Design and conduct of vector control field trials

Anne Wilson
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Presentation overview

1. Common problems with design and conduct of vector control trials
2. Minimum considerations for trial design
Vector control tool development

Phase I

Phase II

Phase III

Phase IV

Intervention concept & draft TPP

Policy development

MoA

Lab assays

Semi-field & small-scale field trial

Epidemiological field trials

Implementation pilot
Common problems with design and conduct of VC trials

- Non-randomised studies
- No (contemporaneous) control group or poor choice of control group
- Non-blinded performance and outcome assessment
- Contamination / spill-over effects
- Two village comparisons

- Short follow-up duration
  - *misleading* effect estimate

- No sample size calculation
  - *unable to show an effect*
3 examples of common problems
1: Two village/area comparison

Insecticide impregnated screens and curtains against cutaneous leishmaniasis (Noazin et al, TRSTMH, 2013)
2: Ento versus epi outcomes

Dadzie et al, 2013 - Percentage protection of NOMAS repellent compared to control

Sangoro/Moore et al, 2014 - An. arabiensis landings in four hours in semi-field system

Topical repellents provide individual protection against bites...
...but are not effective against clinical malaria...

Non significant 18% (95% CI: -8%, 38%) protective efficacy against *P. falciparum* malaria and 20% (95% CI: -37%, 53%) protective efficacy against *P. vivax* malaria

Wilson et al, 2014, Malar J
3: Contamination & spill-over effects

Trial of insecticide-treated curtains and water jar covers against dengue (Kroeger et al, 2006, BMJ)
Choice of study design

Analytic studies

www.cebm.net
Things to consider in study design

- Participants: Choice of control group
- Interventions: QA of intervention – quality, coverage & compliance
- Outcomes: Entomological and/or epidemiological
- Standardised measurement
- Sample size: Need to perform sample size calculation
- Think about size and number of clusters (if cluster randomised)
- Randomisation: Cluster or individually randomised?
- Appropriate steps followed (sequence generation and allocation concealment)
- Blinding: Participants, care providers, investigators
- Statistical methods: Choose method appropriate for data and study design
- How close are clusters? Might there be spill-over effects?
Applying these principles to M&E?

- Is there a control group? Area where you’re not intervening (e.g. staged roll-out) or are you measuring changes over time?
- Other factors which might be affecting results? e.g., environment (rainfall, temp), other programmes etc.
- Quality control of intervention (quality / coverage / compliance)
- Separate team doing the evaluation
Summary

- Evidence based decision making requires that field trials are done to a high standard.
- Importance of epidemiological outcomes.
- Simple measures can improve study quality.
- Also applicable to M&E.