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## Is malaria vector control still useful despite insecticide resistance?

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Poster SHORT 02

# Is vector control still useful despite insecticide resistance?

## Haoues ALOUT



*Combating resistance: microbes and vectors*

**2018 INTERNATIONAL PASTEUR INTERNATIONAL NETWORK SYMPOSIUM**

**Institut Pasteur, Paris – November 15-16, 2018**

# Is vector control still useful despite insecticide resistance?

Malaria prevalence: 50% reduction in 15 years

## Contribution of control methods



Control of disease



21%



Control of transmission



79%

Bhatt *et al.* 2015



Insecticide resistance in malaria vectors



# Is vector control still useful despite insecticide resistance?

Table 1. Protective Efficacy of the Vector Control Tool against the Malaria Burden

Year	Country	Vector control tool	Protective efficacy <sup>a</sup>		Type of control	Insecticide resistance	Mean efficacy (s.e.m) <sup>b</sup>	Refs
			Prevalence of parasitemia	Child morbidity				
1992	Gambia	ITN (permethrin)	7%	45%	Untreated	Susceptible	35% (21%)	[90–92]
1992	Cameroon	ITN (deltamethrin)	40%	NA <sup>c</sup>	No nets	Susceptible		[93,94]
1993–1995	Kenya	ITN (permethrin)	51%	NA	No nets	Susceptible		[95,96]
1996	Burkina Faso	ITC (permethrin)	57%	NA	No nets	Susceptible		[97,98]
1997–1999	Kenya	ITN (permethrin)	19%	55%	No nets	Low		[99,100]
2000	Ivory Coast	ITN (lambda-cyhalothrin)	17%	56%	No nets	High	33% (18%)	[24,101]
2004	Equatorial Guinea	IRS (deltamethrin)	47%	38%	Untreated	Moderate-high		[20,21]
2005	Burundi	ITN (deltamethrin), IRS (deltamethrin + alphacypermethrin)	55%	43%	Untreated	Moderate		[22,23]
2012	Malawi	ITN (deltamethrin)	30%	NA	No nets	Moderate		[25]
2014	Kenya	ITN	14%	NA	No nets	High		[26,27]

???

Alout *et al.* 2017

# Is vector control still useful despite insecticide resistance?

Cost of resistance



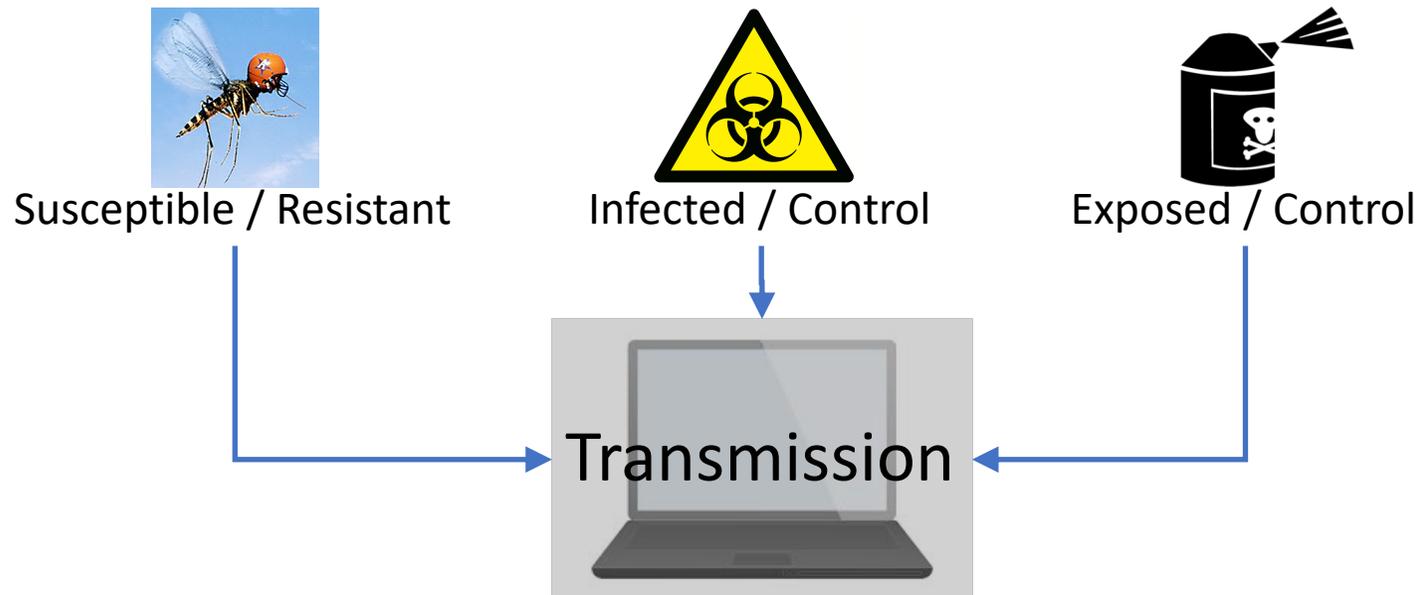
Modifications of several physiological and metabolic processes



