76,78-80,82-84)

Localidades y comunidades reportadas como afectadas por virus Mayaro		
Aislamientos del virus en humanos (Powers, *et al.*, 2006 y Azevedo, *et al.*, 2008)	**Localidades donde se ha reportado**	**Brotes o casos reportados altos niveles de seroprevalencia**
Mayaro,Trinidad y Tobago (1954) Uruma, Bolivia (1955) Pará, Brasil (1955, 1978, 1981,1984, 1988, 1991)	Zonas rurales de Goias, Brasil Región del Amazonas, Brasil Mato Grosso, Brasil Zona rural de Rio Branco, Brasil	(1955) Zona Selvática de Bolivia (1955) Belterra, Brasil (1977-1978) Belterra, Brasil (1978-1981) Conceição do Araguaia, Brasil (1981-1991) Benevides, Brasil
Amapa, Brasil (1970) Surinam (1984) Goias, Brasil (1991)	Río Mazaruni, Guyana Sabana Rupunumi, Guayana	Brasil (1987) Itaruma, Brasil (1991) Tocantins, Brasil
Tocantins, Brasil (1991) Huanuco, Perú (1995, 1999)	Oyapock, Guayana Francesa Maroni, Guayana Francesa	Loreto, Perú
San Martín, Perú (1995) Ayacucho, Perú (1995) Tumbes, Perú (1995) Guayana Francesa (1996)	Zona selvática de Surinam,	(2000), Barlovento, Miranda. Venezuela (2001) Tamaulipas y Veracruz sur, México
Loreto, Perú (1996, 1997, 2000, 2002, 2003)	Sierra de Perijá, Venezuela	(2 casos) (2008) Pau D'Arco, Brasil
Ucayali, Perú (1998) Cuzco, Perú (1998, 2003) Iquitos, Perú (2002) Bolivia (2002) Pau D'Arco, Brasil (2008)	Zona selvática y rural de Bolivia, Colombia, Costa Rica, Perú, Panamá, Guatemala Sureste de Trinidad y Tobago	(2010) Ospino, Portuguesa, Venezuela (2011) Manaos, Brasil **Casos importados de la Panamazonia** 2 casos en Estados Unidos (1996, 1997) 3 en São Paulo (2000) 1 en Francia (2010) 2 en Holanda (2010)

Table 1: Occurrence and geographic distribution of arthritogenic alphaviruses.

Virus	First description	Geographic distribution	Occurrence	References
RRV	1928, in New South Wales, Australia	Australia, Papua New Guinea, Solomon Islands, and the South Pacific Islands	Endemic in Australia and Papua New Guinea, annual epidemics in Australia (~4,000 cases per year). Major epidemics: ~60,000 cases in 1979 in Pacific Islands ~8,000 cases in 1996 in Australia	[2, 4, 23]
SINV	1952, in Sindbis village, near Cairo, Egypt	Europe, Asia, Africa, and Oceania.	Endemic in North Europe; Outbreaks in Finland, Norway, Sweden and Russia (late summer or early autumn)	[2, 4, 21]
CHIKV	1952, in Newala, Tanzania	Africa and Asia (documented cases in Europe, USA, and Oceania)	Sporadic epidemics in Africa and Asia, imported cases reported in Europe and USA. Major epidemics: ~300,000 cases in 2006-2006 in La Réunion (French Indian Ocean territory) ~1.4–6.5 million cases in 2006-2007 in India	[4, 59, 60]
MAYV	1954, in Trinidad and Tobago	Northern South America	Endemic in tropical regions of South America Sporadic outbreaks Pan-Amazonia forest regions	[4, 8, 19]
ONNV	1959, in northern Uganda	Africa	Rare epidemics in Africa (disappeared for 35 years from 1961 to 1996) ~2 million cases in 1959–1961 in East Africa	[2, 4]
BFV	1974, in the Barmah Forest, Australia	Australia	Annual epidemics in Australia (~1,000 cases per year)	[4, 25]

