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Standardized multidisciplinary method for the evaluation of the effectiveness of malaria control interventions

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Standardized multidisciplinary method for the evaluation of the effectiveness of malaria control interventions

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Standardized multidisciplinary method for the evaluation of the effectiveness of malaria control interventions

‘PALEVALUT’ project

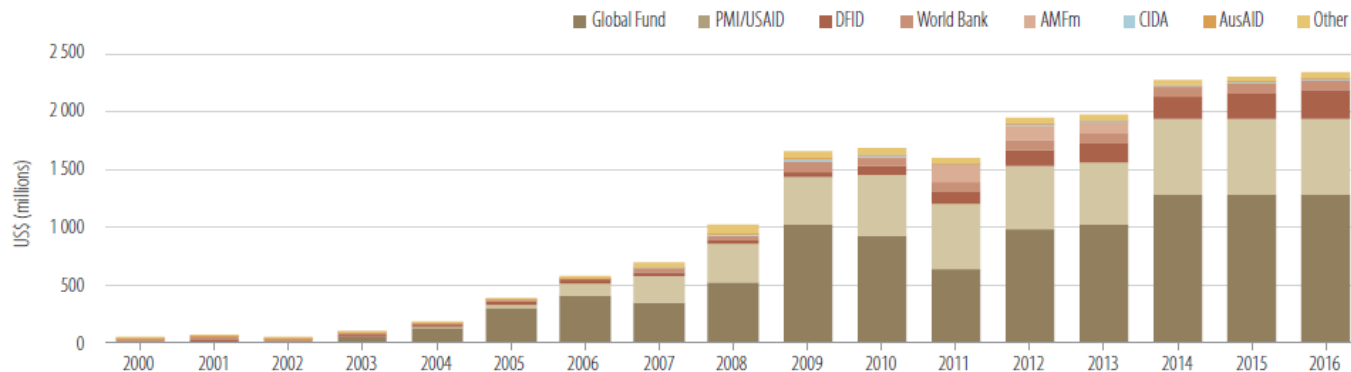
Kesteman T., Remoue F., Randrianarivelojosa M., Pennetier C., Audibert M.,
Etchepare M., Egrot M., Rogier C. & PALEVALUT scientific committee

63rd ASTMH annual meeting - Nov 4th, 2014



Context

- Malaria control depends on international funding (Madagascar: 99.8%), plateauing



International funding of malaria control (2000-2016)
 WHO 2013

- No new control method
- **Need for indicators of performance of Malaria Control Interventions (MCI) after their deployment in the field**

Context

Numerous Malaria Control Interventions (MCI) available/deployed:

- Long Lasting Insecticidal Nets (LLIN)
- Indoor Residual Spraying (IRS)
- Insecticide-Treated Wall Linings (ITWL)
- Intermittent Preventive Treatment of pregnant women (IPTp)
- Intermittent Preventive Treatment of children (IPTc)
- Larviciding
- Topical repellents
- Testing of fever cases by Rapid Diagnostic Tests (RDT) or microscopy
- Treatment of non-complicated malaria cases by Artemisinin-based Combination Therapy (ACT)
- Mass Screening and Treatment (MSAT)
- Information, Education and Communication (IEC)
- ...

Objective

- For a given setting (e.g. country), answer those questions about each MCI:
 - Is it working as expected?
 - Does it offer protection?
 - Does it kill vectors/parasites?
 - Is it carried out as expected?
 - Do people receive/use it?
 - Are we good at carrying it out?
 - What hinders its effectiveness?
 - Do we get what we pay for?
- Performance indicators**
- Protective effectiveness
 - Bio-efficacy
 - Coverage
 - Management
 - Determinants
 - Cost-effectiveness

