



Protective efficacy of LLINs strategy compared with combined LLINs+ IRS strategy in two high malaria transmission regions of Madagascar

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Background (1/2)

Malaria remains a major public health problem in Madagascar:

- ❑ first cause of morbidity
- ❑ first cause of hospital mortality (RHIS,2019)

National Malaria Control Program objective -2018-2022

❑ **General objective:**

Reduce by 30% malaria morbidity by end of year 2022

❑ **Strategic objective:**

Protect at least 90% of eligible population by adequate malaria prevention measures (LLINs, IRS).

Background (2/2)

☐ *Key interventions*

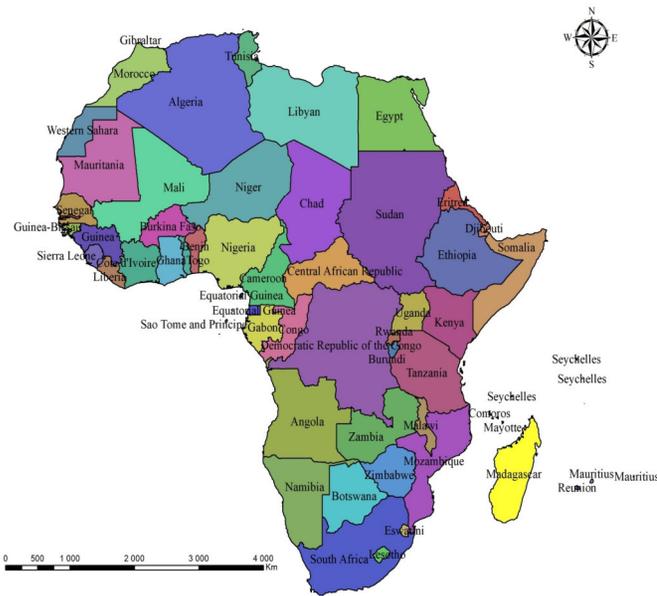
LLINs distribution through different channels :

- ✓ Mass campaign (last LLINs campaign organized in 2018)
- ✓ Routine distribution of LLINs
- ✓ Continue distribution at community level
- ✓ Distribution through social marketing (subsidies)
- ✓ Emergency distribution (malaria outbreak)

Indoor Residual Spraying (IRS)

- ✓ IRS Campaign every year: aim to reduce malaria transmission
- ✓ Focalized IRS: done in emergency response in targeted compound

Methodology-study setting (1/3)

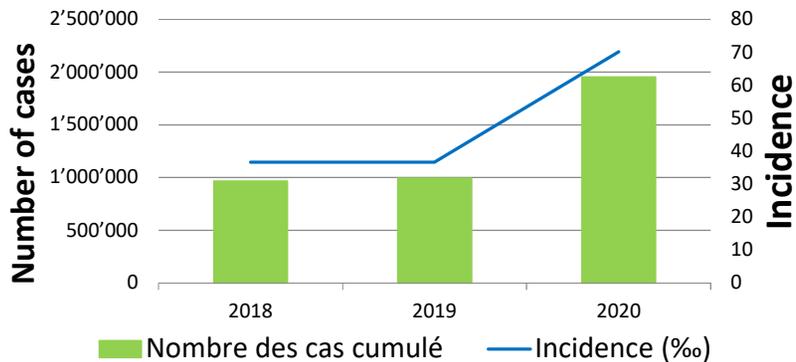


- Locates is Eastern Africa
- Separated from African continent by Mozambican channel

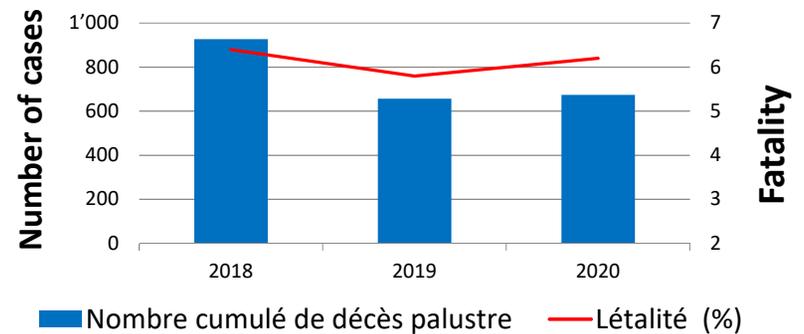
MADAGASCAR PROFILE

- 26 251 309 inhabitants
- 22 Health regions
- 114 Health districts
- 2 974 Primary health centers

