Best of des publications en infectiologie aux Antilles et Guyane 2017-2018

Loïc Epelboin

13 juin 2018

LES BACTÉRIES

Fièvre Q = la fameuse épidémie du camp du tigre

- Épidémie de décembre 2012 à juin 2013 dans le lotissement habité par les familles de militaires
- Taux d'attaque = 20% (11/54).
- 50% (8/16) des ménages touchés
- 3 PCR + dont 1 avec identification MST17

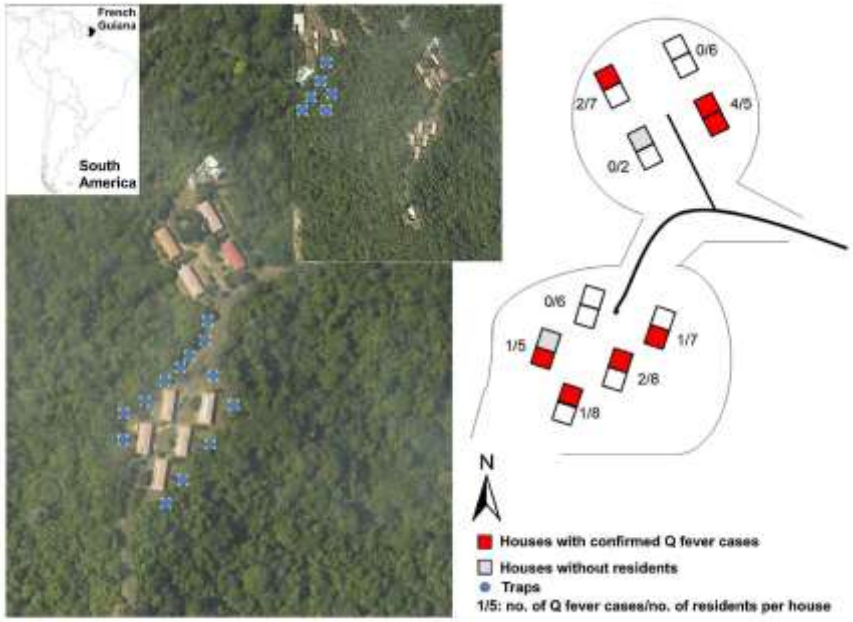

Fig. 1. Camp du Tigre military residential area – Q fever cases distribution in houses. Aerial photography by French armed forces in French Guiana.

Comparative Immunology, Microbiology and Infectious Diseases

Q fever epidemic in Cayenne, French Guiana, epidemiologically linked to three-toed sloth

Vincent Pommier de Santi, Sébastien Briolant, Aba Mahamat, Carole Ilcinkas, Denis Blanchet, Benoit de Thoisy, Yann Reynaud, Georges Hyvert, Jean-Lou Marié, Sophie Edouard, Bernard Davoust, Didier Raoult

ARTICLE INFO

ABSTRACT

A Q fever epidemic occurred in 2013 in a small military residential area in Cayenne, French Guiana. A retrospective cohort study was conducted to identify Q fever risk factors. Confirmed acute Q fever case was defined as positive serology (IgM ≥ 50 and phase II IgG ≥ 200) and/or positive qPCR on serum or blood. In addition, wild mammals were captured at the study site and tested by serology and real-time PCR performed on blood, vaginal swabs and ticks. The attack rate was 20 percent (11/54). All the cases were symptomatic with fever > 38.5 °C and community-acquired pneumonia for four cases. Log binomial multivariate models identified two independent risk factors associated with Q fever: to clean the house (RRa = 7.5 (95% (1.61–55.1)) and to carry a three-toed sloth in area (RRa = 2.6 C95% (1.1–6.0)). Eighteen mammalian individuals were captured, all PCRs were negative but 17% (3/18) had a positive serology. Another study conducted after the epidemic found only one (1/40) three-toed sloth (Bradypus tridactylus) with acute highly infectious for C. burnetii MST17. The same strain C. burnetii genotype 17 has been laboratory- confirmed in this mammal and in human cases. These results support the implication of three-toed sloth in this epidemic. Human contamination mainly occurs through inhalation of infectious aerosols as suggested by high relative risk associated with house cleaning activities and pulmonary forms of the disease, and through direct contact with three- toed sloth. Positive serological results among marsupials confirm wildlife exposure and suggest a more complex sylvatic transmission cycle among wild mammals.

1. Introduction

Q fever, a cosmopolitan zoonosis caused by the intracellular bacterium Coxiella burnetii, is a public health concern in Cayenne, the main city of French Guiana, a French overseas entity located on the northeast coast of South America [1,2]. In a prospective study conducted from 1996 to 2000, the mean annual incidence rate was estimated to 37 cases per 100,000 inhabitants, one of the highest in the world [3]. Pneumonia is the primary manifestation of acute Q fever, representing 24.4% of the community-acquired pneumonia admitted to the Cayenne regional hospital [4]. A unique genotype, C. burnetii multispacer sequence type MST17, only isolated from Cayenne to date, is responsible for the disease [5]. Several risk factors have been identified such as living near forested areas and practicing activities resulting in inhalation of aerosols of dusts [3]. In contrast, no link with classical sources of C. burnetii (cattle, sheep, or goat birth products) has been ever identified and a wild reservoir has been suspected [2,3,6,7].

The "Camp du Tigre" is a military training camp in the city of Cayenne with a residential area of 18 houses, surrounded by rainforest and located at the top of a hill (Fig. 1). The Camp du Tigre has been

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Pommier de Santi V, Comp Imm Microb Inf Dis, 2018

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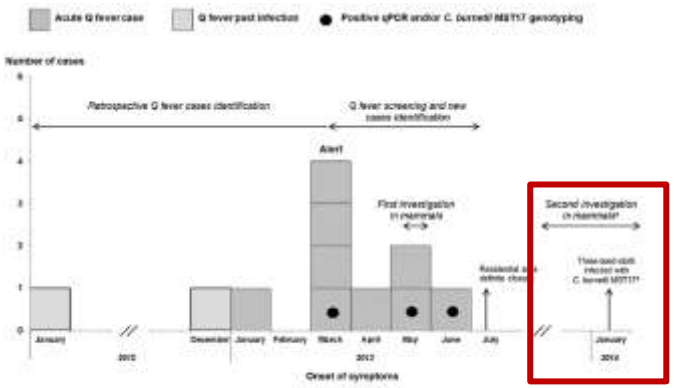

Pommier de Santi V, Comp Imm Microb Inf Dis, 2018

Retrospective cohort study, risk factors for contracting Q fever, univariate and log-binomial multivariate analysis (no = 11 Q fever cases, N = 54 subjects).

Variables	Q fever incidence (I)		Univariate	Multivariate
	no./n exposed (Ie[a])	no./non exposed (Ine[b])	RR[c] [CI95%]	RRa[d] [CI95%]
Sociodemographic				
Sex (Male *vs* Female)	7/27 (25.9)	4/27 (14.8)	1.8 [0.6–5.3]	
Age > 15 years	10/35 (28.6)	1/19 (5.3)	5.4 [0.8–39.3]	
Military *vs* family members	8/20 (40.0)	3/34 (8.8)	4.5 [1.4–15.2]	–
Activities in the past month				
Clean the house	10/29 (34.5)	1/25 (4.0)	8.6 [1.2–62.7]	7.5 [1.03 – 55.3]
Use of high-pressure cleaner	5/12 (41.7)	6/42 (14.3)	2.9 [1.1–7.9]	
Tinker in the home basement	7/21 (33.3)	4/33 (12.1)	2.8 [0.9–8.3]	
Walk in the surrounding forest	4/16 (25.4)	7/38 (18.4)	1.4 [0.5–4.0]	
Practice gardening	5/18 (27.8)	6/36 (16.7)	1.7 [0.6–4.7]	
Use air conditioning at home	2/11 (18.2)	9/43 (20.9)	0.9 [0.2–3.5]	
Contact with animals around home				
See three-toed sloth	9/38 (23.7)	2/16 (12.5)	1.9 [0.5–7.8]	
Hold three-toed sloth in arms	3/5 (60.0)	8/49 (16.3)	3.7 [1.4–9.6]	2.6 [1.1–5.8]
See marsupials	1/6 (16.7)	10/48 (20.8)	0.8 [0.1–5.2]	
See bats	2/8 (25.0)	9/46 (19.6)	1.3 [0.3–4.9]	
See others mammals	5/38 (18.8)	6/16 (37.5)	0.6 [0.3–1.2]	
Clean wild animal feces	5/23 (21.7)	6/31 (19.4)	1.1 [0.4–3.2]	
Cat at home	2/8 (25.0)	9/46 (19.6)	1.3 [0.3–4.9]	
Dog at home	5/25 (20.0)	6/29 (20.7)	1.0 [0.3–2.8]	
Tick bite	1/4 (25.0)	10/50 (20.0)	1.3 [0.2–7.5]	

Leptospirose sévère : Amazonie vs. Maghreb

Variables	French Guiana (n=12)	Morocco (n=100)	Bivariate analysis		
	N (%)	OR	OR	IC 95%	p
Male gender	11/12 (91.7)	92/100 (92)	-	-	1
Age (years)# (mean ± SD)	46.8 ± 17.2	36 ± 15	-	-	0.022
Jaundice	3/12 (25.0)	99/100 (99)	0.0042	0.0001-0.0126	<0.001
Bleeding signs	2/12 (16.7)	76/100 (76)	0.065	0.0065-0.335	<0.001
Pulmonary involvement § §	6/12 (50.0)	42/100 (42)	-	-	0.75
Acute respiratory failure	5/12 (41.7)	12/100 (12)	5.1	1.1-22.5	0.018
Platelet count (G/L)	146.8 ± 142.4	111 ± 123	-	-	0.35
Creatinine (µmol/L) (mean ± SD)	339.2 ± 256.4	531.9 ± 265.5	-	-	0.019
Bilirubin (µmol/L) (mean ± SD)	101.7 ± 163.5	383 ± 313			0.0028
Vasopressors	10/12 (83.3)	11/100 (11)	38.0	6.9-399.2	<0.001
Dialysis	7/12 (58.3)	4/100 (4)	31.0	5.8-202.1	<0.001
Mechanical ventilation	9/12 (75.0)	11/100 (11)	23.0	4.9-152.3	<0.001
ICU mortality	3/12 (25)	23/100 (23)	-	-	1

Epelboin L, Intensive Care Med, 2018

Intensive Care Med (2018) 44:129–132
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CORRESPONDENCE

Severe leptospirosis in Morocco: comparative data from the Amazonian area

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Dear Editor,

We read with interest the article by Abidi and colleagues on severe leptospirosis in Morocco that was recently published in *Intensive Care Medicine* [1]. Leptospirosis is a cosmopolitan zoonosis caused by *Leptospira* sp. and is associated with significant mortality in tropical regions [2]. It has rarely been studied in the Amazonian area and was considered to be anecdotic until recently in French Guiana, a French overseas department in South America [3]. The aim of our study was to determine the variables associated with the evolution of the disease towards a severe form at admission and to compare severe cases from both countries.

A retrospective study was conducted which involved patients admitted to either of the two main hospitals of French Guiana between 1 January 2007 to 30 September 2014. Leptospirosis was confirmed based on: (1) positive PCR assay result in the blood, urine or cerebrospinal fluid, or positive biopsy findings; and/or (2) seroconversion based on the microscopic agglutination test (MAT), with a MAT titer of ≥ 200; and/or (3) a fourfold increase of the MAT titer in paired sera; and/or (4) a MAT titer of ≥ 400. Patients with probable leptospirosis had at least one serology test with a MAT = 200 and/or a positive MAT titer (=100) with or without MAT seroconversion, with immunoglobulin M (IgM) seroconversion in a screening test or a significant positive IgM titer (≥80).

Patients for whom no clinical information was available, < 15 years of age, MAT of ≤ 100 or no significant IgM were excluded. Confirmed and probable cases were included in the analysis. Patients were then separated into two groups: those with non-severe disease and those with severe disease; the latter were defined by the presence of acute renal failure requiring dialysis, shock treated with vasopressor agents, respiratory distress requiring mechanical ventilation and/or death during hospitalization. We first compared patients with severe disease to those with non-severe disease. In a second analysis we compared severe patients hospitalized in ICUs in French Guiana and Morocco, respectively.

