Malaria in Urban Settings

The Case of Conakry, Republic of Guinea and LLIN Mass Distribution Campaign

Dr EUGENE KAMA LAMA
MD.,MPH
National Coordinator NMCP,
Guinea

FATOUMATA DIAKITE
Chief of Party, GF Malaria
Project, Plan International
GUINEA

PRESENTATION OUTLINE

- CONTEXT
- OBJECTIVES
- MALARIA CONTROL STATUS IN GUINEA
- MALARIA CONTROL STATUS IN CONAKRY
- DEMOGRAPHIC AND ENVIRONNMENTAL FACTORS, CONAKRY
- RAPID ENTOMOLOGICAL AND EPIDEMIOLOGICAL SURVEY TO CHARACTERISE MALARIA TRANSMISSION

I. CONTEXT

- Malaria remains a national priority
- Low prevalence of malaria in Conakry
- National campaign scheduled for April 2019
- An 860,000 LLIN gap not covered by partners
- Appropriateness of distributing LLINs in Conakry given low prevalence of malaria

II. OBJECTIVES

- Describe the malaria situation at the national level and in Conakry

- Analyse wether mass distribution of LLINs is appropriate in Conakry.

III. MALARIA CONTROL SITUATION IN GUINEA

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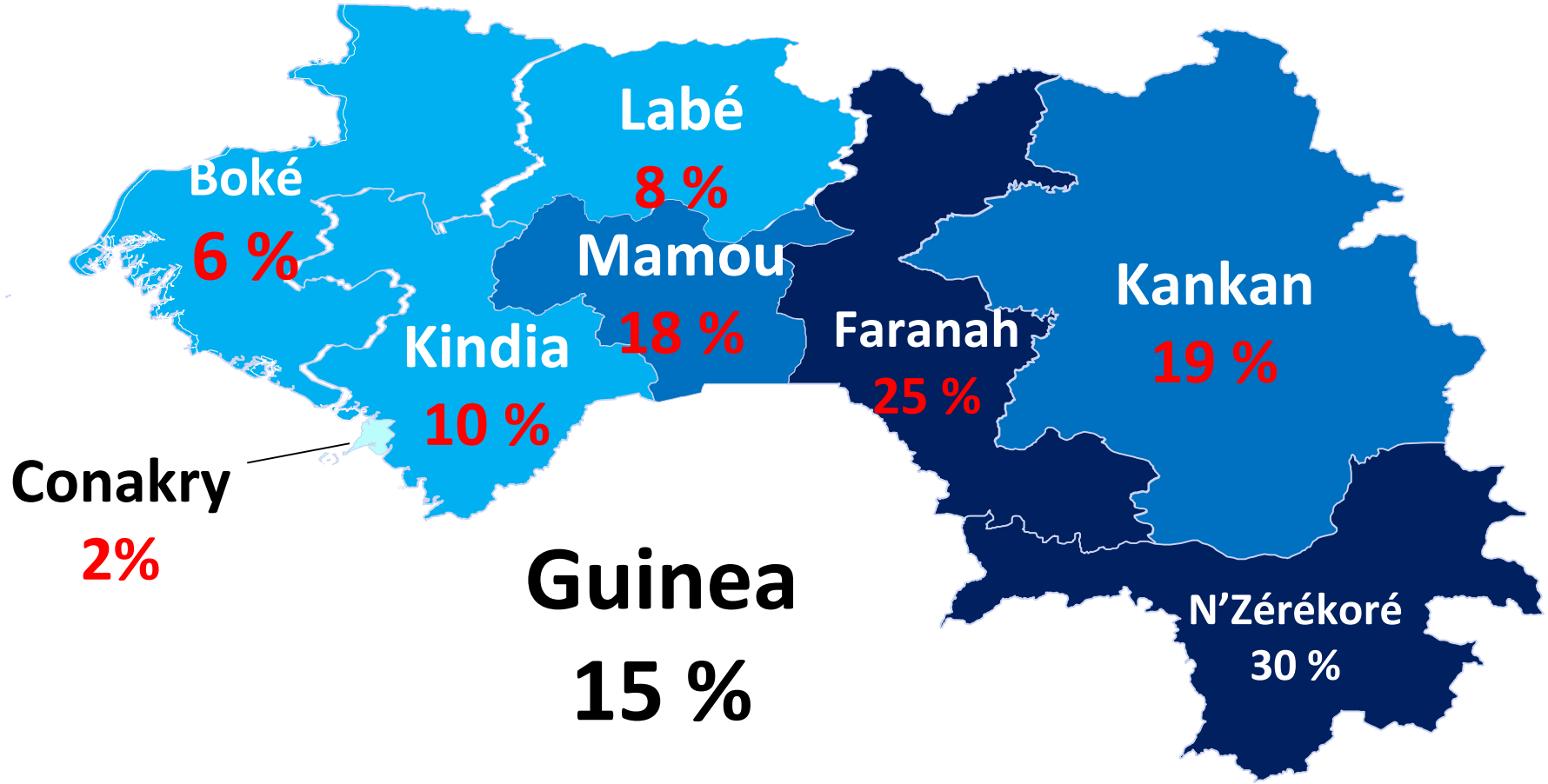
III.1. Epidemiological features