# Is vector control still useful despite insecticide resistance?

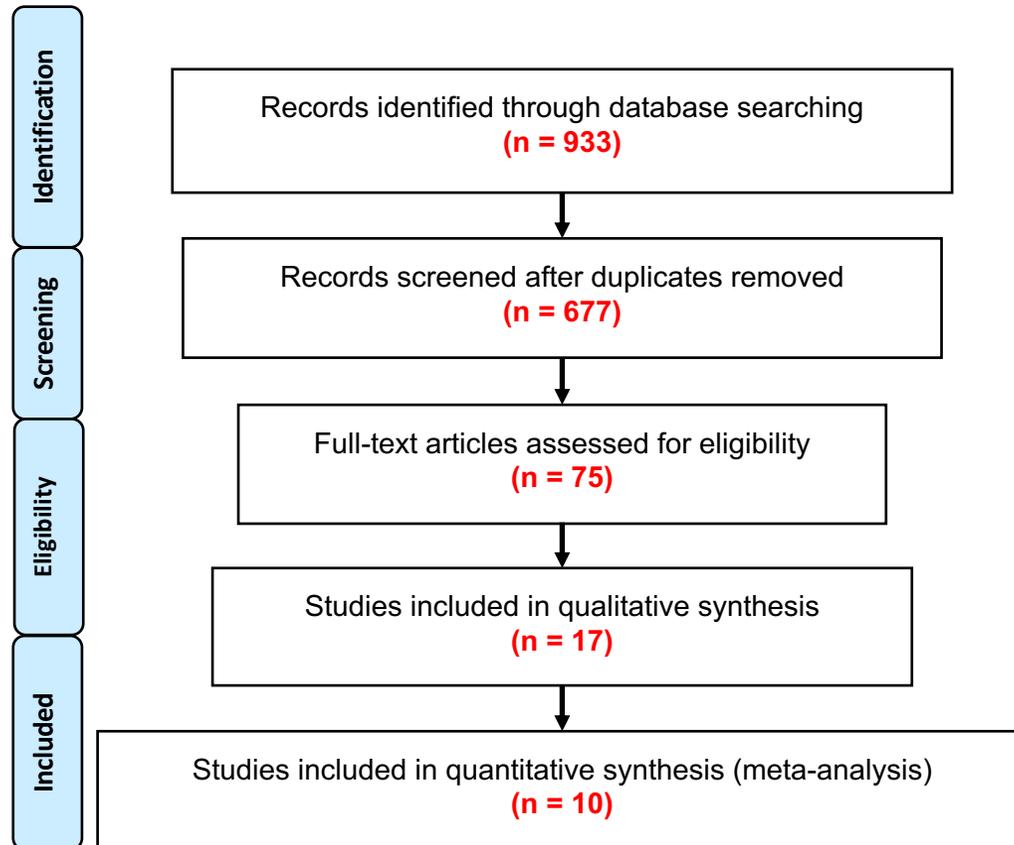
Interactions between:

Resistance genes – Infection – Insecticides



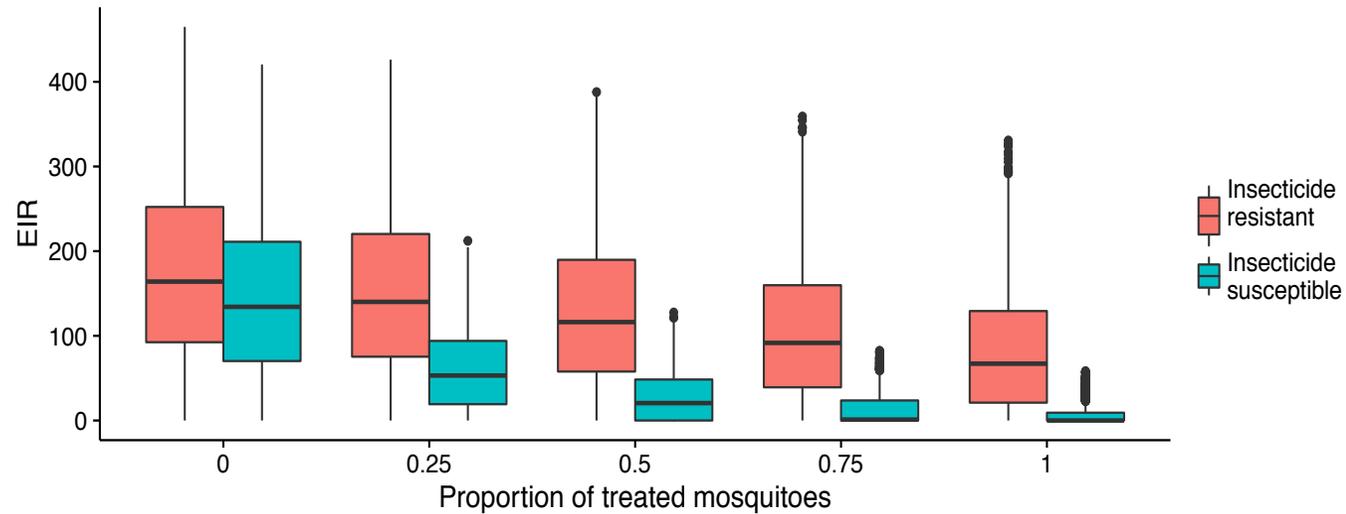
# Is vector control still useful despite insecticide resistance?

## Systematic review:



- Criteria :
- Experimental studies only
  - At least 1 resistant strain/pop
  - Known mechanism of resistance
  - Appropriate control

# Is vector control still useful despite insecticide resistance?



**In resistant populations, insecticides remain partially efficient to reduce malaria transmission**

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Poster SHORT 02

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And thank you