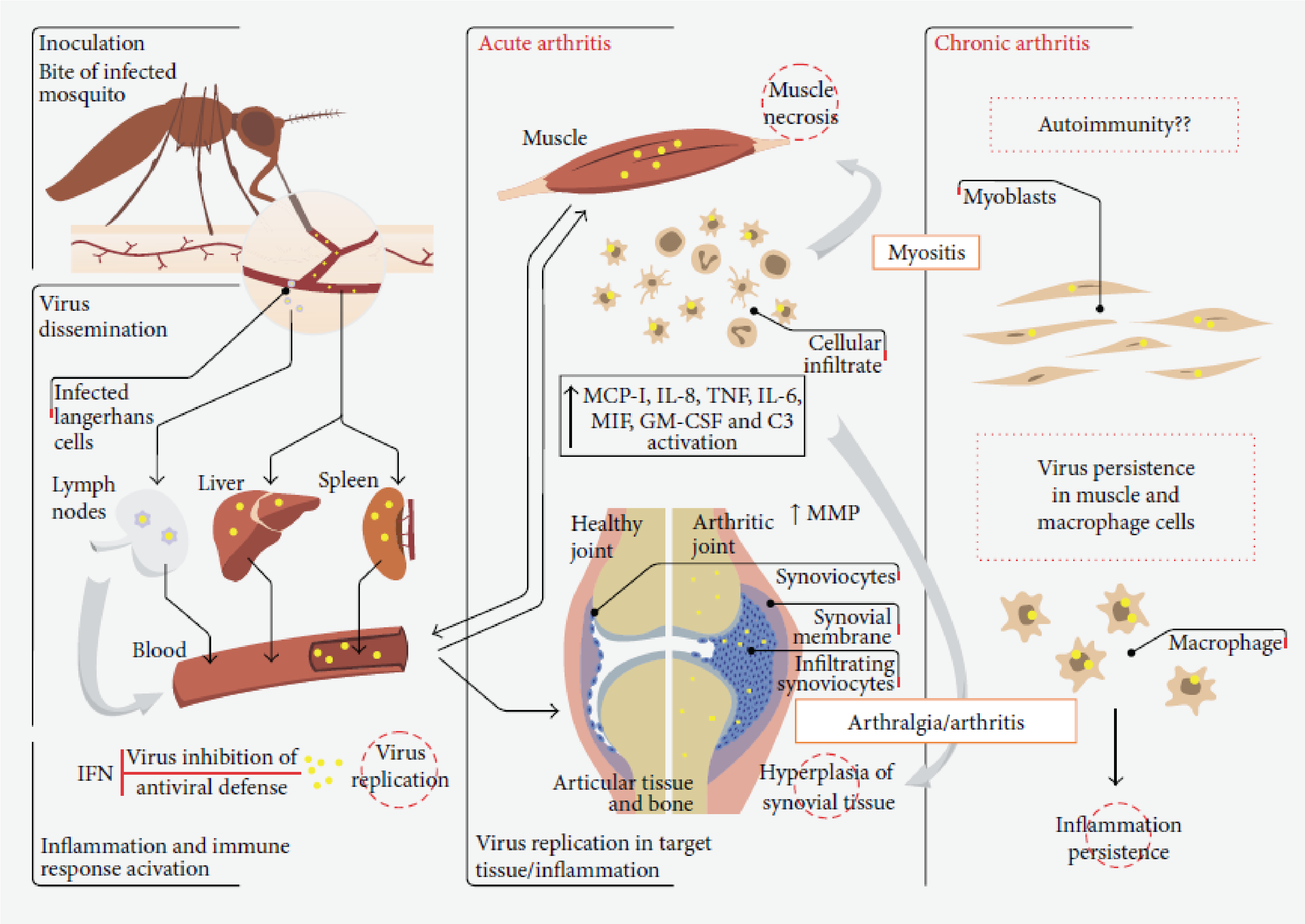

Figure 1: *Pathogenesis of alphavirus-induced arthritis/myositis*. After inoculation through the bite of an infected mosquito in the skin, alphaviruses disseminate in the host organism through the bloodstream. Liver, spleen, muscle, and lymph nodes are sites of primary replication, allowing an efficient virus spread. Langerhans cells facilitate virus delivery to the lymph nodes. Interferon (IFN) program is early activated, but the alphaviruses developed several mechanisms to inhibit this antiviral response. The acute phase of the disease involves virus replication followed by an inflammatory response in the target tissues, which is characterized by an extensive infiltration of lymphocytes, NK cells, neutrophils, and macrophages (the main component). The increase in the levels of several proinflammatory cytokines and chemokines in the site of infection and in the plasma is associated with myositis and arthralgia/arthritis. Also, the secretion of metalloproteinases (MMP) in the joint tissue may contribute to articular damage. Persistence of the symptoms may be related to the persistence of the virus or its products in the target cells with the subsequent accumulation of inflammatory mediators such as IL-6 and GM-CSF. A question that remains open is whether an autoimmune process is associated to the persistence of the inflammatory response, as observed for rheumatoid arthritis.