A total of 72 patients were included in the analysis, among whom 12 (16.6%) presented severe forms of the disease. Mortality was 4.2% (three cases). Results of the bivariate analysis are presented in Table 1. Acute respiratory failure was more frequent among patients admitted to the intensive care units (ICUs) in French Guiana, while jaundice and hemorrhage were more frequent among admitted to ICUs in Morocco. Surprisingly, irrespective of ICU mortality, vasopressor, mechanical ventilation and renal replacement therapy were applied more systematically in French Guiana than in Morocco.

This is the first description of patients with severe Leptospirosis from the Amazonian area. The results vary widely from previous studies because of the heterogeneity of the inclusion criteria, study populations and severity criteria [4]. Patient fatality rate was globally lower than that in other Latin American countries [5]. One partial explanation for this difference may be associated with French Guiana being a French territory with human and material resources that are closer to European norms than those of neighboring countries with far fewer resources, especially in terms of intensive care procedures, such as dialysis, mechanical ventilation and

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Take-home message: Leptospirosis is a potentially life-threatening bacterial disease associated with a high frequency of severe cases and death despite modern intensive care procedures as found in French Guiana. Acute respiratory failure is more frequent in French Guiana while jaundice and hemorrhage are more frequent in Morocco.

Patients for whom no clinical information was available, < 15 years of age, MAT of ≤ 100 or no significant IgM were excluded. Confirmed and probable cases were included in the analysis. Patients were then separated into two groups: those with non-severe disease and those with severe disease; the latter were defined by the presence of acute renal failure requiring dialysis, shock treated with vasopressor agents, respiratory distress requiring mechanical ventilation and/or death during hospitalization. We first compared patients with severe disease to those with non-severe disease. In a second analysis we compared severe patients hospitalized in ICUs in French Guiana and Morocco, respectively.

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LES VIRUS

Chikungunya : facteurs pronostiques de mortalité des personnes agées hospitalisées, Martinique

Table 2 Independent predictors of inhospital death for elderly patients with CHIKV infection and the corresponding point values of the developed score

Predictors	HR* (95% CI)	P value	aHR† (95% CI)	P value	Points
Age ≥85 years	1.4 (0.7 to 2.8)	0.36			
Male sex	1.1 (0.6 to 2.2)	0.73			
Fever	1.4 (0.5 to 3.6)	0.51			
Arthralgia‡	0.6 (0.3 to 1.1)	0.10			
Concurrent renal failure‡	3.5 (1.7 to 7.1)	0.0007			
Concurrent decompensated diabetes	0.8 (0.2 to 2.5)	0.66			
Concurrent CNS diseases‡	1.7 (0.8 to 3.3)	0.16			
Including sensorimotor deficit‡	2.8 (0.8 to 9.2)	0.09	7.6 (2.0 to 28.5)	0.003	8
Including confusion or delirium‡	1.9 (0.9 to 3.6)	0.07	2.1 (1.1 to 4.2)	0.04	2
Concurrent cardiovascular disorders‡	6.0 (2.8 to 12.9)	<0.0001	11.8 (4.5 to 30.8)	<0.0001	12
Concurrent respiratory infection‡	3.1 (1.3 to 7.6)	0.01	9.6 (3.4 to 27.2)	<0.0001	10
Absence of musculoskeletal pain‡	2.1 (1.1 to 4.0)	0.04	2.6 (1.3 to 5.3)	0.009	3
History of alcoholism‡	2.5 (1.1 to 5.7)	0.03	2.5 (1.1 to 5.9)	0.04	3
Concurrent digestive symptoms‡	2.2 (1.1 to 4.3)	0.02	2.4 (1.2 to 4.9)	0.02	2

- Inclusion janv à déc 2014 - Age > 65 ans et PCR chik +
- Modèle de cox pour comparer DCD survivants
- 385 patients inclus dont 35 DC (9,1%) sex ratio 1

Godaert & al., BMJ Open, 2017

Epidémiologie du chikungunya chez les donneurs de sang Guadeloupe et Martinique

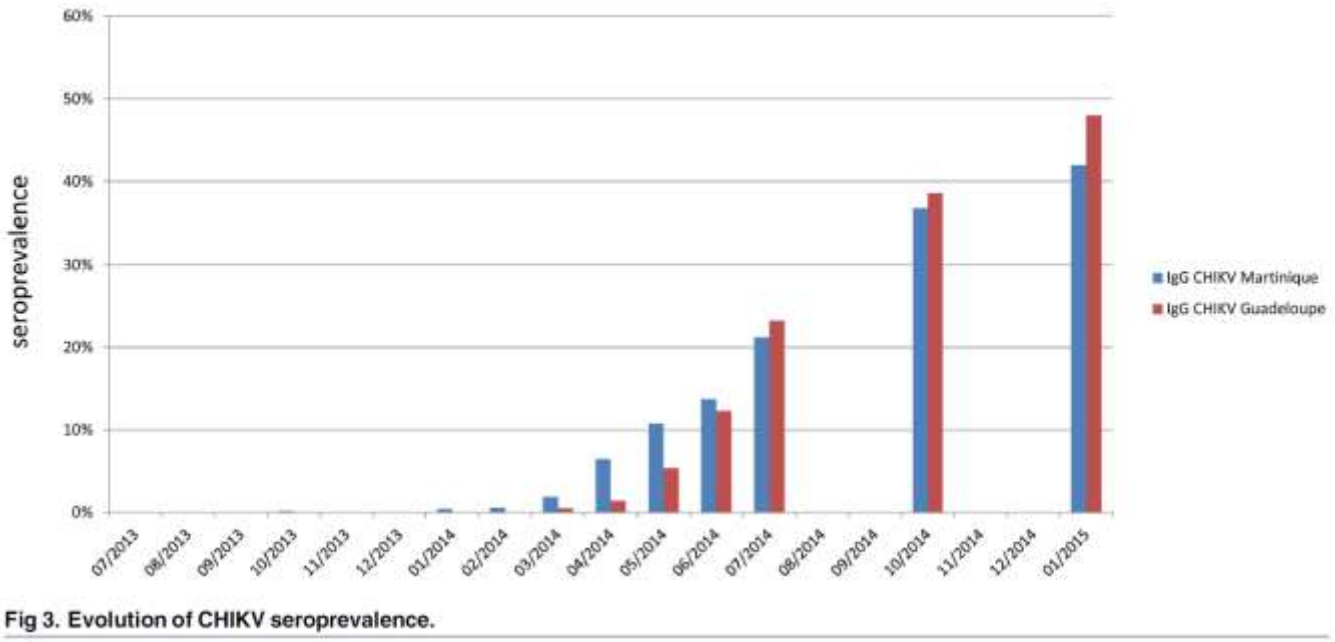


Fig 3. Evolution of CHIKV seroprevalence.

Séroprévalence estimée :

48,1% Gwada

41,9% Martinique

- **Variables associées aux IgG +:**
  - différentes entre Guadeloupe et Martinique (sexe, âge, groupe sanguin, phénotypes…)
  - En multivariée: sexe masculin> féminin et augmentation avec l'âge

Gallian, PLoS NTD, 2017

Patients avec chik plus précaires que ceux avec dengue

Comparaison paramètres sociaux 168 1ers patients avec chik avril-juin 2014 vs 168 1er AgNS1 positifs au CHAR épidémie de dengue 2013

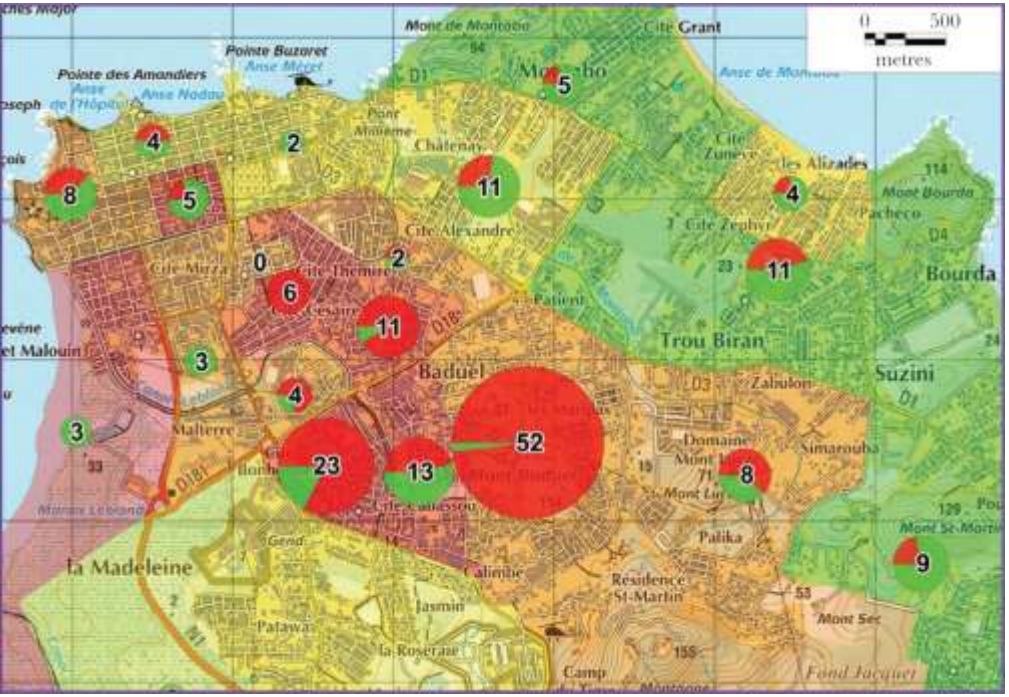
Table 1. Univariate Analysis of the Demographic and Socioeconomic Data of CHIKV and DENV Patients

	CHIKV[a] n = 168 (%)	DENV[a] n = 168(%)	OR	95% CI	P
Born abroad[b]	117 (69.6)	58 (34.5)	4.35	2.69–7.06	<.001
No health insurance	25 (14.9)	14 (8.3)	1.92	0.92–4.16	.06
Precarious social status[c]	90 (53.6)	55 (32.7)	2.37	1.49–3.78	<.001
Poor neighborhoods[d]	123 (82.0)	69 (44.0)	5.81	3.35–10.2	<.001
Man	77 (45.8)	91 (54.2)	0.72	0.46–1.12	.13
Age (mean ± SD)	43.8 (±17.8)	35.4 (±15.5)			<.001
Age >50 years old	67 (39.9)	35 (20.8)	2.52	1.51–4.22	<.001
Age <18 years old	6 (3.6)	22 (13.1)	0.25	0.08–0.65	.002

Health Insurance Status		n = 168 (%)		n = 168 (%)		(95% CI)	P
Precarious Social Status[a]	None	25 (14.9)	90 (54)	14 (8.3)	55 (33)	1.92 (0.92–4.16)	.06
	AME	11 (6.6)		6 (3.6)		1.89 (0.62–6.37)	.21
	CMU	54 (32.1)		35 (20.8)		1.8 (1.07–3.05)	.02
No Precarious Social Status[b]	Social security only	46 (27.4)	78 (46)	18 (10.7)	113 (67)	3.14 (1.68–6.04)	.001
	ALD	10 (6.0)		7 (4.2)		1.46 (0.49–4.62)	.45
	Complementary health insurance	22 (13.1)		88 (52.4)		0.14 (0.08–0.24)	<.001

Bonifay T, Open Forum Inf Dis, 2017

Patients avec chik plus précaires que ceux avec dengue



Number of cases

25
12.5
2.5

CHIKV
DENV

Socio-economic level

High
Upper middle
Lower middle
Low

Open Forum Infectious Diseases
MAJOR ARTICLE

Poverty and Arbovirus Outbreaks: When Chikungunya Virus Hits More Precarious Populations Than Dengue Virus in French Guiana

Timothee Bonifay,[1,2] Moyis Douine,[2,3] Clemence Beenotte,[1,2] Benoit Hurpeau,[1] Mathieu Nacher,[2,3] Felix Djossou,[1,2] and Loïc Epelboin[2,3]

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Background. Since 2013, 3 successive arbovirus outbreaks, dengue (DENV), chikungunya (CHIKV), and Zika virus, have occurred in French Guiana (FG). The primary objective of this study was to describe the socioeconomic indicators of the first patients infected with CHIKV during the outbreak of 2014. The secondary objective was to compare those patients with patient infected by DENV and with the local population.