Method = Toolbox



Epidemiology

Socio-Anthropology

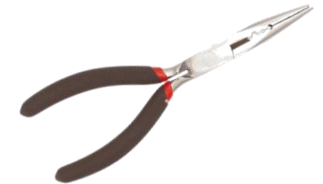
Health Economy

Biology

Entomology

Parasitology

~~New tools?~~

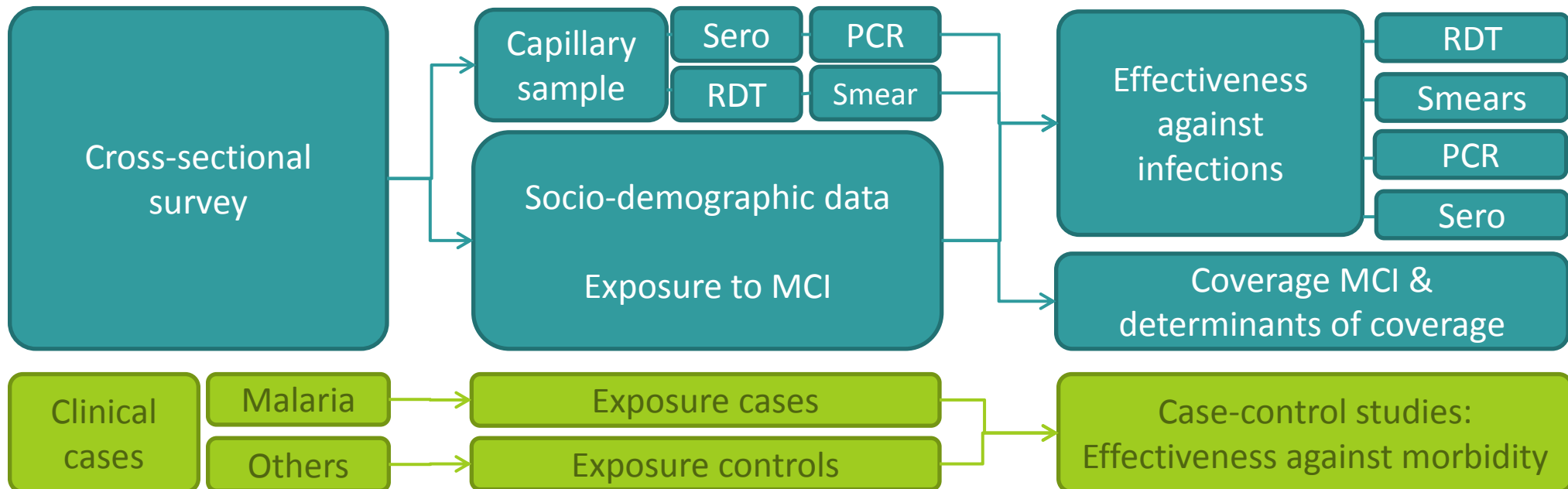


Epidemiology & Biology

Design & population

Samples & data collected

Analyses performed & indicators

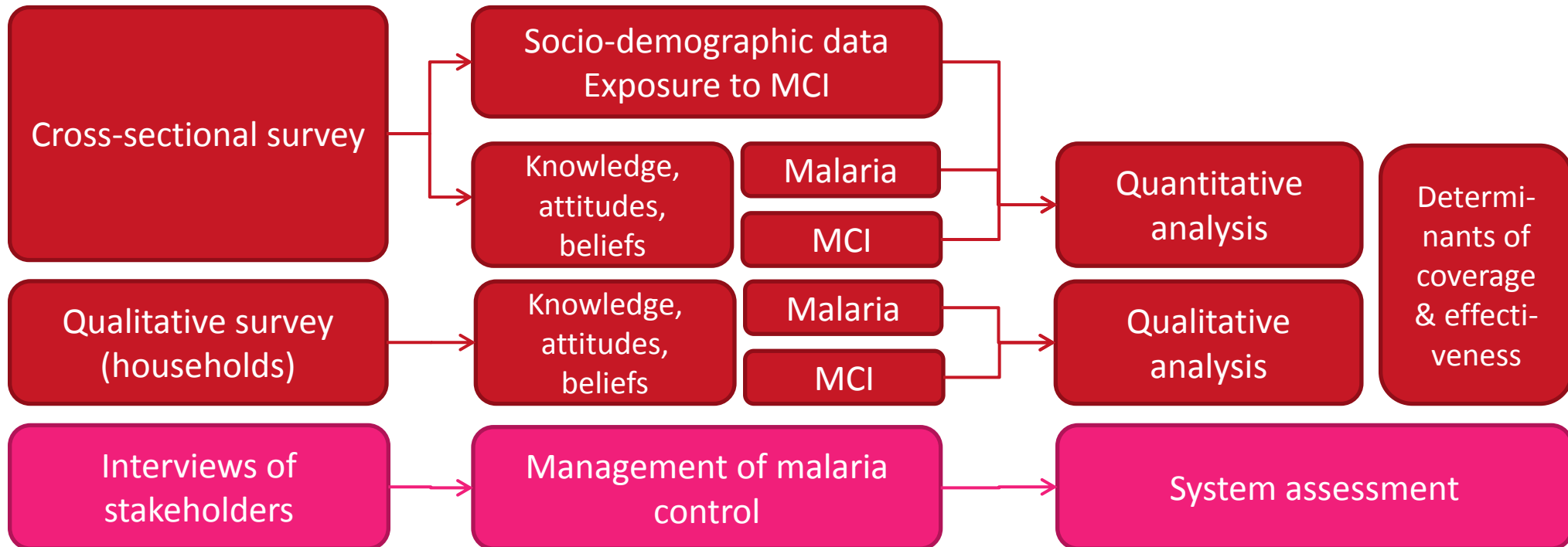


Socio-Anthropology