Symptoms

- The disease caused by Mayaro lasts for 3-5 days and includes
  - Fever,
  - headache,
  - myalgia,
  - rash and
  - arthralgia of large joints and,
  - occasionally, arthritis.

de Figueiredo ML, Figueiredo LT. Emerging alphaviruses in the Americas: Chikungunya and Mayaro. Rev Soc Bras Med Trop. 2014 Nov-Dec;47(6):677-83.

Acta Tropica 147 (2015) 12–16

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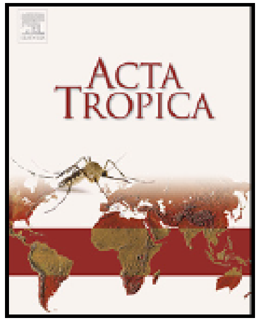
journal homepage: www.elsevier.com/locate/actatropica



Detection of Mayaro virus infections during a dengue outbreak in Mato Grosso, Brazil

Carla Julia da Silva Pessoa Vieira[a], David José Ferreira da Silva[a], Eriana Serpa Barreto[a], Carlos Eduardo Hassegawa Siqueira[b], Tatiana Elias Colombo[c], Katia Ozanic[c], Diane Johnson Schmidt[d], Betânia Paiva Drumond[e], Adriano Mondini[f], Maurício Lacerda Nogueira[c], Roberta Vieira de Morais Bronzoni[a,*]

[a] Instituto de Ciências da Saúde, Universidade Federal de Mato Grosso, Sinop, MT, Brazil
[b] Laboratório Municipal de Análises Clínicas, Sinop, MT, Brazil
[c] Faculdade de Medicina de São José do Rio Preto, São José do Rio Preto, SP, Brazil
[d] Tufts University, North Grafton, MA, USA
[e] Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brazil
[f] Universidade Estadual Paulista, Araraquara, SP, Brazil

Acta Tropica 147 (2015) 12–16

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Detection of Mayaro virus infections during a dengue outbreak in Mato Grosso, Brazil

CrossMark

Table 1
Clinical and laboratorial findings from Mayaro fever positive patients.

No	Gender	Age (years)	Symptoms							Leukocytes count (/mm^3)	Platelets count (/mm^3)
			Fever	Headache	Ocular pain	Myalgia	Arthralgia	Abdominal pain	Vomiting		
1	Female	14	X	X	X	X	X		X	7460	266,000
2	Female	21	X	X	X	X	X		X	4020	111,000
3	Male	48	X	X		X	X		X	2480	173,000
4	Female	19	X	X	X	X		X	X	12,460	148,000
5	Male	62	X	X	X	X	X	X	X	12,780	147,000
6	Male	24	X	X		X	X	X	X	18,300	139,000

Table 3. Prevalence of presenting symptoms and signs in 22 patients with Mayaro virus disease in Peru.

Symptom or sign	Prevalence (% of patients)
Fever	100
Headache	100
Myalgia	77.3
Eye pain	63.6
Chills	59.1
Arthralgia	50.0
Rash	31.9
Nausea	18.2
Cough	18.2
Sore throat	18.2
Vomiting	13.6
Abdominal pain	13.6
Nasal congestion	9.0
Diarrhea	9.0
Photophobia	4.5
Bleeding gums	4.5

Tesh RB. Clin Infect Dis. 1999 Jan;28(1):67-73.

Mayaro Virus Infection, Amazon Basin Region, Peru, 2010–2013

Eric S. Halsey, Crystyan Siles, Carolina Guevara, Stalin Vilcarromero, Erik J. Jhonston, Cesar Ramal, Patricia V. Aguilar, and Julia S. Ampuero

During 2010–2013, we recruited 16 persons with confirmed Mayaro virus infection in the Peruvian Amazon to prospectively follow clinical symptoms and serologic response over a 12-month period. Mayaro virus infection caused long-term arthralgia in more than half, similar to reports of other arthritogenic alphaviruses.

Figure 1. Map of Peru. Sites for study of Mayaro virus–infected patients are marked with a dot.

