4th Housing & Malaria Work Stream meeting
Co-leaders: Steve Lindsay & Lucy Tusting

Wednesday 8 February 2017
Room Dassault/Morane
10:30 – 13:30
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.30 – 10.35</td>
<td>Welcome</td>
<td>Steve Lindsay &amp; Lucy Tusting</td>
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<tr>
<td>10.50 – 11.10</td>
<td>Policy update Work in progress on housing &amp; malaria proposal</td>
<td>Steve Lindsay</td>
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<td>11.10 – 11.20</td>
<td>Housing improvements in Namibia</td>
<td>Tara Seethaler (CHAI)</td>
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<td>11.20 – 12.30</td>
<td>Discussion: How do we engage with the housing sector?</td>
<td>All (led by Steve Lindsay)</td>
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<tr>
<td>12.30 – 13.30</td>
<td>Discussion: Work Plan 2017-2018 Advocacy, GVCR &amp; AOB</td>
<td>All (led by Lucy Tusting)</td>
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<td><strong>13:30</strong></td>
<td><strong>End of meeting</strong></td>
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</tbody>
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Review of Work Plan 2016-2017
Lucy Tusting
2016-2017 Work Plan

1. **Advocacy** for inclusion of housing in strategic plans, curricula, CSR

2. **What housing interventions do we recommend** – update 2015 consensus statement

3. **Visit key funders** to present ideas on malaria and housing

4. **6 monthly updates** on what’s happening in housing and malaria

5. **Stakeholder visits** to study sites in Tanzania and The Gambia

6. **Explore links with UNEP & other organisations**
2016-2017 Work Plan

1. **Advocacy** for inclusion of housing in strategic plans, curricula, CSR

   - *Global Vector Control Response 2017-2030* emphasizes role of housing for vector control – Due for presentation to the WHA May 2017

   - *Proposal to UK BBSRC* to establish a network on housing & VBDs – Round 1 successful; full application due 16th Feb

   - *Habitat 3 presentation & blog* on housing & VBDs; VBD included in *New Urban Agenda*

   - *Networking & informal discussions* – ongoing, e.g. discussion of future research held at ASTMH 2016
2016-2017 Work Plan

2. **What housing interventions do we recommend** – update 2015 consensus statement
   - Not done – Discuss at VCGW 2017

3. **Visit key funders** to present ideas on malaria and housing
   - **DfID** – advocated for future funding for research on housing & VBDs in online consultation, Oct 2016
   - **IVL, a Bill Gates Company** – Visit to Seattle in December 2016 to discuss development of house screening products
2016-2017 Work Plan

4. **Six monthly updates** on what’s happening in housing and malaria

5. **Stakeholder visits** to study sites in Tanzania and The Gambia
   - RooPfs study, The Gambia – June 2016 meeting attended by officials from NMCP and housing sectors
   - Magoda project, Tanzania – 2017?

6. **Explore links with UNEP & other organisations**
   - 2016 New Urban Agenda included VBD (Graham Alabaster)
Work in Progress
Lucy Tusting & Steve Lindsay
Work in Progress

1. Multi-country analysis of housing & malaria
2. RooPfs study in The Gambia
3. Eave-tube study in Côte d’Ivoire
4. Importance of cross-ventilation
5. Relevant policy issues
Work in Progress

1. Multi-country analysis of housing & malaria
2. RooPfs study in The Gambia
3. Eave-tube study in Côte d’Ivoire
4. Importance of cross-ventilation
5. Relevant policy issues
Multi-country analysis of housing & malaria

RESEARCH ARTICLE
Housing Improvements and Malaria Risk in Sub-Saharan Africa: A Multi-Country Analysis of Survey Data

Lucy S. Tusting\(^1\)*, Christian Bottomley\(^2\), Harry Gibson\(^1\), Immo Kleinschmidt\(^3,4\), Andrew Tatem\(^5,6\), Steve W. Lindsay\(^7\), Peter W. Gething\(^1\)

Out on Feb 21st
Background

- House improvements show promise for malaria control, but for most of Africa no studies have linked housing quality and malaria.

- No systematic comparison between housing and established malaria interventions.