Methods. A monocentric, retrospective, case-control study was conducted in Cayenne hospital in FG comparing a group of patients infected with CHIKV in 2014 with a group infected with DENV in 2013. Children aged less than 15 years and pregnant women were excluded.

Results. A total of 168 CHIKV patients were compared with 168 DENV patients. Factors associated with CHIKV were living in poor neighborhoods (82% vs 44%; odds ratio [OR], 5.81; 95% confidence interval [CI], 3.35–10.2), having a precarious status (54% vs 33%; OR, 2.37; 95% CI, 1.49–3.78), and being born abroad (70% vs 35%; OR, 4.35; 95% CI, 2.69–7.06).

Conclusions. The present results suggest that early in the epidemic, the populations most at risk for CHIKV infection were the most socially vulnerable populations in the poorest neighborhoods, whereas DENV appeared to have affected a richer population and richer areas.

Keywords. chikungunya; dengue; French Guiana; poverty; precarity.

Chikungunya (CHIKV) is an arthropod-borne virus, transmitted by a mosquito of the genus *Aedes*, mainly *Aedes aegypti* and *Aedes albopictus*. Although, the first cases were described in the early 1950s, and regular outbreaks occur in Africa and South-East Asia, this arbovirus was hardly known before the massive epidemics in the Indian Ocean in 2005–2006, especially on La Reunion Island. There, one third of the population was affected, according to a seroprevalence study, and new acute and chronic clinical presentations were reported [1]. Until late 2013, no autochthonous case had been reported for more than 200 years in the Americas [2]. In December 2013, the first cases were identified in St. Martin, then in St. Barthelemy, 2 French islands in the Caribbean. The infection then spread to the rest of the West Indies and Latin America. The first cases in Latin America were described in French Guiana (FG), a French overseas region located on the coast between Suriname and northern Brazil, in February 2017. There, the outbreak of CHIKV followed that of dengue virus (DENV) in 2013. The 4 serotypes of DENV circulate in FG in endemic-epidemic form. In the past 10 years, there has been an increase in the number of DENV outbreaks and hospitalized cases [3, 4]. Thus far, *A aegypti* mosquitoes have been the sole vector implicated in these outbreaks, and *A albopictus* have not been actually reported in FG [5].

At the beginning of the CHIKV outbreak, from April to June 2014, most of the cases were diagnosed in the Cayenne area, where approximately half of its 237 000 inhabitants lives. Attending physicians reported that the patients who sought treatment for CHIKV infection seemed to be in a more precarious situation than other patients. In fact, although the gross domestic product (GDP) is half that of mainland France, it is the highest GDP per capita in Latin America [6, 7] and thus attracts numerous immigrants in search of socioeconomic improvement, health, or education.

The hypothesis of this study is that CHIKV patients are more socially vulnerable than patients with DENV and the rest of the population. The primary objective of the study was to describe the demographic, social, and economic indicators of the first patients infected with CHIKV during the outbreak of 2014. The secondary objective was to compare them with the population with DENV and with local population.

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Bonifay T, Open Forum Inf Dis, 2017

Zika et syndrome de Guillain-Barré en Martinique

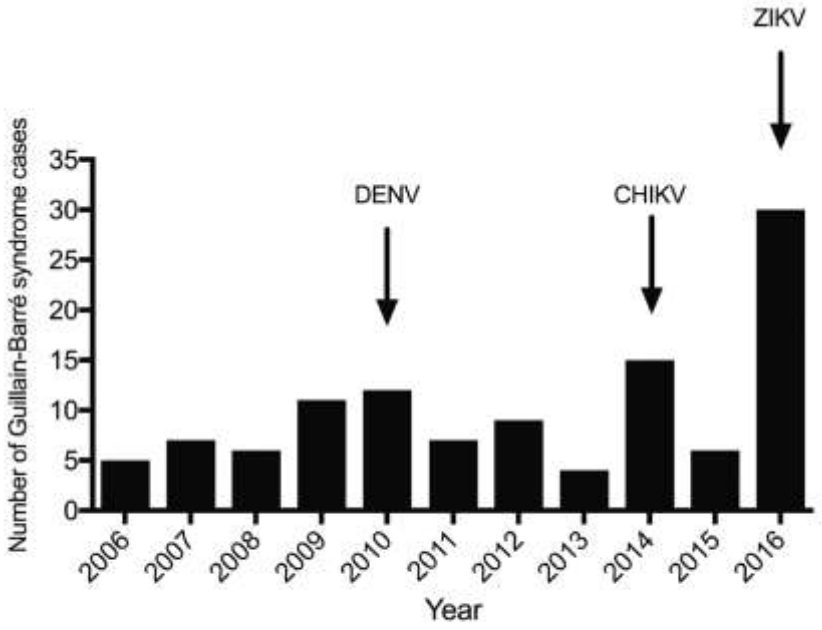


Figure 1. Number of Guillain-Barré syndrome cases per year during 10 years at the University Hospital of Martinique (2006–2016). Abbreviations: CHIKV, chikungunya virus; DENV, dengue virus; ZIKV, Zika virus.

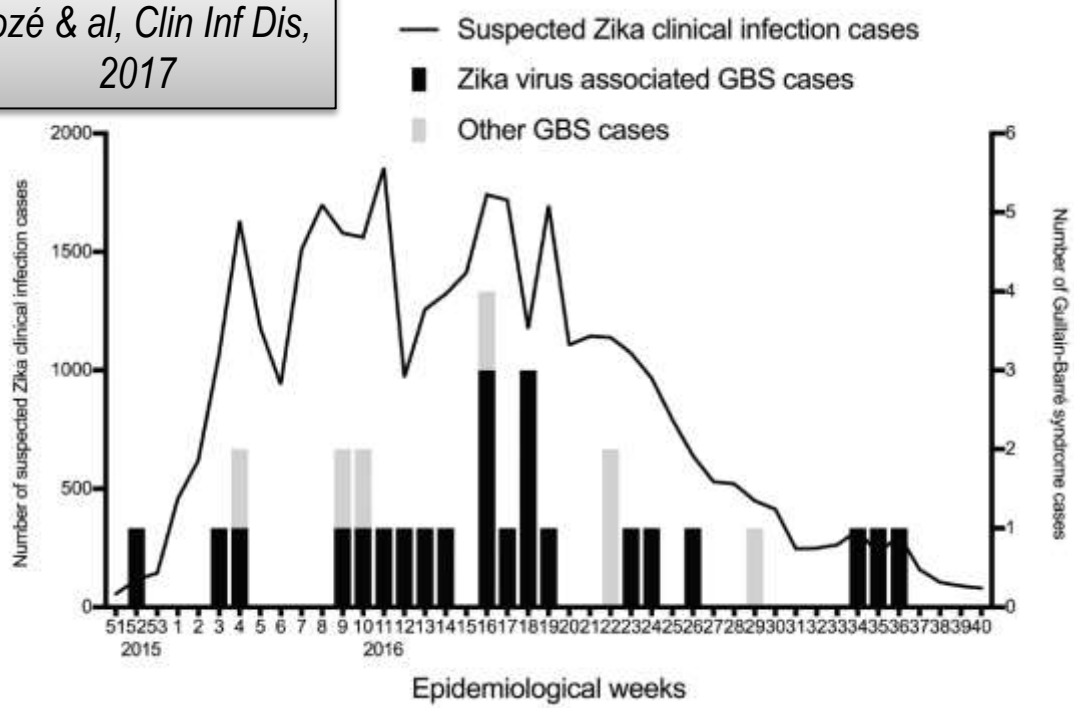
- **Inclusion de toute paralysie flasque aiguë + pas réaction inflammatoire LCR + critères de Brighton + EMG**

- **01/2006-12/2015**
  - 105 cas SGB
  - Incidence 2,1/100000 hab/an
- **janv-oct 2016**
  - 34 cas
  - 30 avec infection prouvée par zika (17 PCR + 6 IgM + 7 IgG)
  - Incidence 9,5/100000 hab/an
- **Incidence rate ratio 2016 vs. 2006-2015 = 4,52 (IC95 2,8-7,64; p 0,0001)**

Rozé & al, Clin Inf Dis, 2017

Zika et syndrome de Guillain-Barré en Martinique

Rozé & al, Clin Inf Dis, 2017



- **ZIKV = 77% des cas de SGB 2016**
- **Cas sévères++**
- **Délai court entre syndrome viral et apparition signes neuro**

Table 2. Clinical Characteristics of Patients With Zika Virus–Associated Guillain-Barré Syndrome (n = 23) on Martinique, 2016

Characteristic	No. (%) or Median (IQR)
Demographic factors	
Age, y	61 (56–71)
Male sex	15 (65)
Previous viral syndrome	16 (70)
Conjunctivitis	8 (35)
Rash	11 (48)
Fever	5 (22)
Arthralgia	10 (43)
Myalgia	8 (35)
Headache	8 (35)
Time between reported viral syndrome and onset of neurological symptoms, d	5.9 (1.5–6.5)
Symptoms at admission	
Paresthesia	22 (96)
Hyporeflexia	23 (100)
Arm weakness	16 (70)
Leg weakness	20 (87)
Incapacity of walking	19 (83)
Facial palsy	9 (39)
Dysphagia	16 (70)
Time between onset of neurological symptoms and diagnosis of GBS, d	6.3 (2–9)
Time between onset of neurological symptoms and peak of illness, d	8.8 (7–12)
Duration of plateau phase of illness, d	7.9 (3–12)
Treatment	
Intravenous immunoglobulin	23 (100)
Plasmapheresis	0
Time between onset of neurological symptoms and treatment, d	6.7 (3–12)
Patients admitted to intensive care	14 (61)
Respiratory assistance	10 (43.5)
Duration of hospitalization in intensive care, d	20 (7–23)
Duration of hospital stay, d	60 (36–83)
Lumbar puncture results	
Proteins, g/L	1.08 (0.64–1.39)
White blood cells/μL	5.9 (0–3)
First electrophysiological examination	
Time between onset of neurological symptoms and first electrophysiological examination (n = 21), d	18.6 (10–19)
AIDP	20 (95)

Complications cardio-vasculaires du SGB associé au Zika - Martinique

Contents lists available at ScienceDirect

Journal of Clinical Virology

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

Letter to the editor

Cardiovascular complications in patients with Zika virus-induced Guillain-Barré syndrome

- **22 SGB-ZIKV hospitalisés en réa entre 12/2015 et 12/2016**
  - 20/22 (91%) ventilation mécanique
  - 4 ACR ; 1 DC
  - 14/22 myocardite aiguë (tropo/ECG/ETT; pas d'IRM ni biopsie EM)
  - IRA 36%; SDRA 32%; troubles CV 27%; défaillance multiviscérale 18/22 (82%)
- **Complications dysautonomiques sévères avec complications CV indirectes à court terme**

Resiere, J Clin Virol, 2018

Conséquence de l'infection par zika sur la grossesse: la cohorte antillo-guyanaise

- 555 fœtus / 546 grossesses entre mars et novembre 2016
- 527 (95%) naissances vivantes
- Atteintes neuro et/ou OPH 39 (7,0% IC95%: 5,0-9,5)
- 10/39 (25,6%) ITG, 1MFIU, 28 naissances vivantes
- Microcéphalie
  - <2DS: 32 (5,8%)
  - <3DS: 9 (1,6%)
- Terme
  - 24/189 (12,7%) 1er T
  - 9/252 (3,6%) 2ème T
  - 6/114 (5,3%) 3ème T

The NEW ENGLAND JOURNAL of MEDICINE

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Pregnancy Outcomes after ZIKV Infection in French Territories in the Americas

Bruno Hoen, M.D., Ph.D., Bruno Schaub, M.D., Anna L. Funk, M.Sc., Vanessa Ardillon, M.D., Manon Boullard, M.Sc., André Cabié, M.D., Ph.D., Caroline Callier, M.Sc., Gabriel Carles, M.D., Sylvie Cassadou, M.D., Raymond Césaire, M.D., Ph.D., Maylis Douine, M.D., Ph.D., Cécile Herrmann-Storck, M.D., Philippe Kadhel, M.D., Ph.D., Cédric Laouénan, M.D., Ph.D., Yoann Madec, Ph.D., Alice Monthieux, M.D., Mathieu Nacher, M.D., Ph.D., Fatiha Najioullah, Ph.D., Dominique Rousset, M.D., Ph.D., Catherine Ryan, M.D., Kinda Schepers, M.D., Ph.D., Sofia Stegmann-Planchard, M.D., M.P.H., Benoît Tressières, M.Sc., Jean-Luc Volumétie, M.D., Samson Yassinguezo, M.D., Eustase Janky, M.D., Ph.D., and Arnaud Fontanet, M.D., Dr.P.H.