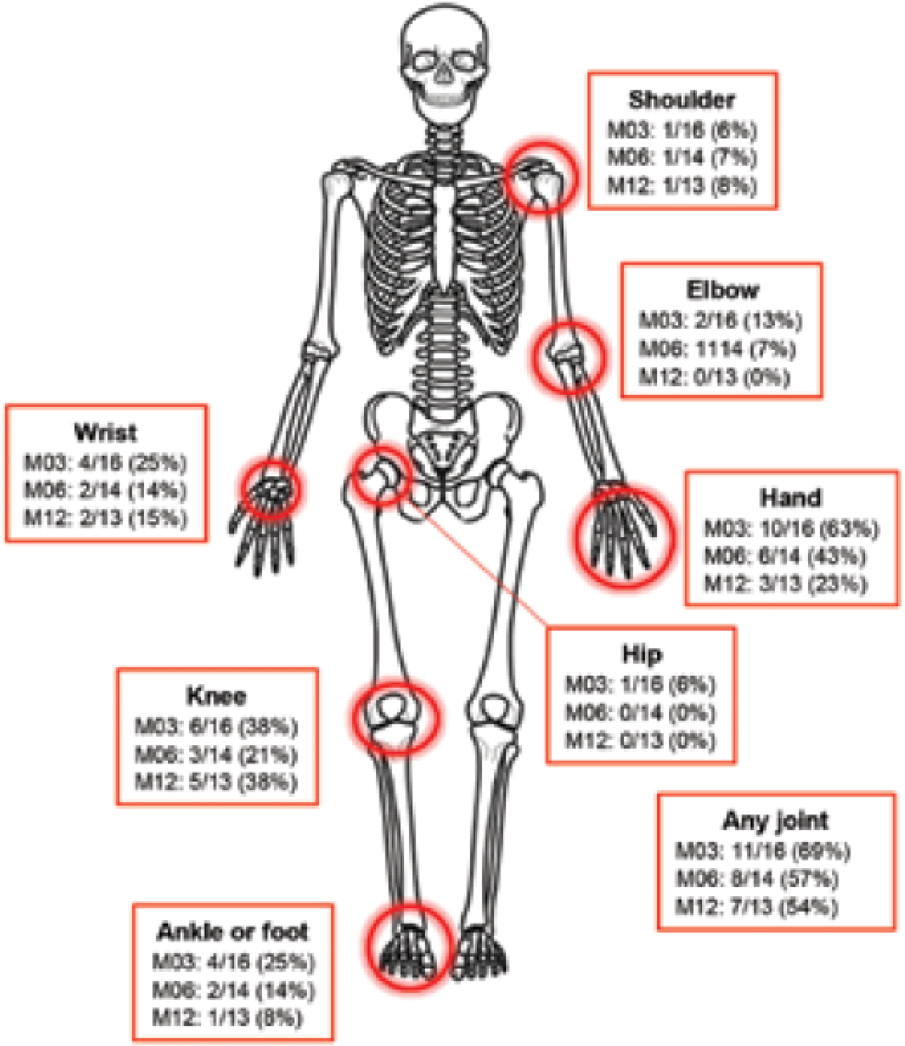

Figure 2. Prevalence of joint involvement at the different follow-up visits for Mayaro virus infection, Amazon Basin region, Peru, 2010–2013. Denominators varied because of varying numbers of participants reporting to each follow-up visit. M03, 3-month follow-up; M06, 6-month follow-up; M12, 12-month follow-up.

Emerg Infect Dis. 2013 Nov;19(11):1839-42

Table 1. Demographic factors and laboratory findings at 5 encounters for patients with MAYV infection, Amazon Basin region, Peru, 2010–2013*

					IgM; IgG‡				
Patient	Age, y/sex	Day of illness at enrollment	Isolation	RT-PCR†	Acute phase	Day 20	Month 3	Month 6	Month 12
1	12/F	2	MAYV	MAYV	0; 0	6,400; 100	0; 6,400	0; 25,600	0; 25,600
2	28/F	2	MAYV	MAYV	0; 0	1,600; 100	0; 1,600	0; 6,400	0; 25,600
3	19/F	4	Neg	Neg	0; 0	6,400; 100	0; 1,600	–	–
4	11/M	2	MAYV	MAYV	0; 0	1,600; 100	0; 1,600	0; 1,600	0; 6,400
5	41/F	2	MAYV	MAYV	0; 0	25,600; 400	0; 1,600	0; 1,600	0; 6,400
6	20/M	2	Neg	Neg	0; 0	6,400; 1,600	0; 1,600	0; 400	–
7	36/F	1	MAYV	MAYV	0; 0	6,400; 100	0; 102,400	0; 409,600	0; 102,400
8	35/F	1	MAYV	MAYV	0; 0	1,600; 100	400; 1,600	0; 25,600	0; 25,600
9	43/M	2	MAYV	MAYV	0; 0	1,600; 0	0; 1,600	0; 6,400	0; 6,400
10	34/F	3	MAYV	MAYV	0; 0	6,400; 100	0; 1,600	0; 6,400	0; 25,600
11	46/F	3	Neg	MAYV	0; 0	1,600; 400	0; 6,400	–	–
12	51/M	4	Neg	Neg	0; 0	6,400; 400	0; 1,600	0; 6,400	0; 6,400
13	40/F	1	MAYV	MAYV	0; 0	1,600; 400	400; 25,600	0; 25,600	0; 25,600
14	11/M	2	MAYV	MAYV	0; 0	1,600; 400	0; 25,600	0; 6,400	0; 6,400
15	11/M	3	MAYV	MAYV	0; 0	1,600; 400	0; 6,400	0; 25,600	0; 25,600
16	64/M	2	Neg	MAYV	0; 0	6,400; 25,600	400; 6,400	0; 6,400	0; 6,400