Zone	Humid savannah of West Africa
Transmission	Long transmission season (6 to 8 months, rainy season) Zone with Stable Malaria
Vector	Female anopheles mosquitos constitute : 66% of anopheline fauna
Morbidity	In 2018, • Confirmation rate: **68%** • Confirmed cases: **1 335 208** • Deaths: **1162**

Source: Annual Report, 2018 NMCP

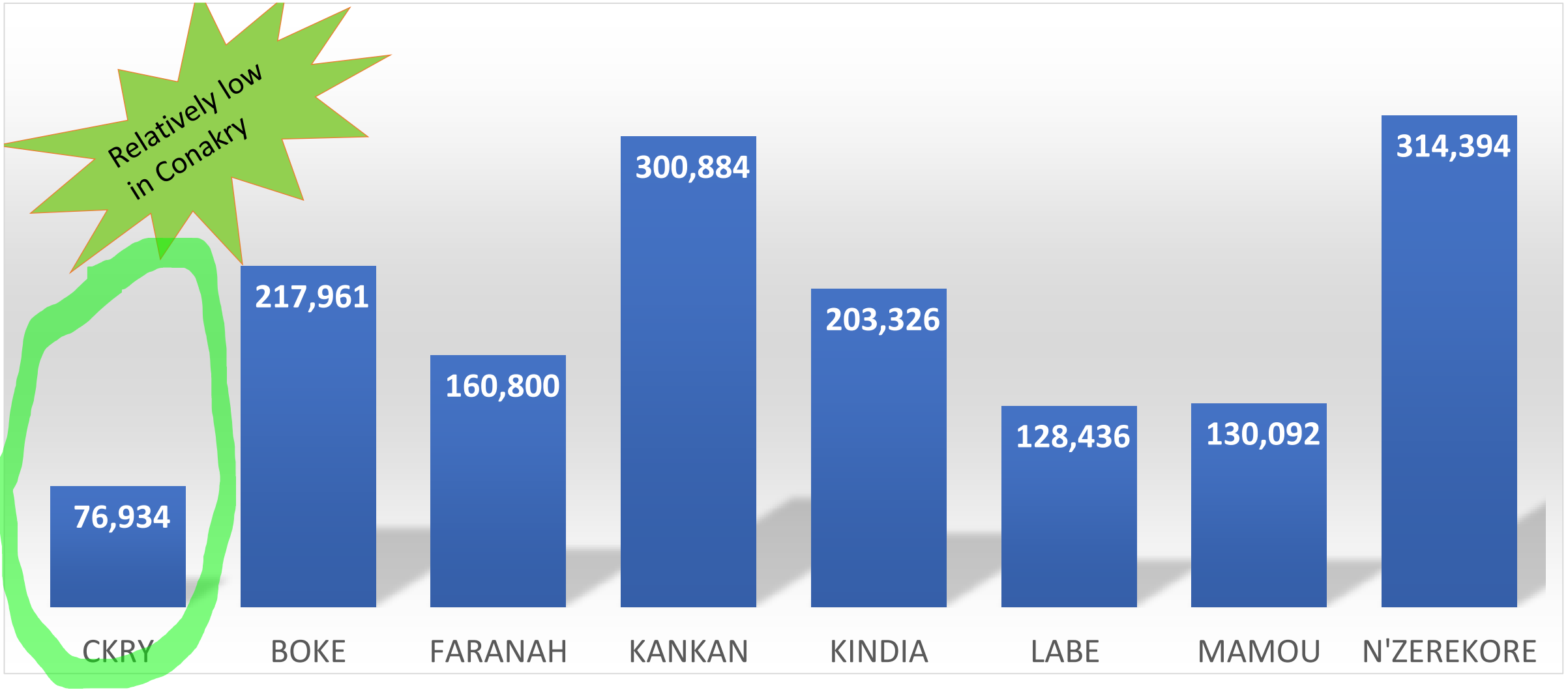
III. MALARIA CONTROL SITUATION IN GUINEA