Design & population

Samples & data collected

Analyses performed & indicators



Health Economy

Design & population

Samples & data collected

Analyses performed & indicators

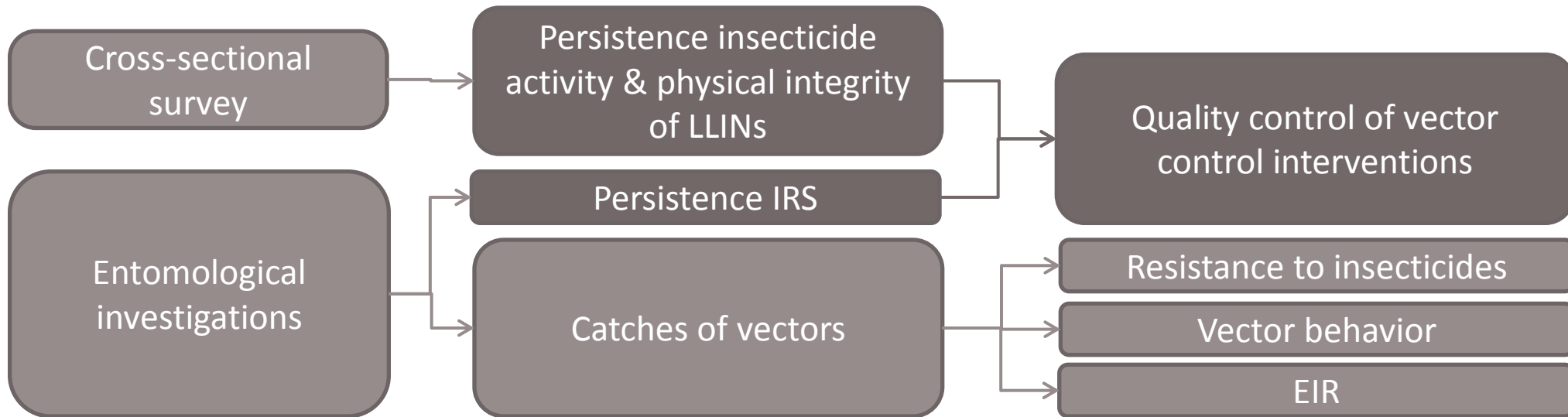


Entomology

Design & population

Samples & data collected

Analyses performed & indicators



Parasitology

Susceptibility to antimalarial drugs

