

# Can insecticide-treated curtains prevent transmission of dengue?

**Submission date**  
14/04/2011

**Recruitment status**  
No longer recruiting

☐ Prospectively registered

☐ Protocol

**Registration date**  
18/04/2011

**Overall study status**  
Completed

☐ Statistical analysis plan

☒ Results

**Last Edited**  
07/03/2022

**Condition category**  
Infections and Infestations

☐ Individual participant data

## Plain English summary of protocol

Not provided at time of registration

## Contact information

### Type(s)

Scientific

### Contact name

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## Additional identifiers

### Protocol serial number

N/A

## Study information

### Scientific Title

A cluster randomised controlled trial of household-based insecticide-treated indoor curtains for control of the dengue vector *Aedes aegypti* and prevention of transmission of dengue in the community

## **Study objectives**

We investigated whether window curtains made from long-lasting insecticide-treated netting and deployed inside houses, could reduce dengue virus transmission, as measured by seroconversion rates in humans, following reductions in dengue vector populations, as measured by a series of standard indices for *Aedes aegypti* intra-domiciliary and peri-domestic abundance, in intervention groups compared to control groups.

## **Ethics approval required**

Old ethics approval format

## **Ethics approval(s)**

1. Research Ethics Committee of the Liverpool School of Tropical Medicine approved on 8th June 2009 (ref: 09/59)
2. Loreto Regional Health (Direccion Regional de Salud de Loreto), Peru approved on 3rd July 2009 (ref 586-2009-GRL-DRS/30.09.01)
3. US Naval Medical Research Center Detachment (NAMRID) Lima approved on 8th September 2009 (project no. 6000 RAD1.S.B0302; Approval ref. NAVMEDRSCHCENDETACHMENTINST 3900.6H)

## **Study design**

Cluster randomised controlled trial

## **Primary study design**

Interventional

## **Study type(s)**

Prevention

## **Health condition(s) or problem(s) studied**

Dengue (including Dengue Haemorrhagic Fever [DHF] and Dengue Shock Syndrome [DSS])

## **Interventions**

Insecticide-treated curtains deployed inside human habitations. The curtains are made from PermaNet® deltamethrin-coated polyester netting, a long-lasting impregnated material (Vestergaard-Frandsen, Lausanne, Switzerland), that has been approved for indoor use (World Health Organisation Pesticide Evaluation Scheme [WHOPES]), with proven efficacy against dengue vectors.

Householders in treated clusters are permitted to dictate the quantity and location of their insecticide-treated materials (ITMs), with a minimum of one ITM required for the household to be classified as receiving treatment.

Control households received no treatment, but will be offered ITMs at the end of the study.

Efficacy of the intervention (Insecticide-treated curtains as described in E51) fell to an unacceptably low level (as determined by standard WHO recommended bioassays and other methods), when monitored over a period of months during 2010. Consequently, in October and November 2010, the existing curtains were treated again with a different product ("K-O Tab 1 2 3"; Bayer Environmental Science, Germany) designed to deliver a long-lasting formulation of the same insecticide.

**Intervention Type**

Other

**Phase**

Not Applicable

**Primary outcome(s)**

Effect of ITMs on dengue transmission - measured by detection of dengue specific antibodies in human blood, taken from householders within the study area, using the Plaque Reduction Neutralizing Antibody test (PRNT). PRNT is specific to dengue virus serotype, and is the gold standard against which all other dengue virus (DV) serological assays are validated.

Blood samples will be collected from the study population at baseline and at three 9-month intervals thereafter (9, 18, 24 months post intervention) in householders that were not positive for all four circulating serotypes during the immediate preceding survey.

**Key secondary outcome(s)**

1. The effect of ITMs on household vector infestation and breeding primarily measured by:
    - 1.1 The adult index (proportion of houses positive for adult *Ae. aegypti*)
    - 1.2. The Breteau index (number of containers with immature vector stages/100 houses)
  - Secondarily by the other *Stegomyia* indices:
    - 1.3. Pupae per person index (number of pupae per number of people)
    - 1.4. House index (percentage of houses found with immature stages of *Ae. aegypti*)
    - 1.5. Container index (percentage of water-holding containers found with immature stages of *Ae. aegypti*).
- Six surveys will be conducted: Baseline and 1, 6, 12, 18 and 24 months post intervention.
2. Quantification of spill-over effects from treated clusters on nearby control clusters, a potential confounding effect on analyses as well as an indicator of potential community-level impact
  3. Determining factors associated with adoption and continued use of ITMs, including the most effective diffusion mechanism (channel of communication) for ITM promotion, by household questionnaires and focus group discussions. Surveys will coincide with the serological surveys.

**Completion date**

31/12/2011

**Eligibility****Key inclusion criteria**

1. All occupied households
  - 1.1. Persons aged 3 years or older with parental permission
  - 1.2. Adults consenting to participate in the study living in the study area
  - 1.3. Assent to participation for 8-17 year old persons

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**Key exclusion criteria**

1. Persons younger than 3 years old
2. Temporary visitors to the study areas
3. Adults who do not consent to participate
4. 8-17 year old persons who do not assent or who do not have parental permission to participate in the study

**Date of first enrolment**

01/11/2009

**Date of final enrolment**

31/12/2011

**Locations****Countries of recruitment**

United Kingdom

England

Peru

**Study participating centre****Pembroke Place**

Liverpool

United Kingdom

L3 5QA

**Sponsor information****Organisation**

Liverpool School of Tropical Medicine (UK)

**ROR**

<https://ror.org/03svjbs84>

**Funder(s)**

**Funder type**

Charity

**Funder Name**

The Wellcome Trust (UK) (grant ref: 085714)

## Results and Publications

**Individual participant data (IPD) sharing plan**

Not provided at time of registration

**IPD sharing plan summary**

Not provided at time of registration

**Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>		07/03/2022	07/03/2022	Yes	No
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes