

High prevalence of asymptomatic malaria in urban settings in Douala, Cameroon

The American Society of Tropical Medicine and Hygiene
62nd Annual Meeting
November 13-17, 2013
Mariott Wardman Park, Washington, DC



Coalition de la Communauté des Affaires contre le SIDA,
la Tuberculose et le Paludisme

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Summary

1. Introduction

The context

Malaria in Cameroon / Douala

2. Methodology

*Parasitological assessment in the
CCA/SIDA – ExxonMobil Project*

3. Results

4. Conclusive remarks: DTB Approach

The context

- *Recent developments in diagnostic testing present new opportunities for malaria surveillance systems.*
- *Availability of inexpensive, quality-assured RDT means that malaria surveillance can be based on confirmed rather than suspected cases at all levels of the health system.*
- *As malaria control measures expand and the proportion of fevers due to malaria falls rapidly, it becomes increasingly important to track confirmed malaria cases, so that resources can be targeted to **areas** where problems remain and progress in malaria control is accelerated.*

Source: Disease surveillance for malaria elimination: an operational manual. WHO – RBM, 2012

Introduction

3/4 of managers in SS Africa attest the negative impact of malaria on their activity

RBM REPORT 2006



Douala

Economic capital of Cameroon

Biggest town of the whole CEMAC zone of 6 countries in central Africa

Population 2,446,945^[1]
(2012 est.)



Introduction

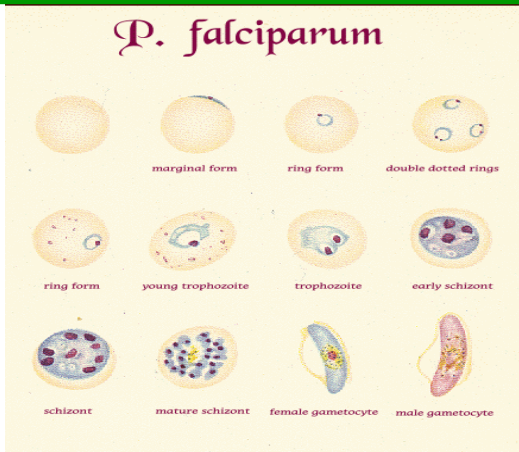
MALARIA IN CAMEROON

- First cause of morbidity and mortality
- 41% of morbidity
- 50% of hospitalizations
- 24% of death in hospital
- 40% of infant mortality
- 1st cause of absenteeism in school and at work

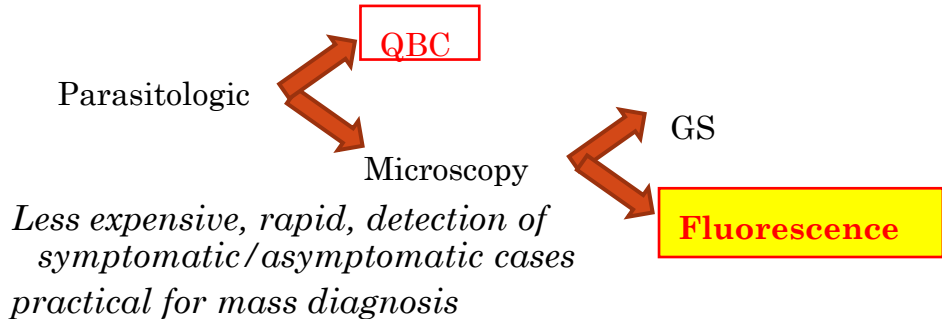
Introduction

Plasmodium falciparum

- Predominant in Douala
 - Resistance against chloroquine established
- Since the 90s
- High gametocytemia during treatment



- Paraclinic = laboratoty test



- Sérologie



ELISA



RDT
(Immunochromatography)

- Molecular biology



PCR

Cytometry

Research

*SD FK60 Malaria Ag
Pf/Pan® adopted by MoH
in Cameroon*

Anopheles gambiae



- The most common vector in Douala
- Active period 10 PM – 5 AM
- Night peaks between 1 & 2 AM
- 61.17 infective bites /human /year.

Evangelic School Carrière Ndog-Passi II

Prevalence = 77%

Insalubrity score = 8/10





Coalition de la Communauté des Affaires contre le SIDA,
la Tuberculose et le Paludisme

Malaria sensitization in small and medium enterprises and communities in Douala

Sponsored by ExxonMobil Foundation

OBJECTIVE

Evaluation of the intervention in six communities and three enterprises

Activity	Partners	Sponsors
Distribution of LLINs and Indoor spraying in 2011	 Coalition de la Communauté des Affaires contre le SIDA, la Tuberculose et le Paludisme	
Screening October 2012 - July 2013		

FIELD WORK

- Questionnaire

- Microscopy

3 microscopists 300 tests/in 8 hours

1min 36s / Test

- Production of results and reporting



Characteristics of the LED fluorescence microscope **CyScope®** (Partec, Germany)



- UV (wavelength 365 nm) excitation
- White light
- Achromate Objectives : 20x, 40x, 100x

- **Option CCD camera** (visualization slides on PC with Windows TM interface)
- Powered by rechargeable battery
- **6 hours of energy autonomy**

Malaria diagnostic with CyScope®



Etape 1
Piquer au bout du doigt

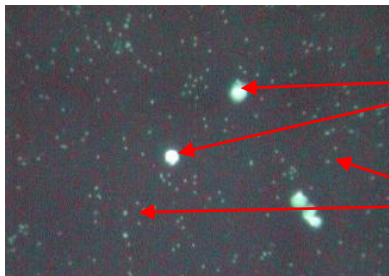


Etape 2
Déposer la goutte de sang sur la lame "P-DAPI" au-dessus du réactif. Recouvrir avec une lamelle et attendre 1 minute