  - Is modern, improved housing associated with a lower risk of malaria infection in children, than unimproved housing, across a range of transmission settings in Africa?
Methods

• Cross-sectional analysis of 29 Demographic and Health Surveys from 21 African countries dating from 2008-2015 (139,318 total children aged 0-5 years)

• We determined the association between:
  i. House type (improved vs unimproved) and malaria infection
  ii. ITN use and malaria infection

• Used conditional logistic regression, adjusting for age, gender, IRS, household wealth and geographic cluster
Improved vs unimproved housing

**Improved**: metal roof, concrete walls

**Unimproved**: thatch roof, mud walls
Odds of malaria infection are lower in improved houses and ITN users (RDTs)

a. Improved housing:

Favours improved  
Favours unimproved

b. ITNs:

Favours ITNs  
Favours no ITNs
Odds of malaria infection are lower in improved houses and ITN users (RDTs)

a. Improved housing: 14% reduction
b. ITNs: 15% reduction
Odds of malaria infection are lower in improved houses and ITN users (microscopy)

a. Improved housing:
- Favours improved
- Favours unimproved

b. ITNs:
- Favours ITNs
- Favours no ITNs
Odds of malaria infection are lower in improved houses and ITN users (microscopy)

a. Improved housing: 9% reduction
b. ITNs: 16% reduction
Summary & conclusions

• Children living in modern, improved housing had **9-14% lower odds of malaria infection** than children living in traditional, unimproved housing.

• Children sleeping under ITNs had **15-16% lower odds of malaria infection** than children not sleeping under ITNs.

• Improving house quality in Africa may help to reduce malaria transmission and may have a similar effect on malaria to ITNs.
Work in Progress

1. Multi-country analysis of housing & malaria
2. RooPfs study in The Gambia
3. Eave-tube study in Côte d’Ivoire
4. Importance of cross-ventilation
5. Relevant policy issues
Roo*Pfs* study design

800 houses traditional mud-walled thatched houses recruited

400 traditional mud-walled thatched houses

400 ventilated metal-roofed houses
RooPfs house: Ventilated roof
Roo *Pf* s house: Ventilated front door
Eave tubes study update

cross reference to the talk of Matt Thomas in the New Challenges, New Tools in Vector Control work stream where he gave an update on the Eave tube trial.
Effects of cross-ventilation on mosquito behaviour

Jim Sutcliffe, Trent University, CDC Entomology Branch

Cross-ventilation makes bed nets more comfortable to use but... how does it affect mosquito behaviour and does it matter?

Used video to see where mosquitoes attack an occupied net in still air and with 0.1 and 0.4 m/s cross-drafts from a small fan.

Av. appearances/min
(# video frames with mosquitoes)

- Cross-ventilation may cause mosquitos to attack sides where most holes occur, to move away from areas with special treatments or it may work against other measures such as eave tubes.
- Such unintended and unforeseen consequences illustrate the need to build investigations of mosquito behaviour into all intervention planning.
Global Vector Control Response

Reduce the burden and threat of vector-borne diseases that affect humans

Effective locally adapted sustainable vector control

Pillars of action

1. Strengthen inter- and intra-sectoral action and collaboration
2. Enhance vector surveillance and monitoring and evaluation of interventions
3. Scale up and integrate tools and approaches
4. Engage and mobilize communities

Foundation

A. Enhance vector control capacity and capability
B. Increase basic and applied research, and innovation

Enabling factors

Country leadership
Advocacy, resource mobilization and partner coordination
Regulatory, policy and normative support
SDG11 & the New Urban Agenda
Housing improvements in Namibia - Tara Seethaler
Discussion Part 1:  
How do we engage with the housing sector?  

Steve Lindsay
Discussion Part 2: 
Next steps 2017-2018

Lucy Tusting
Long-term vision

Goal
Sustainable & resilient communities free of VBDs

Objectives
Develop & scale up products & approaches in the built environment for reducing VBDs

Action
- Information exchange
- Advocacy
- Basic & applied research
- Pathways for scale-up

Foundation
Network of experts in vector-borne disease control & the built environment

RBM workstream
Overarching question for discussion

Change from:
• Malaria and housing

To….
• Vector-borne diseases & the built environment
• With the primary focus on malaria and housing
Next steps for 2017-2018?

• Strengthen links with the housing sector

• Update housing and malaria recommendations
  • Link with Global Vector Control Response

• Encourage basic and applied research on vector-borne diseases & the built environment

• Information exchange (including news updates)
Strengthen links with the housing sector
Update housing recommendations
Encourage research & innovation on VBDs and the built environment
Information exchange