ABSTRACT

BACKGROUND
The risk of congenital neurologic defects related to Zika virus (ZIKV) infection has ranged from 6 to 42% in various reports. The aim of this study was to estimate this risk among pregnant women with symptomatic ZIKV infection in French territories in the Americas.

METHODS
From March 2016 through November 2016, we enrolled in this prospective cohort study pregnant women with symptomatic ZIKV infection that was confirmed by polymerase-chain-reaction (PCR) assay. The analysis included all data collected up to April 27, 2017, the date of the last delivery in the cohort.

RESULTS
Among the 555 fetuses and infants in the 546 pregnancies included in the analysis, 28 (5.0%) were not carried to term or were stillborn, and 527 were born alive. Neurologic and ocular defects possibly associated with ZIKV infection were seen in 39 fetuses and infants (7.0%; 95% confidence interval, 5.0 to 9.5); of these, 10 were not carried to term because of termination of pregnancy for medical reasons, 1 was stillborn, and 28 were live-born. Microcephaly (defined as head circumference more than 2 SD below the mean for sex and gestational age) was detected in 32 fetuses and infants (5.8%), of whom 9 (1.6%) had severe microcephaly (more than 3 SD below the mean). Neurologic and ocular defects were more common when ZIKV infection occurred during the first trimester (24 of 189 fetuses and infants [12.7%]) than when it occurred during the second trimester (9 of 252 [3.6%]) or third trimester (6 of 114 [5.3%]) (P=0.001).

CONCLUSIONS
Among pregnant women with symptomatic, PCR-confirmed ZIKV infection, birth defects possibly associated with ZIKV infection were present in 7% of fetuses and infants. Defects occurred more frequently in fetuses and infants whose mothers had been infected early in pregnancy. Longer-term follow-up of infants is required to assess any manifestations not detected at birth. (Funded by the French Ministry of Health and others; ClinicalTrials.gov number, NCT02967302.)

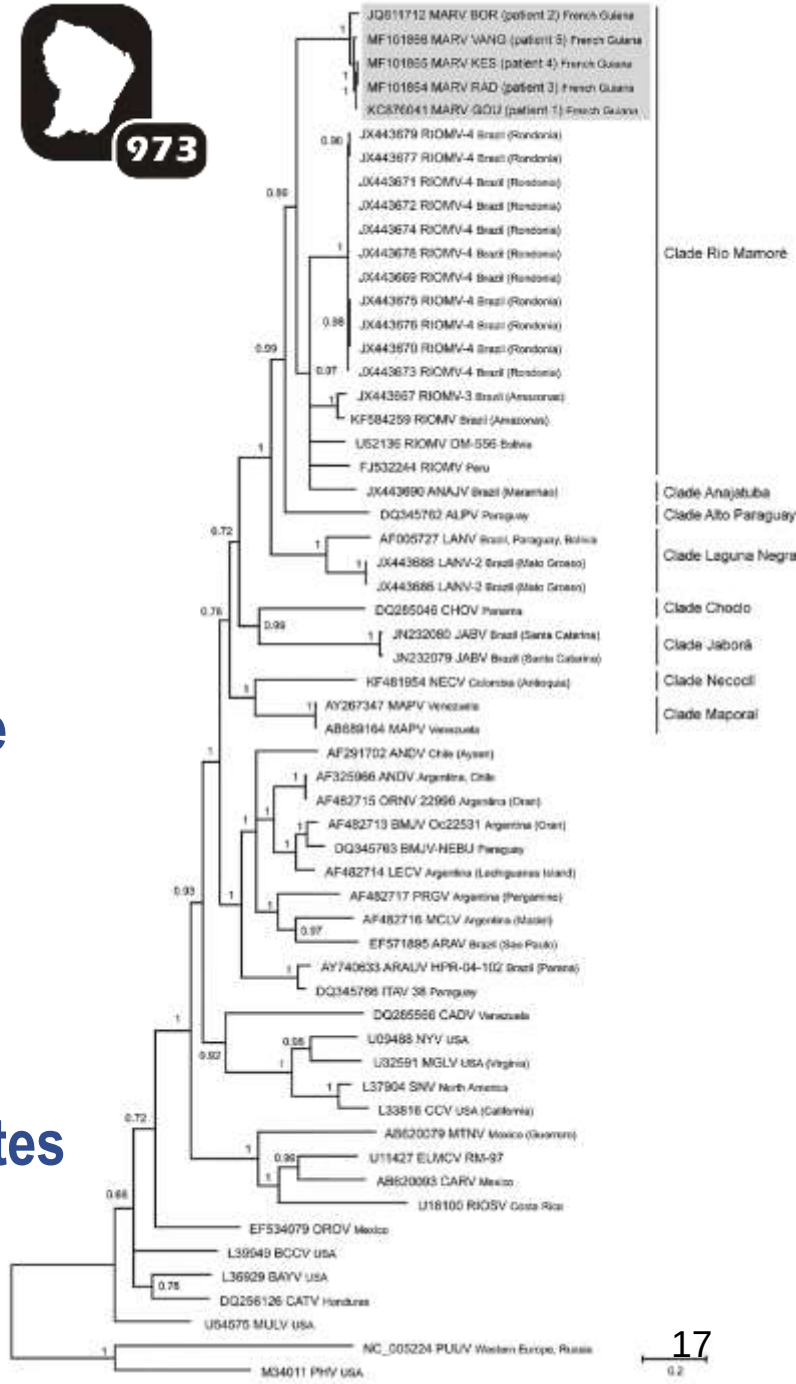
The authors' affiliations are listed in the Appendix. Address reprint requests to Dr. Hoen at the Department of Infectious Diseases, Dermatology, and Internal Medicine, University Medical Center of Guadeloupe, BP 465, 97159 Pointe-à-Pitre, CEDEX, France, or at bruno.hoen@inserm.fr.

N Engl J Med 2018;378:985-94.
DOI: 10.1056/NEJMoa1805461

Hoen B, NEJM, 2018

Syndrome pulmonaire à Hantavirus souche Maripa

- 5 cas entre 2008-2016
- 4/5 DC; 47 jours d'hospit pour le survivant
- 100% ♂
- Dyspnée fébrile avec infiltrat alvéolaire diffus bilatéral + Insuffisance rénale aiguë + tb hémodynamiques + thrombopénie
- Diagnostic par RT-PCR
- Enquête rongeurs : 3 espèces différentes positives



Matheus S, Emerg Inf Dis, 2017

Pays d'acquisition du VIH chez les PVVIH de Guyane nés à l'étranger

- Séroprévalence > 1%
- En Guyane, >75% des PVVIH nés à l'étranger
- Inclusion de tous les patients suivis à Cayenne
- Estimation du délai entre la séroconversion et la date du diagnostic avec la formule [$\sqrt{}$(CD4 séroconversion)-$\sqrt{}$(CD4 diagnostic)]/pente de déclin des CD4
- Pente varie avec l'âge et l'ethnie

PLOS ONE

RESEARCH ARTICLE

Country of infection among HIV-infected patients born abroad living in French Guiana

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Data Availability Statement: There is no personal identification risk within this anonymized raw data, which is available after notification and authorization of the competent authorities. In France, all computer data (including databases, in particular patient data) are protected by the National Commission on Informatics and Liberty (CNIL), the national data protection authority for France. CNIL is an independent French administrative regulatory body whose mission is to ensure that data privacy law is applied to the collection, storage, and use of personal data. As

Abstract

Background

Over 75% of patients in the HIV cohort in French Guiana are of foreign origin. Our objective was to estimate what proportion of the migrant population of HIV-infected patients in Cayenne had been infected in French Guiana.

Methods

We included patients of known foreign origin who were followed in Cayenne, for whom the year of arrival in French Guiana was known and the initial CD4 count at the time of diagnosis was available. The time between seroconversion and time at diagnosis was estimated using the formula [square root (CD4 at seroconversion)-square root(CD4 at HIV diagnosis)] / slope of CD4 decline.CD4 counts at the time of infection and the slope were computed in an age and ethnicity-dependent variable.

Results

The median estimated time between infection and diagnosis was 4.5 years (IQR = 0.2–9.2). Overall, using a median estimate of CD4 count at the time of infection, it was estimated that 53.2% (95% CI = 48.3–58%) of HIV infected foreign patients had acquired HIV after having arrived in French Guiana. Patients having arrived in French Guiana before and during the 1990s and those receiving their HIV diagnosis before 2010 were more likely to have been infected in French Guiana.

Conclusions

Contrary to widespread belief suggesting that most migrants are already HIV-infected when they arrive in French Guiana, a large proportion of foreign HIV patients seem acquire the virus in French Guiana. There is still much to do in terms of primary prevention and testing among migrants.

Nacher M, PLoS One, 2018

Pays d'acquisition du VIH chez les PVVIH de Guyane nés à l'étranger

- Durée médiane séroconversion – diagnostic = 4,5 ans (IQR 0,2-9,2) : (Brésil 5.3 ans, Guyana 3.1 ans, Haïti 3.8 ans, Suriname 5.6 ans)
- 53,2% acquisition en Guyane chez les patients étrangers (IC95% 48,3-58%)
- Patients arrivés < 2010 vs ≥ 2010 ++
- Va contre les préjugés
- Prise de risque à l'arrivée → grande précarité

Nacher M, PLoS One, 2018

Table 2. Predictors of HIV acquisition in French Guiana.

	Crude prevalence ratio (95%CI)	Adjusted prevalence ratio* (95%CI)	P
Country			
Brazil	0.9 (0.6–1.5)	0.8 (0.4–1.4)	0.4
Haiti	Ref	Ref	
Guyana	0.9 (0.6–1.4)	0.9 (0.6–1.5)	0.8
Suriname	0.8 (0.4–1.4)	0.9 (0.5–1.9)	0.9
Other	1.8 (0.9–3.5)	1.3 (0.2–10.5)	0.7
Year of HIV diagnosis			
<1990	2 (1.2–3.2)	0.8 (0.1–5.8)	0.8
1990–2000	1.4 (1–2.1)	0.6 (0.3–1)	0.05
2001–2010	1.2 (0.9–1.7)	0.6 (0.4–0.9)	0.01
2011–2016	Ref	Ref	Ref

VIH en Guyane : combien s'ignorent??