Design & population

Samples & data collected

Analyses performed & indicators

Cross-sectional survey

Capillary sample
→ PCR resistance markers

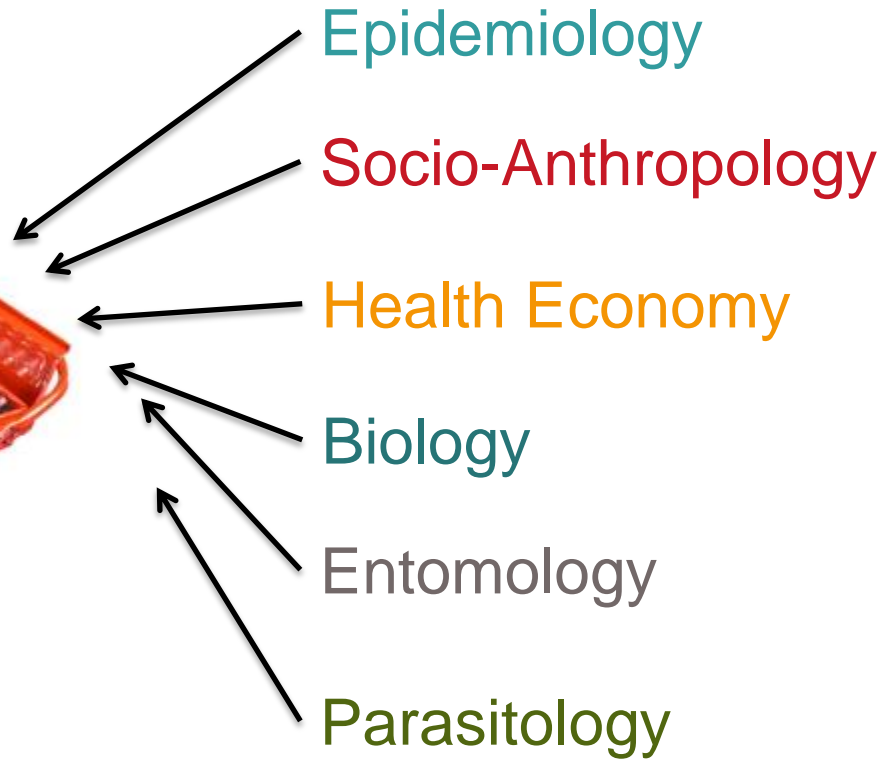
In vitro susceptibility

Clinical malaria cases

Longitudinal Follow-Up
→ Parasite clearance

In vivo susceptibility

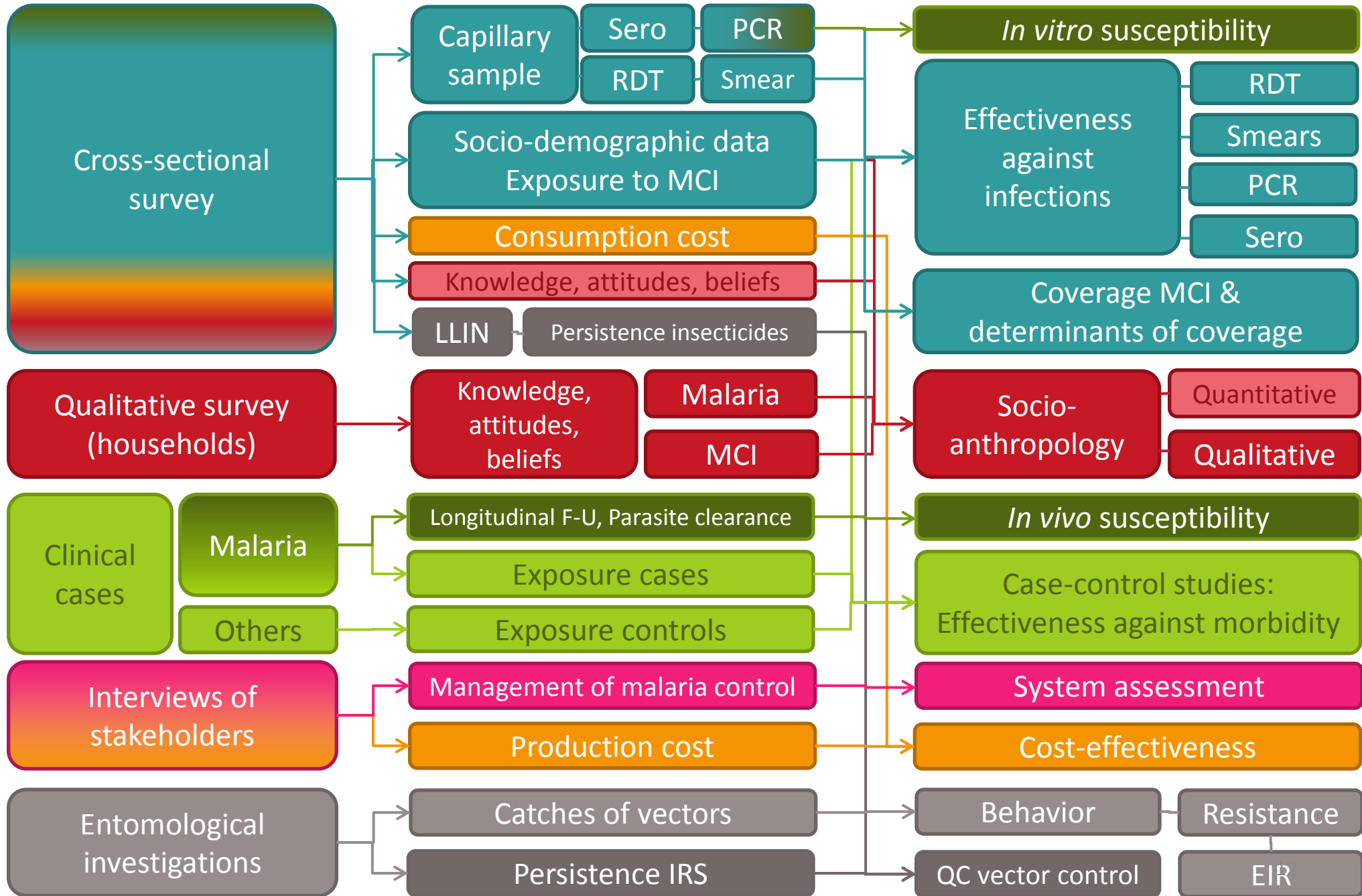
Why do we need a toolbox?