Etape 3
Passer à l'observation sur le CyScope en lumière UV

Results



WBC

Plasmodium
parasites



CHOCOCAM

Screening in enterprises



HYSACAM



Average prevalence of malaria in enterprises

	Hysacam	G4S	Chococam	combined
Positive	103	56	44	212
Négative	346	153	121	652
Total	449	209	165	823
Prevalence	22.9%	26.8%	26.7%	24.67%

Knowledge of malaria among workers

Treatment

	Chococam		Hysacam		G4S	Total
Correct answer	61	(38.1%)	83	(19%)	80 (38.3%)	224 (27.8%)
Paracetamol	14	(8.7%)	151 (34.5%)	80 (38.2%)		245 (30.8%)
Chloroquine	9	(5.6%)	81 (18.5%)		16 (7.6%)	106 (13.2%)

Knowledge of malaria among workers

Causes

	Chococam	Hysacam	G4S	Total
Plasmodium	49 (30.6%)	89 (20.4%)	73 (34.9%)	211 (26.2%)
Others	111 (69.4%)	348 (79.6%)	136 (65.1%)	595 (73.8%)

Number of persons per LLIN

	Hysacam	G4S	Chococam	Total
Number of LLINs	101	316	300	717
Persons / household	247	1150	831	2228
Persons/ LLIN	2.44	3.63	2.77	3.10



Screening in communities



Results in communities

PREVALENCE OF MALARIA							
	BALI	BONAMIKANO	DIKOLLO-BALI	BONANDOUMBE	MABANDA	SODIKO	TOTAL
POSITIVE	302	153	131	221	472	419	1698
NEGATIVE	507	173	189	239	664	843	2615
TOTAL	809	326	320	460	1136	1262	4313
PREVALENCE	37.33%	46.93%	40.94%	48.04%	41.55%	33.20%	39.37%

Results in communities

Prevalence related to possession of LLINs

	LLIN	NO LLIN	TOTAL
POSITIVE	1007	536	1543
NEGATIVE	1458	785	2243
TOTAL	2465	1321	3786
PREVALENCE	40.85%	40.58%	40.76%

Results in communities

Prevalence by age group

	POSITIVE	NEGATIVE	TOTAL	PREVALENCE
< 5	323	484	807	40.02%
5-10	501	803	1304	38.42%
11-15	237	353	590	40.17%
> 15	687	975	1612	39.52%
TOTAL	1698	2615	4313	39.37%

Conclusive remarks

1 – Rapid detection of asymptomatic malaria cases is feasible in endemic areas using fluorescence microscopy.

2 - Malaria prevalence remains high in Douala despite control measures (54% in schools, 40% in communities and 25% in enterprises)

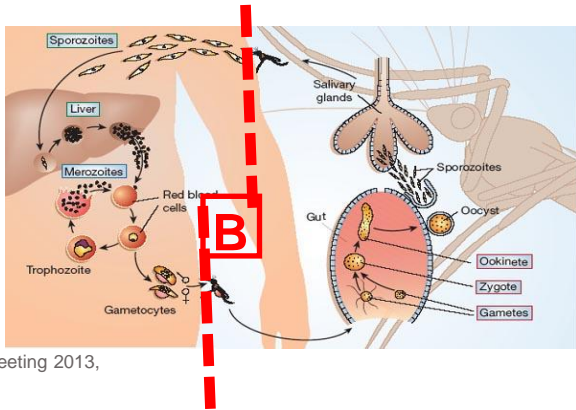
3 - Only 3.5% of positive cases had fever in this study



Contribution for malaria elimination strategies

1 - Why not treat systematically ?

2 - Why not protect Systematically?





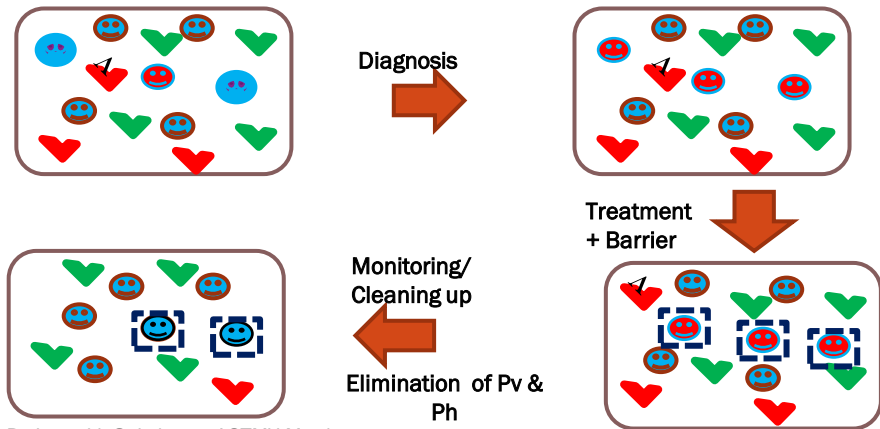
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DTB Approach

*Presence of **P**arasites* \Rightarrow ***P**rotection from bites*

Every positive case is a parasite reservoir , which must be closely protected against Anopheles bites for about 6 weeks

DTB Concept



Our approach for elimination

D



T

&

B



Conclusive remarks

- Asymptomatic malaria is highly prevalent in Douala and should be considered for elimination

The DTB approach specifically targets positive cases and reduces prevention costs

- Malaria patients should be prioritized in bednet distribution campaigns , **at least those under treatment**

*Priority: communication for protection
of all patients from mosquito bites*



*No more
Unprotected
hospitalized
patient*

Acknowledgments

- Participants, Traditional chiefs,:
CHOCOCAM, HYSACAM, G4S
- CCA/SIDA
- ExxonMobil Foundation
- URED – DOUALA
- PARTEC