- **Objectif ONUSIDA 90/90/90**
- **2 outils pour estimer les non diagnostiqués : Spectrum model et ECDC model**
- **2016:**
  - 3206-3539 cas
  - 161-174 nouveaux cas
  - 520 non diagnostiqués

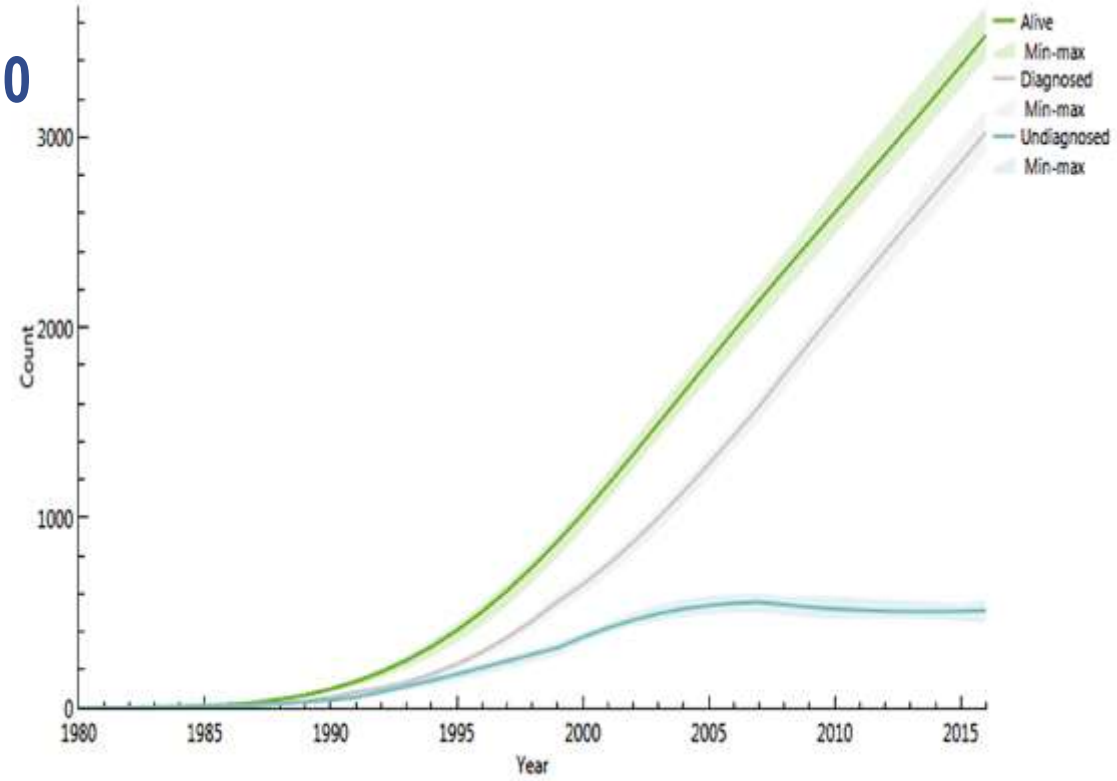


Fig 2. Total estimated number of persons living with HIV in French Guiana by year with confidence intervals using the ECDC HIV modeling tool.

Table 1. Continuum of care of HIV infection in French Guiana, 2016.

Estimated number of PLWHIV*	HIV prevalence**	Proportion undiagnosed	Proportion lost to follow-up (>12 months)	Proportion in care on on ART	Proportion on ART &virologically suppressed	Proportion of all PWLHIV (diagnosed and undiagnosed) virologicallysuppressed***
3206–3539	1.18%-1.35%	15%	17.8%	91%	91%	57.8%

*SPECTRUM-ECDC models;

**total population 262 527;

*** Obtained by multiplying proportion diagnosed X proportion on ARV X proportion virologically suppressed.

Nacher M, PLoS One, 2018

Décroissance majeure de l'incidence des (HAM/TSP) en Martinique 1986-2010

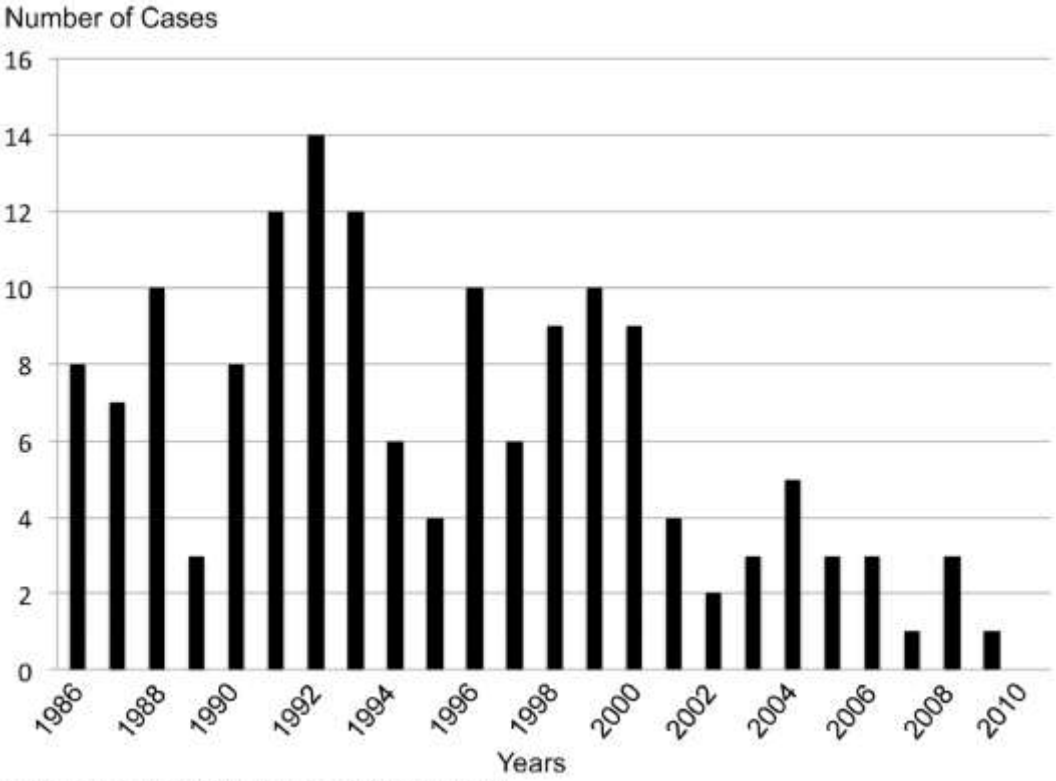


Fig 1. Number of HAM/TSP diagnosis per year over the 25-year study period.

- HAM/TSP (MLH/PST) myélopathies liées à HTLV1 / paraparésie spastique tropicale
- 1ère étude d'incidence

Olindo, PLoS NTD, 2018

Table 2. Crude and age-standardized 5-year incidence rates and rate ratio of HAM/TSP in Martinique between 1986 and 2010.

Study Periods	Estimated Population at Risk	Events, n	Crude 5-year Incidence Rate (95%CI)	1986–1990 age-standardized 5-year incidence rates (95%CI)	Standardized Incidence Rate Ratio (95%CI)
1986–1990	359,579	36	10.01 (6.78–13.28)	10.01 (6.78–13.28)	1
1991–1995	368,735	48	13.02 (9.34–16.70)	11.93 (8.61–15.25)	1.19 (0.87–1.55)
1996–2000	381,325	44	11.54 (8.13–14.95)	10.37 (7.28–13.47)	1.04 (0.91–1.13)
2001–2005	397,727	17	4.27 (2.24–6.28)	3.13 (1.64–4.62)	0.31 (0.17–0.51)
2006–2010	394,171	8	2.03 (0.62–3.43)	1.34 (0.41–2.27)	0.13 (0.09–0.18)

Décroissance majeure de l'incidence des (HAM/TSP) en Martinique 1986-2010

Table 4. Prevalence of HTLV-1 infection among first-time blood donors by genders in the four 5-year study periods.

Study Periods	1996–2000	2001–2005	2006–2010	2011–2015	p
Whole subjects					
First-time Blood Donors, n	11932	12276	12948	9727	
HTLV-1 Seropositive, n	67	46	33	20	
Age (y), Mean±SD	38.7±11.9	43.9±11.2	43.3±13.7	44.1±12.3	0.025
Seroprevalence, %, (95%CI)	0.56 (0.42–0.69)	0.38 (0.27–0.48)	0.26 (0.17–0.34)	0.21 (0.12–0.30)	
Odds Ratio (95%CI)	1	0.67 (0.46–0.98)	0.45 (0.30–0.68)	0.37 (0.22–0.61)	
Female					
First-time blood donors, n	5713	6630	7140	5487	
HTLV-1 Seropositive, n	41	29	24	13	
Age (y), Mean±SD	40.6±11.4	44.1±11.3	43.7±14.6	42.5±15.4	0.35
Seroprevalence, %, (95%CI)	0.72 (0.50–0.94)	0.44 (0.28–0.60)	0.34 (0.20–0.47)	0.24 (0.11–0.37)	
Odds Ratio (95%CI)	1	0.61 (0.38–0.98)	0.47 (0.28–0.78)	0.33 (0.18–0.62)	
Male					
First-time blood donors, n	6219	5646	5808	4240	
HTLV-1 Seropositive, n	26	17	9	7	
Age (y), Mean±SD	35.6±12.2	43.6±11.3	42.4±11.6	46.4±5.7	0.028
Seroprevalence, %, (95%CI)	0.42 (0.26–0.58)	0.30 (0.16–0.44)	0.15 (0.05–0.26)	0.17 (0.04–0.29)	
Odds Ratio (95%CI)	1	0.72 (0.39–1.33)	0.37 (0.17–0.79)	0.39 (0.17–0.90)	

CI indicates Confidence Interval; SD indicates Standard Deviation

Odds ratio were calculated using the 1996–2000 study period as reference

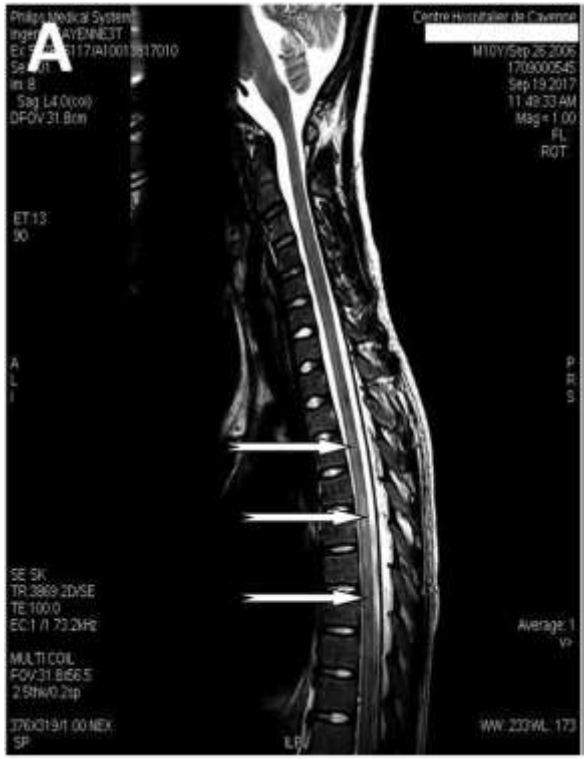
Olindo, PLoS NTD, 2018

- **Diminution de l'incidence des HAM/TSP liée à la diminution de la prévalence d'HTLV dans la population (cf population donneurs)**
- **Explications : préservatif, allaitement artificiel, augmentation du niveau de vie, occidentalisation du mode de vie**

LES PARASITES

1er cas prouvé d'infection à *Angiostrongylus cantonensis* Guyane/Surinam

- **Tableau de méningite à éosinophiles + myélite transverse chez un enfant de 10 ans**



Dufo, Emerg Inf Dis, 2018
Valente, Mem Inst Osw Cruz, 2018

Après *A. cantonensis, A. costaricencis* en Martinique

Parasite **25**, 22 (2018)

https://doi.org/10.1051/parasite/2018022

PARASITE

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RESEARCH ARTICLE OPEN ACCESS

***Angiostrongylus costaricensis* infection in Martinique, Lesser Antilles, from 2000 to 2017**

Céline Dard[2,3,a,*], Duc Nguyen[4,5,a], Charline Miossec[1], Katia de Meuron[6], Dorothée Harrois[7], Loïc Epelboin[5,8], André Cabié[4,9,10], and Nicole Desbois-Nogard[1,*]

- **Décrit en Amérique centrale et Nord Amérique du Sud**
- **4 cas d'infections à *A. cantonensis* décrits en Martinique entre 2000 et 2017**
- **Tableaux de douleurs abdo intenses avec hyperéosinophilie importante**
- **2/4 perforations iléales**
- **Incidence faible (0,03 cas/100000 hab/an)**
- **Emergent? Forme moins grave sous estimées?**

Paludisme au Surinam = importé de Guyane?