Malaria incidence, 2018-2020

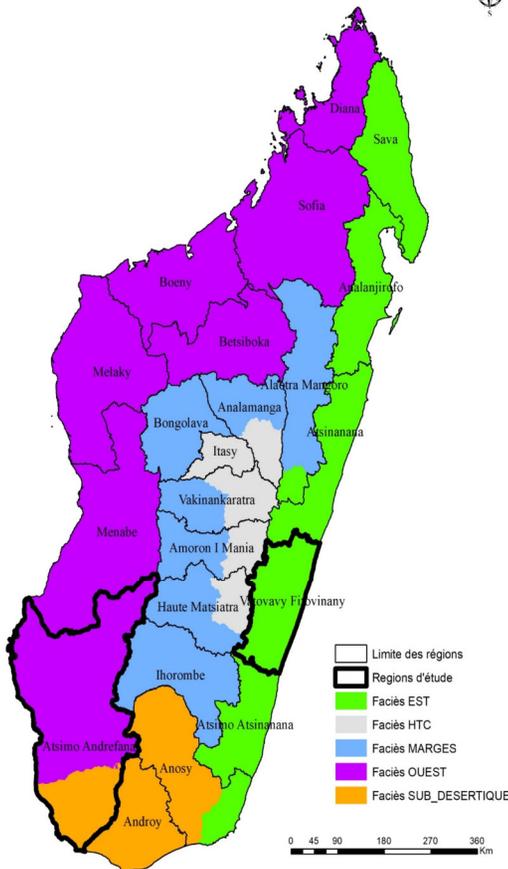


Malaria fatality, 2018-2020



Methodology-study setting (2/3)

FACIES EPIDEMIOLOGIQUES DE MADAGASCAR



- 5 epidemiological clusters defined by transmission duration and climate: **East, Central Highlands, Margins, West, Sub-desertic**
- Study targeted:
 - Région Vatovavy: faciès East**
 - Région Atsimo Andrefana: faciès sub-desertic**

Methodology (3/3)

Study design

- ❑ Cross-section retrospective study conducted in 2019
- ❑ Secondary data analysis(LLINs& IRS) reported within RHIS 2019 database
- ❑ 2 study arms selected with 98 communes in each ,
 - ☛ LLINs arm
 - ☛ LLINs + IRS arms

Study variables

- ❑ Malaria incidence in study areas (case per/1000 inhabitants)
- ❑ Malaria rapid diagnostic test positivity rate
- ❑ Proportion of confirmed malaria cases among under five years.

Results: Efficacy LLINs MID compared LLINs + IRS

Variables mesurées	MID (n=98)	MID+CAID (n=98)	p value
Fever reported	366 505	409 534	
Fever tested with mRDT	351 845 (96%)	393 153 (96%)	
Positivity rate	49,53% (174 269 cases)	38% (149 399 cases)	0,09
% of malaria among under five years	38%	32%	0,378
Malaria incidence	125‰	93‰	< 0,0000

Results: Efficacy LLIN compared LLIN + IRS

- ❑ Positivity rate: difference of 11.53 points between LLIN arm and LLIN+IRS arm, given a reduction of 23% positivity rate between both arms. The difference is however not statistically significant (p-value=0,09)
- ❑ Proportion of malaria among < 5 yrs: difference of 6 points, not significant
- ❑ Difference of 32 points in incidence for LLIN+IRS arm, (reduction of about 26% between the two arms for malaria incidence) with a difference statistically significant (p-value < 0,0001)
- ❑ The study was limited only in two high transmission regions out of 20 and country level representative study is needed.

Challenges

- ❑ High cost of IRS implementation limit its scalability
- ❑ IRS constraints: Biologic plants (i.e rice fields), insecurity (armed gangs), geographical unaccessibility (hard to reach areas)
- ❑ Low uptake of LLIN by population
- ❑ Mis-use of LLINs for other purpose

Conclusion

- ❑ LLIN+IRS combined strategy contributed to reduce significantly malaria incidence among beneficiaries population compared to single LLIN strategy
- ❑ Combined strategies (LLIN+IRS) should be encouraged in high transmission areas to reduce malaria morbidity and break the transmission chain
- ❑ Further representative experiments should be undertaken to include more health regions
- ❑ Advocacy among donors to consider funding these strategies

THANKS FOR YOUR ATTENTION