*MAYV, Mayaro virus; RT-PCR, reverse transcription PCR; Neg, negative; –, visits not attended by the patient.
†Isolation and RT-PCR results are from the acute-phase visit.
‡For ELISA IgM and IgG results, endpoint titration values were determined. All serology values are expressed as inverse titers.

Family Cluster of Mayaro Fever, Venezuela

Jaime R. Torres,* Kevin L. Russell,† Clovis Vasquez,‡ Roberto Barrera,‡ Robert B. Tesh,§ Rosalba Salas,¶ and Douglas M. Watts§

A cluster of protracted migratory polyarthritis involving four adult family members occurred in January 2000 after a brief overnight outing in a rural area of Venezuela. Laboratory testing demonstrated Mayaro virus as the cause of the cluster. These results documented the first human cases of Mayaro virus in Venezuela.

Emerg Infect Dis. 2004 Jul;10(7):1304-6.

Control

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Patrice Bouree[a,b], Pierre Zambon[c]
[a] Consultation des maladies tropicales, Institut Fournier, Paris.
[b] Service de parasitologie, Hôpital Cochin, Paris.
[c] Centre de santé, Raiatea, Polynésie française.

| Figure 4. *Aedes*

| Figure 5. Pulvérisation d'insecticides.

Medidas de salud pública pertinentes para personal clínico

- Los pacientes infectados por el arbovirus (DENV, CHIKV, ZIKV, MAYV) son el reservorio de la infección para otros, en el hogar y en la comunidad.
- Por consiguiente, las medidas de salud pública para **reducir al mínimo la exposición a mosquitos se convierten en imperativas para prevenir la diseminación del brote.**
- Eduque al paciente y a otros miembros del hogar acerca del riesgo de transmisión y las maneras de reducir al mínimo este riesgo al disminuir la población de vectores y el contacto con vector.

Reducir al mínimo la población de vectores

- Redoble los esfuerzos para reducir los hábitats larvarios al interior y en las proximidades de las casas; eliminar toda el agua estancada en la basura o desechos alrededor del hogar y en las zonas peridomésticas.

Infectio. 2015;19(4):141–143

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EDITORIAL

Panorama de las enfermedades transmisibles en Colombia desde la perspectiva del Plan Decenal de Salud Pública 2012-2021

Panorama of communicable diseases in Colombia from the perspective of the Public Health 2012-2021 Ten-Year Plan

Diana M. Castañeda-Hernández[a,b,c] y Alfonso J. Rodríguez-Morales[b,d,*]

Castañeda-Hernández DM, Rodriguez-Morales AJ. Panorama de las Enfermedades Transmisibles en Colombia desde la Perspectiva del Plan Decenal de Salud Pública 2012-2021. Infectio 2015 Oct-Dec; 19(4):141-143.
Available online at: http://www.sciencedirect.com/science/article/pii/S0123939215000569

Información actualizada sobre Chikungunya y las publicaciones relacionadas de nuestro grupo:

- http://blog.utp.edu.co/arodriguezm/chikungunya/

- E-mails:
  - arodriguezm@utp.edu.co
  - ajrodriguezmmd@utp.edu.co


Gracias
Aquí en tu ciudad
de lo más pequeño...
Hacemos lo más grande!
Bolivar Desnudo
Pereira, Risaralda, Colombia
Thanks
感謝
Here, in your city,
from the littlest…
we made the biggest thing!
“Aquí no hay forasteros, todos somos pereiranos”