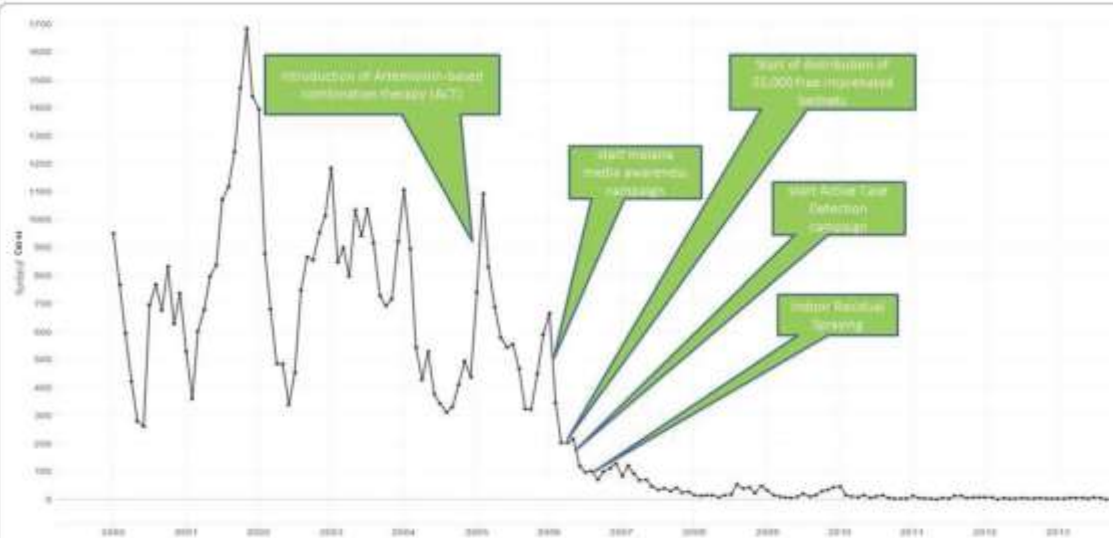

Fig. 7 Malaria interventions in the stable populations in Suriname on a timeline of monthly malaria cases 2000–2015 (source: data l

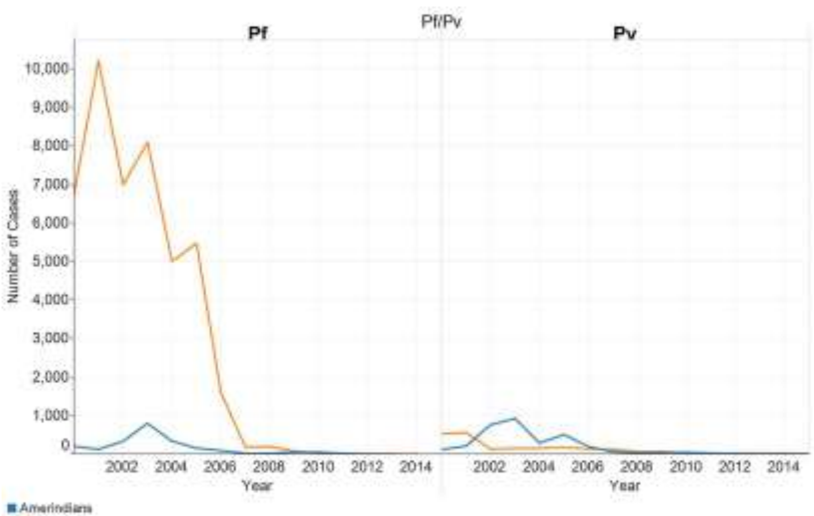

Fig. 2 Number of *Plasmodium falciparum* (Pf) and *Plasmodium vivax* (Pv) cases between 2000 and 2015 by ethnicity in stable population in Suriname (source: data Medical Mission)

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Malaria Journal

RESEARCH Open Access

Decreased endemic malaria in Suriname: moving towards elimination

Edward D. van Eer[1*], Gustavo Bretas[2] and Hélène Hiwat[3]

Abstract

Background: Suriname has moved from being the country with the highest annual parasite index in the Americas to one on the threshold of elimination. The progress toward elimination in the stable populations of Suriname between 2000 and 2015 is reviewed.

Methods: Data was obtained from the Medical Mission and the Ministry of Health Malaria Programme case-reporting systems, and analysed with a focus on disease burden and differentiation of the disease geographically, by malaria species, age, gender, ethnicity, incidence and gametocytaemia.

Results: Between 2000 and 2015 there were 57,811 locally acquired cases of malaria in the stable populations of Suriname. A significant reduction in indigenous malaria cases was observed from 2006 to 2015. The number of imported malaria cases saw a relative increase compared to the number of autochthonous cases. In 2015 over 95% of the cases reported in stable communities are imported, mainly from neighbouring French Guiana, a department of France. The overall decline in malaria case incidence followed the mass-distribution of free long-lasting insecticide-impregnated mosquito nets and increased awareness building efforts, improved access to malaria services as a result of the introduction of Rapid Diagnostic Tests and the implementation of active case detection in high risk areas. In addition, improved management of *Plasmodium falciparum* infections was achieved with the introduction of artemisinin combination therapy.

Conclusions: The existence of a network of policlinics in the interior ran by Medical Mission, for the indigenous population, allowed the rapid implementation of the strategy in stable communities. The success of malaria control in Suriname indicates that the availability at local level, of prompt and adequate prevention, diagnosis and treatment is a key requirement for the elimination of malaria.

Keywords: Malaria elimination, Stable populations, *P. falciparum*, Accessibility of health services, Suriname

Background

Malaria incidence in the world decreased with 41% between 2000 and 2015. About 212 million malaria cases and 429,000 deaths occurred in 2015 worldwide [1]. In the region of the Americas the number of confirmed malaria cases decreased from 1.2 million in 2000 to 390,000 in 2014 [2, 3]. In addition, malaria-related deaths decline by 79%. Three countries achieved zero indigenous cases between 2010 and 2015 and only two countries, Haiti and Venezuela, saw an increase in their malaria burden [2].

Suriname (Fig. 1) was responsible for the highest concentration of *Plasmodium falciparum* malaria in the Americas prior to 2006 [4]. The coastal area of Suriname has been free of malaria since 1968 [5] but malaria continued to be a problem in the interior of the country, especially in the Maroon and Amerindian village communities, located along the main rivers. Since 2006 Suriname experienced a significant decrease in malaria incidence, reaching near elimination levels by 2009 [6–8]. Transmission still occurs in the remote forested gold mining areas, with the mobile migrant miner population currently being most at risk [6]. The

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BioMed Central

Van Eer E, Malaria J, 2018

Paludisme au Surinam = importé de Guyane?

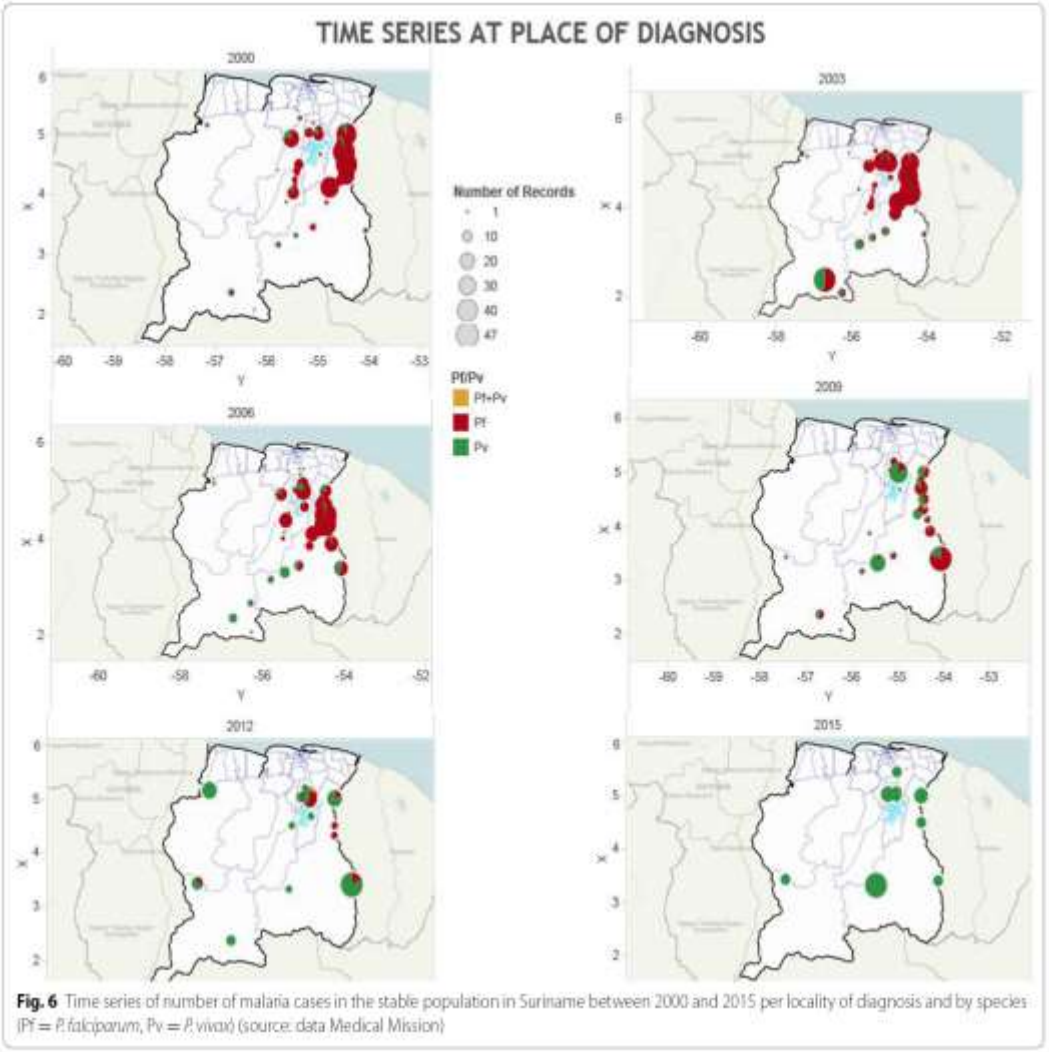

Fig. 6 Time series of number of malaria cases in the stable population in Suriname between 2000 and 2015 per locality of diagnosis and by species (Pf = *P. falciparum*, Pv = *P. vivax*) (source: data Medical Mission)

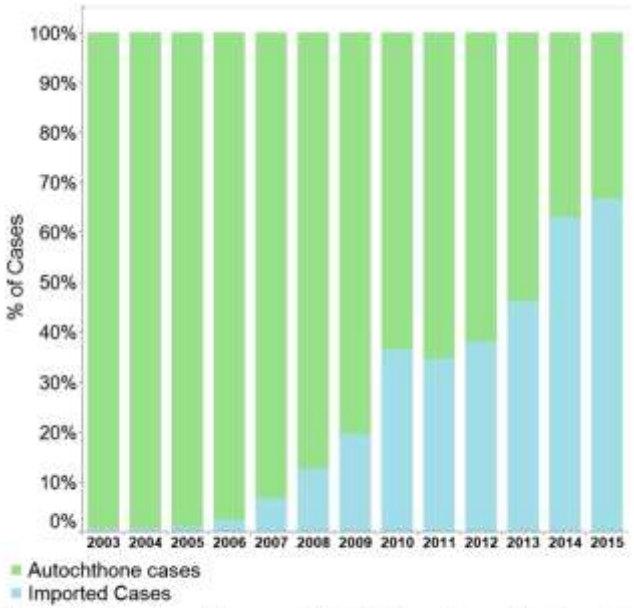

Fig. 3 Number of malaria cases 2000–2015 by origin of infection of the stable population in Suriname (source: data Medical Mission)

Van Eer E, Malaria J, 2018

Auto-médication contre le paludisme chez les orpailleurs illégaux et risque de résistance à l'artémisine en Guyane

- **22,3% des orpailleurs + à *Plasmodium* sp.**
- **Étude transversale multicentrique menée sur les sites de repli de janv à juin 2015. Questionnaire.**
- **421 inclusions;**
  - 30,4% ttt même si test neg
  - 54,8% aucune protection vs moustiques
  - 15,7% avait dormi sous une moustiquaire la veille

Douine M, J Antimicrob Chem, 2017

J Antimicrob Chemother 2018; **73**: 231–239
doi:10.1093/jac/dkx343 Advance Access publication 17 October 2017

Journal of Antimicrobial Chemotherapy

Predictors of antimalarial self-medication in illegal gold miners in French Guiana: a pathway towards artemisinin resistance

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Background: Malaria is endemic in French Guiana (FG), South America. Despite the decrease in cases in the local population, illegal gold miners are very affected by malaria (22.3% of them carried *Plasmodium* spp.). Self-medication seems to be very common, but its modalities and associated factors have not been studied. The aim of this study was to evaluate parasite susceptibility to drugs and to document behaviours that could contribute to resistance selection in illegal gold miners.