Design & population

Samples & data collected

Analyses performed & indicators



Why do we need a toolbox?



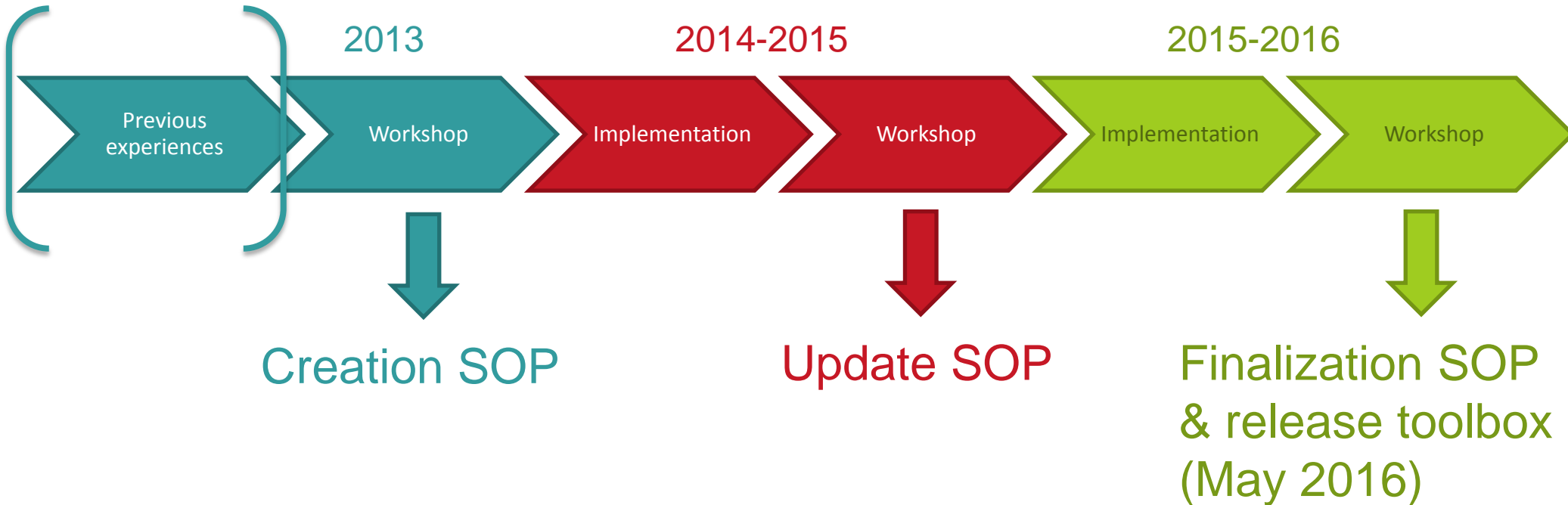
Some preliminary results ...

Example: IRS in Madagascar

- Protective effectiveness of IRS
 - Against clinical malaria: 25% non significant (OR 0.75 [0.33 - 1.81])
 - Against infection: -249% non significant (OR 3.49 [0.74 - 62.3])
- Qualitative study: belief IRS aims at reducing **insect nuisance** (e.g. fleas, cockroaches) but not aimed at malaria
- Determinants of IRS:
 - No significant difference of **coverage** between villages (range 82-100%, p=0.5)
 - No significant difference of **refusal** between villages (range 0-4%, p=0.6)
- **Persistence** of insecticide activity of IRS: **3.3%** of households meet WHO standards ($\geq 80\%$ mortality), 3.6 months after IRS (mean time)

Operability

- To ensure operability, 3 evaluation cycles



- Objective: completion in 1 year, US\$ 220 000

Thanks



More about PALEVALUT...

- www.Palevalu.org
Evaluation opérationnelle de la lutte intégrée contre le paludisme

- thomask@pasteur.mg