III.2. Prevalence of malaria in Guinea: MICS-Malaria 2016



III. MALARIA CONTROL SITUATION IN GUINEA

III. 3. Confirmed cases of malaria by health zone, 2018



Source: Annual Report, 2018 NMCP

INCIDENCE OF MALARIA IN 2018

REGIONS	INCIDENCE /1000 pop. 2018
CONAKRY	**38**
BOKE	**154**
FARANAH	**146**
KANKAN	**156**
KINDIA	**120**
LABE	**88**
MAMOU	**116**
N'ZEREKORE	**126**
PAYS	**116**

Low incidence in Conakry: **38 /1000**

versus

116/1000 at the national level 2018

Source: annual report, 2018 NMCP

MALARIA CONTROL SITUATION IN CONAKRY

EPIDEMIOLOGICAL STATUS - CONAKRY, 2016

Item	Conakry	National Average
Prevalence	2%	15%
Incidence (per 1000)	38	116
Cases of confirmed malaria	76,934	191,603

DEMOGRAPHIC AND ENVIRONMENTAL SITUATION - CONAKRY

- Capital of Guinea, West Africa
- City on narrow peninsula of Kaloum, which extends into the Atlantic Ocean.
- Largest city in Guinea.
- Includes 5 communes subdivided into more than 120 neighborhoods.

DEMOGRAPHIC AND ENVIRONMENTAL SITUATION - CONAKRY

- Population: over 2,000,000 inhabitants in 2018

- High population density with 8,151 pop/km² versus 49 pop / km² at the national level

- Conakry experiences intense population movements related to the rural exodus

DEMOGRAPHIC AND ENVIRONMENTAL SITUATION - CONAKRY

Conakry is characterised by chaotic urbanisation and poor waste water management

- Urban zone with waste water disposal system
- Semi-urban zone with scattered modern buildings, lodgings without waste water disposal system;
- Rural zone with wildlife, vegetation, scattered modern housing on the periphery.

City of Conakry

DEMOGRAPHIC AND ENVIRONMENTAL SITUATION - CONAKRY

AERIAL VIEW OF CONAKRY

- Showing densely populated peninsula

ISSUE

Is it appropriate to conduct a mass LLIN distribution campaign in Conakry, the largest city in Guinea, characterised by chaotic urbanisation, poor waste water management, and low prevalence of malaria?

Rapid entomological and epidemiological survey to characterise malaria transmission in Conakry, conducted in Conakry and Dubréka (rural region close to Conakry) in August 2018

SURVEY METHODOLOGY

- Epidemiological aspects:
  - Health center visits to verify data
  - Household survey including RDT and LLIN observation
  - Interviews with community leaders and community health workers

- Entomological aspects:
  - Larval transects/prospection
  - Human landing catch
  - Mosquito identification

POPULATION AND STUDY SITES

- Selection households and members
  - Directional method for households
  - Head of household responds to household questionnaire
  - Children <5, pregnant women, random selection of adults for RDTs
  - Four people per household

- Entomological aspects
  - Exhaustive search for mosquito breeding sites in neighborhoods and sectors
  - Advice from villagers for potential sites

SURVEY RESULTS

On epidemiological aspects

- Positivity rate in Conakry **(5.6%)** is low compared to Dubréka **(28%)**

- **75%** of those who tested positive by RDT hadn't left the city during the previous four weeks.

- The private health facilities are the most frequented in Conakry

- The reported incidence of malaria is higher outside of Conakry

Source: Investigation CDC-NMCP2018

RESULTS

Regarding entomological aspects:

- Female anopheles mosquitos comprise 16% of mosquitos captured
- The number of anopheles captured in Conakry was much lower than in Dubréka
- The largest number of female anopheles mosquitos in Conakry were found in Kaloum, downtown neighborhood
- Anopheles were absent in the mosquito breeding sites found in Conakry
- In Conakry, the breeding sites comprise water containing large amounts of organic and cleaning materials
- In Dubreka, most breeding sites positive for larva were found in water troughs for domestic animals

Mosquito trapping in Conakry

Source: Investigation CDC_NMCP 2018

(1) OBSERVATIONS

- Strong evidence of **local transmission** of malaria in Conakry
  - RDT positivity in people without a history of moving outside of Conakry
  - Trapping of significant quantities of anopheles mosquitos

- **Variable levels** of transmission in Conakry
  - Kaloum: 11% RDT+ and 21 anopheles mosquitos per night
  - Matoto: 1% RDT+ and 0 anopheles mosquitos per night

- **Low LLIN coverage** in Conakry
  - 19% LLIN access in Conakry (vs 64% in Dubréka)
  - Same LLIN use rate in those with access to an LLIN

Source: Investigation CDC_NMCP, 2018

(2) OBSERVATIONS

Same incidence of fever in Conakry as in rural setting

- 20% of fever reported in the previous 2 weeks

Access and use of public sector facilities was similar in Conakry and Dubréka

- A third of those with fever sought care in the public sector in both sites

Good screening practices for fever cases in both sites

Good data quality in both sites

Source: Investigation CDC_NMCP, 2018

CONCLUSION

- The incidence of malaria reported monthly in Conakry indicates real **local transmission of malaria in Conakry**
- Malaria transmission in Conakry **varies widely among the 5 communes**
- It’s necessary to conduct an LLIN distribution campaign in all communes in the city of Conakry.

Source: Investigation CDC_PNLP, 2018

WHY A DISTRIBUTION IN CONAKRY?

- Even if the prevalence is lower, malaria cases exist in the whole city of Conakry
- Even in neighborhoods with low level of transmission like Matoto, we still have deaths caused by malaria
- During the last campaign, the number of LLINs distributed in Conakry was too low and it resulted in LLINs distributed outside of the capital being sold in the capital.

Source: Investigation CDC_PNLP, 2018

SURVEY LIMITATIONS

- The limited and non-randomized sampling weakens the generalisation of results and prevents extrapolation to other time periods and sites

- The teams didn’t find any larval breeding sites positive for anopheles mosquitos, thus the source of the anopheles remains unexplained

RECOMMENDATIONS

- The population of Conakry could benefit from LLIN distribution
- Plan a survey for seasonal monitoring to better identify and characterise mosquito breeding sites
- Strengthen the engagement of private health facilities in malaria control.

Source: Investigation CDC_NMCP, 2018

THANK YOU