Methods: This multicentric cross-sectional study was conducted in resting sites along the FG–Surinamese border. Participating gold miners working in FG completed a questionnaire and provided a blood sample.

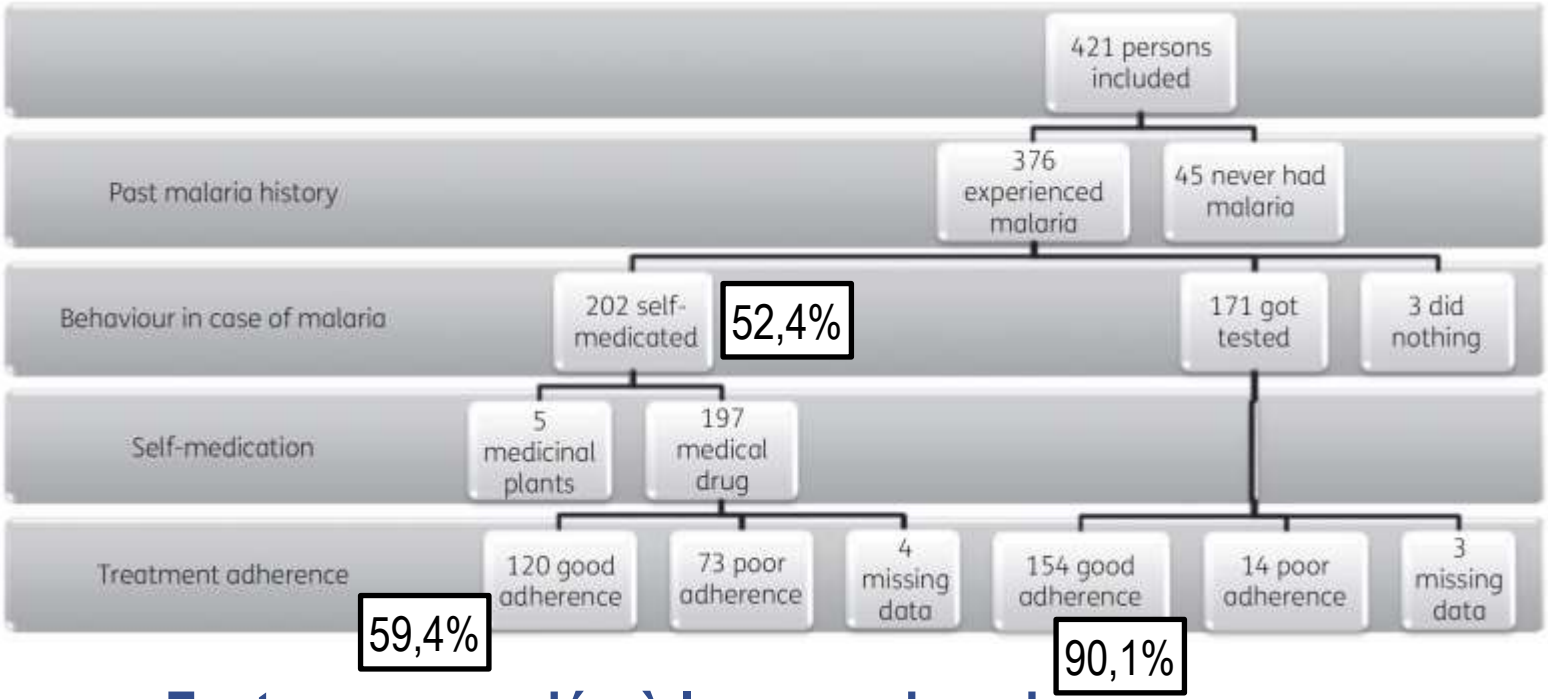
Results: From January to June 2015, 421 illegal gold miners were included. Most were Brazilian (93.8%) and 70.5% were male. During the most recent malaria attack, 45.5% reported having been tested for malaria and 52.4% self-medicated, mainly with artemisinin derivatives (90%). Being in FG during the last malaria attack was the main factor associated with self-medication (adjusted OR = 22.1). This suggests that access to malaria diagnosis in FG is particularly difficult for Brazilian illegal gold miners. Treatment adherence was better for persons who reported being tested. None of the 32 samples with *Plasmodium falciparum* presented any mutation on the *pfK13*-gene, but one isolate showed a resistance profile to artemisinin derivatives *in vitro*.

Conclusions: The risk factors for the selection of resistance are well known and this study showed that they are present in FG with persons who self-medicated with poor adherence. Interventions should be implemented among this specific population to avoid the emergence of artemisinin resistance.

Introduction

Malaria is a major parasitic illness, with 198 million cases and 584 000 deaths in 2014, worldwide.[1] In French Guiana (FG), a French overseas territory located on the Guiana Shield in South America, malaria is endemic.[2] Great efforts have been deployed to control malaria in the region. In Suriname as in local villages in FG, the number of cases decreased drastically.[3,4] But in this territory, mainly covered by Amazonian forest, the soil is rich in gold. In addition to the legal mining industry, 8000–10 000 illegal gold miners, mainly Brazilian, work in the forest.[5] They have difficult life conditions with poor hygiene and exhausting work, which lead to poor health. Deforestation and still water pools favour mosquito proliferation, notably *Anopheles darlingi*, the main malaria vector. In 2015, in western FG, molecular malaria diagnosis showed 22.3% of illegal gold miners carried *Plasmodium* spp., 84% of whom were asymptomatic.[6] In 2014, in a gold mining site near Maripa Soula, 48.3% of gold miners were positive for *Plasmodium* spp. by PCR.[7] This indicated that although malaria in local populations keeps decreasing, it remains hyperendemic in this specific population in FG. Medical care is free in health centres, but the remoteness of the mines and the fear of law enforcement hamper effective access to care for miners. A first study in this population in Suriname and FG has shown that self-medication with artemisinin derivatives seemed to be very common, with poor treatment adherence.[8] But self-medication modes and factors associated with

Auto-médication contre le paludisme chez les orpailleurs illégaux et risque de résistance à l'artémisine



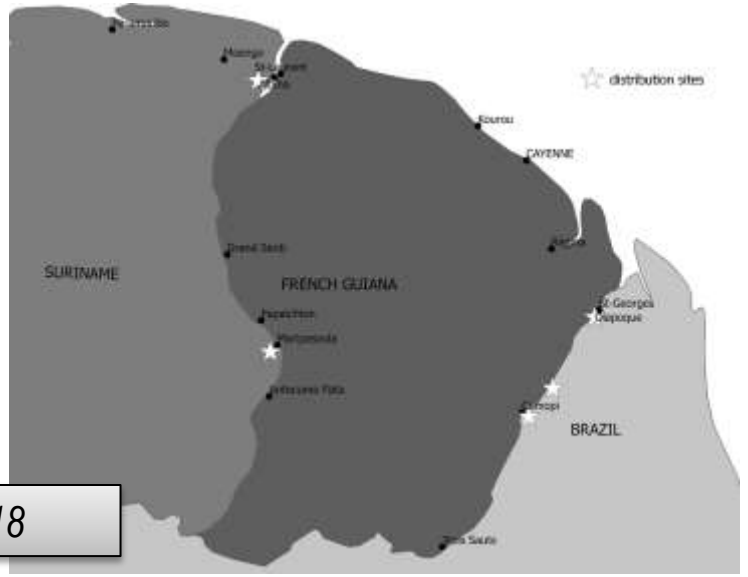
- **Facteurs associés à la mauvaise observance:**
  - Ne pas avoir fait le test
  - Auto-médication
  - Fait de penser qu'on doit prendre un ttt même si test négatif

Douine M, J Antimicrob Chem, 2017

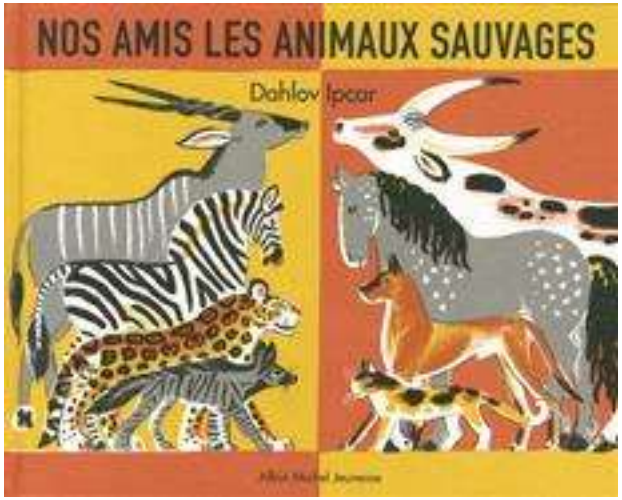
- **Parmi les 32 + à *P. falciparum* → 0 mutation de résistance mais 1 souche résistante in vitro.**

Bien « Malakit » ne profite jamais?
Ou comment s'attaquer à la racine du problème en traitant et prévenant le palu chez les orpailleurs illégaux en forêt guyanaise

- Jusqu'à 46,8% de portage asymptomatique de paludisme chez les « garimpeiros »
- Projet pilote international (France, Brésil, Surinam) piloté par la Guyane avril 2018 – octobre 2019
- Auto-diagnostic et auto-traitement contre le paludisme
- Formation et distribution de « mala-kits » sur les sites de repli coté Surinam et Brésil



Douine, Malaria J, 2018



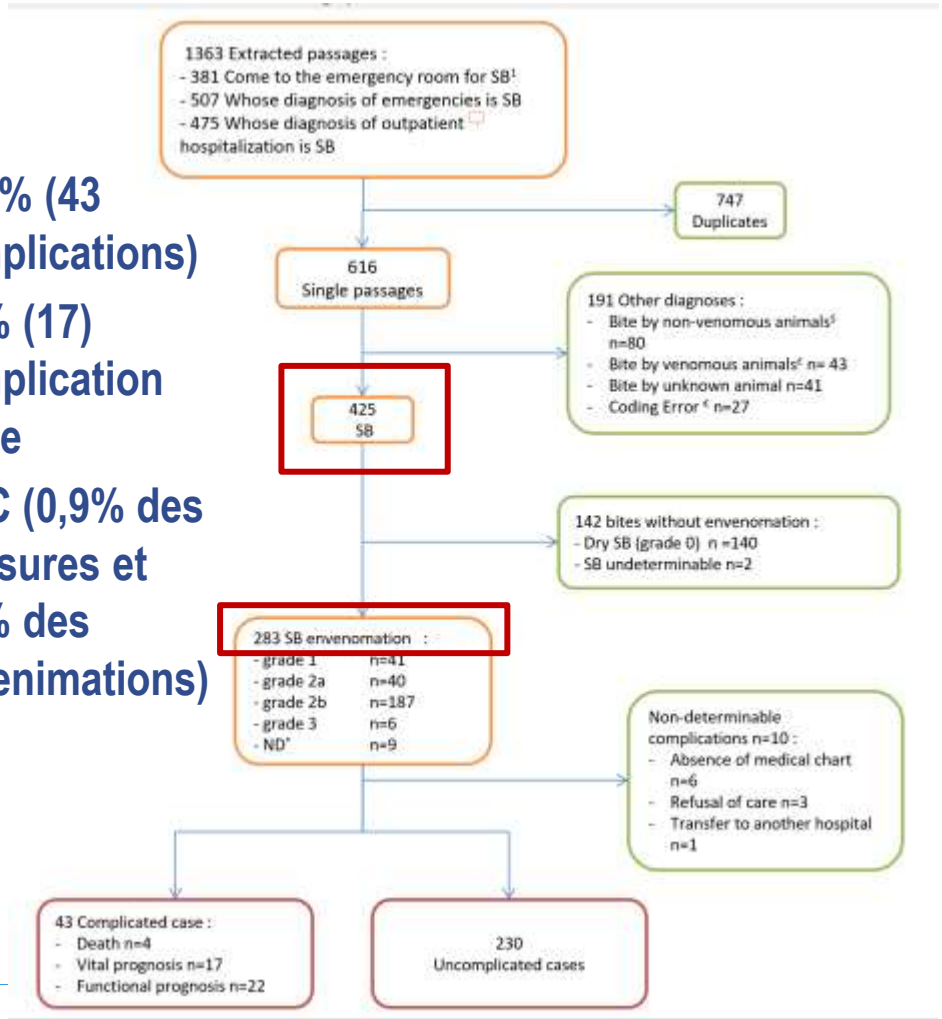
LA FAUNE SAUVAGE

1ère étude sur les envenimations ophidiennes en Guyane depuis…… 34 ans!

15,2% (43 complications)

7,4% (17) complication vitale

4 DC (0,9% des morsures et 1,6% des envenimations)



Intensive Care Med (2018) 44:113–117
DOI 10.1007/s00134-017-4929-3

LETTER

Predictors of complications of snake envenomation in Cayenne, French Guiana, 2007–2015

Rémi Mutricy[1*], Gérald Egmann[2,3], Christian Marty[4], Stéphanie Houcke[5], Antoine Adenis[1,3], Maylis Douine[1,3], Mathieu Nacher[1,3] and Loïc Epelboin[3,6]

Dear Editor,

Snake bite envenomation is a public health problem in most tropical countries and is still a neglected disease [1]. It is responsible for an important level of morbidity and mortality. There are an estimated 5.5 million snake bites per year in the world, causing 1.84 million envenomations and 94,000 deaths [2]. The snake species most incriminated is *Bothrops atrox*. In French Guiana, an Amazonian French overseas territory, snake bite envenomation is not considered a public health problem, and antivenom therapy was not used until recently [3, 4]. The death of two persons in late 2015 in French Guiana following a snake bite has led to this view being questioned. In this context, the predictors of complications of snake bite envenomations in French Guiana were studied. A cross-sectional study was conducted between 1 January 2007 and 31 December 2015.

All patients with a snake bite envenomation admitted by the Emergency Department of Cayenne Hospital were included. Bites without envenomation were excluded.

Complicated cases, defined as patients with impairment of functional or vital prognosis, were compared to uncomplicated cases. Bivariate analysis selected predictive variables using logistic regression. The dependent variable was the presence of complications and the independent variables were all the other variables. The patients that were already vitally compromised (shock, consciousness impairment) were excluded from the model in order to better study the predictors of poor outcome. Backwards multiple logistic regression was used.

During the 9-year study period, 425 patients presented with snake bites, among whom 283 had envenomation. Among them 196 were male (69.3%; sex ratio 2.25), and the median age was 34 years (range 1–92; IQR 21–48) and 49 (17.3%) were aged less than 16 years. The relative frequency of snake bite envenomations at the emergency ward was 0.7 per 1000 consultations (CI 95% 0.65–0.83‰). All envenomations were of the viperine type, i.e., with local impairment or hemorrhagic syndrome but no neurological signs as usually induced by *Micrurus* sp. or *Crotalus* sp.

Forty-three (15.2%) patients were complicated and 230 (81.3%) were uncomplicated. Classification was not possible in 10 patients (3.5%).

Four patients died following the envenomation (lethality rate 1.4%, CI 95% 0.5–3.7%), 17 (7.4%) presented vital risks, and 22 (9.6%) functional consequences, taking into consideration that some patients had several complications. This amounted to 58 health events, comprising 32 surgical indications [necrosectomy ($n = 13$), abscess drainage ($n = 8$), fasciotomy ($n = 6$), finger amputations ($n = 2$), phlegmon drainage ($n = 3$)]; 13 required blood product transfusions [red blood cells ($n = 10$), fresh frozen plasma ($n = 3$)]; 2 infectious complications [septic arthritis ($n = 1$), erysipelas ($n = 1$)]; 2 hemorrhagic strokes; 7 dialysis; 1 persistent loss of cutaneous substance for 2 months; 1 required mechanical ventilation. The variables independently associated with complications were Audebert and Harry score ≥ 3 [5], necrosis, blistering, glomerular filtration rate (GFR) ≤ 60 ml/min (Table 1). The global model fit was correct (GoF

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Springer

Mutricy R, Intensive Care Med, 2018

Mortalité des envenimations ophidiennes en Guyane : émergence ou sous-estimation?

- 7 décès 2007-2017
- Incidence 0,274 DC/ 100000hab/an
- 4ème mortalité des Amériques
- Réinstauration du sérum antivenimeux en 2017

Mutricy R, PLoS NTD, 2018

Ciguatera en Guadeloupe 2013-2016

Symptoms	Emergency department cases (n = 92)	Regional monitoring network (n = 104)	Cumulative data
Gastrointestinal	97.8% (90/92)	90.4% (94/104)	93.9%
Diarrhea	82.6% (76/92)	77.9% (81/104)	80.1%
Vomiting	67.4% (62/92)	46.2% (48/104)	56.1%
Nausea	19.6% (18/92)	25.0% (26/104)	22.4%
Abdominal pain	37.0% (34/92)	58.7% (61/104)	48.5%
Neurological	65.2% (60/92)	85.6% (89/104)	76.0%
Peripheral Nervous System	50.0% (46/92)	80.0% (68/85)	64.4%
Paresthesia	34.8% (32/92)	50.6% (43/85)	42.4%
Dysesthesia	15.2% (14/92)	57.6% (49/85)	35.6%
Pruritus	18.5% (17/92)	54.8% (57/104)	37.8%
Myalgia	3.3% (3/92)	11.5% (12/104)	7.7%
Arthralgia	4.3% (4/92)	1.9% (2/104)	3.1%
Central Nervous System	27.2% (25/92)	18.3% (19/104)	22.4%
Vertigo/Dizziness/Loss of consciousness	21.7% (20/92)	16.3% (17/104)	18.9%
Visual disturbance	3.3% (3/92)	0.0% (0/104)	1.5%
Headache	6.5% (6/92)	7.7% (8/104)	7.1%
Hallucinations	0.0% (0/92)	1.0% (1/104)	0.5%
Cardiovascular (hypotension or bradycardia)	73.9% (68/92)	10.6% (11/104)	40.3%
Hypotension	33.7% (31/92)	8.7% (9/104)	20.4%
Bradycardia	70.7% (65/92)	4.8% (5/104)	35.7%
Other cardiovascular signs			
Hypertension	8.7% (8/92)	0.0% (0/104)	4.1%
Tachycardia	6.5% (6/92)	1.9% (2/104)	4.1%
Others			
Hypothermia (T°C < 36.5)	61.4% (51/83)	NR*	
Asthenia/Fatigue	33.7% (31/92)	42.3% (44/104)	38.3%

Fish family in *Latin* (and English)	Local name of fish in French (or English) (*and corresponding species* when name was specific)	n
Carangidae (Jacks)	**Carangue**	47
Lutjanidae (Snappers)	**Pagre, Sarde**	16
	Vivaneau (*Lutjanus buccanella*) (Black fin Snapper)[1,2]	10
	Colas (*Ocyurus chrysurus*) (Yellowtail Snapper)[1,2]	1
Serranidae (Groupers)	**Mérou, Grande gueule**	14
	Vieille à carreaux (*Mycteroperca venenosa*) (Yellowfin grouper)[1,2]	1
Sphyraenidae (Barracudas)	**Barracuda, grande bécune** (*Sphyraena barracuda*) (Great barracuda)[1,2]	12
Mullidae (Goatfishes)	**Barbarin, Rouget Barbet** (*Mulloidichtys martinicus*)(Yellow goatfish)[1,2]	12
Muraenidae (Morays)	**Murène, Congre** (*Gymnothorax funebris*) (Green Moray)[1,2]	4
Coryphaenidae (Dolphins)	**Dorade** (*Coryphaena hippurus*) (Dolphin)*	3
Labridae (Wrasses)	**Parroquette** (*Halichoeres radiatus*) (Pudding wife)[1]	3
Haemulidae (Grunts)	**Gorette**[1]	2
Priacanthidae (Bigeyes)	**Poisson-soleil** (*Priacanthus arenatus*) (Bigeye)[1]	1
Scombridae (Tunas and mackerels)	**Thazard Cero** (*Scomberomorus regalis*) (Cero)[1]	1
Balistidae (Triggerfishes)	**Bourse** (*Balistes vetula*) (Queen Triggerfish)[1]	1
Centropomidae	**Brochet de mer** Snook (*Centropomus undecimalis*) (Snook)*	1
Scorpaenidae	**Poisson-lion** (*Pterois volitans*) (Lionfish)[1]	1
Not described	Not described	21

Boucaud-Maitre, Sci Reports, 2018

- **234 cas → 1,47 cas/100000 hab/an (IC 95 1,29-1,66)**
- **X 5 par rapport 1996-2006**

Envenimation par méduses et syndrome d'Irukandji en Guadeloupe, 2010-2016

- **211 cas passés aux urgences 2010-2016**
- **95 (45%) syndromes d'Irukandji**
  - Symptômes systémiques 5 à 60 min après l'envenimation
  - Douleur intense des extémités et signes sympathetiques

Irukandji diagnostic signs and number of diagnostic signs described (VAS: visual analogue scale).

	N	%
Clinical signs of IS		
Diaphoresis	39	41.1%
Abdominal or thoracic pain	35	36.8%
Anxiety	25	26.3%
Lumbosacral pain	19	20.0%
Vomiting	16	16.8%
Muscle cramps of the four limbs	12	12.6%
Restlessness	5	5.3%
Nausea	5	5.3%
Headache (with VAS>6)	1	1.1%
Number of clinical signs of IS		
1	37	38.9%
2	27	28.4%
3	20	21.1%
4	6	6.3%
5	2	2.1%
6	1	1.1%
7	1	1.1%
8	0	0.0%
9	1	1.1%
Mean ± SD	2.2 ± 1.4	

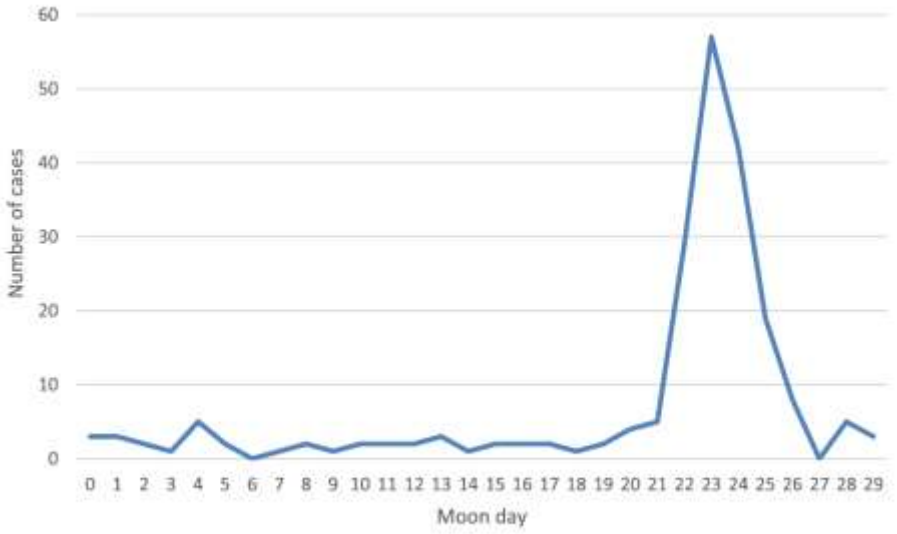

Fig. 1. Number of jellyfish envenomation in emergency wards depending on the day of lunear cycle.

MERCI DE VOTRE ATTENTION!