ISRCTN27037293 https://doi.org/10.1186/ISRCTN27037293

Effectiveness perifocal deltamethrin spray versus insecticide treated curtains for Aedes control

Submission date
23/07/2012

Recruitment status
No longer recruiting

Registration date
07/09/2012

Overall study status
Completed

Last Edited
18/01/2019

Condition category
Infections and Infestations

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Dengue is a common viral infection spread by mosquitoes. It is widespread in tropical and sub-tropical regions, mainly affecting urban areas but extending into more populated rural areas. The mosquitoes breed in water storage containers and other deposits containing relatively clean water. Attempts at eradicating the mosquitoes failed during the 1960s in Latin America and today more than 50% of houses are infested with mosquitoes in many endemic areas. This research is studying new methods to control dengue mosquitoes. We are studying the acceptance, effectiveness and cost-effectiveness of insecticide-treated curtains and of spraying the insecticide deltamethrin in and around the house.

Who can participate?
Houseblocks are selected at random in the city of Santiago de Cuba among those with the highest infestation rates in 2009-2010, and all families living in these areas are invited to participate

What does the study involve?
Groups of houses are randomly allocated to one of three groups. Group 1 receive the routine mosquito control activities of the Ministry of Health programme. Group 2 receive insecticide-treated curtains (maximum of three per house) on top of the routine mosquito control activities of the Ministry of Health programme. Group 3 receive every four months a spraying of deltamethrin in and around their houses on top of the routine mosquito control activities of the Ministry of Health programme.

What are the possible benefits and risks of participating?
Participants receive the mosquito control methods for free. As they have shown already good results in other studies, the mosquitoes in the house will decrease if the tool is correctly used. The curtains that will be distributed didn't show any side effects in other studies, except for a brief feeling of itching and sneezing in 7% of the people, lasting for at most 1 day. The spraying

is a procedure that has already been used in Santiago de Cuba by the Ministry of Health. In this study it's another insecticide, widely used in Africa and Latin-America, but up to now not yet used in this area in this form.

Where is the study run from?
Institute of Tropical Medicine (Belgium)

When is the study starting and how long is it expected to run for?
May 2011 to December 2013

Who is funding the study?
1. Directorate-General for Development Cooperation (Belgium)
2. Institute of Tropical Medicine (Belgium)
3. Ministry of Health (Cuba)

Who is the main contact?
Prof. Patrick Van der Stuyft

Contact information

Type(s)
Scientific

Contact name
Prof Patrick Van der Stuyft

Contact details
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Additional identifiers

Protocol serial number
B300201111923

Study information

Scientific Title
Effectiveness and cost-effectiveness of perifocal residual deltamethrin spraying and of long lasting deltamethrin treated curtains distribution for Aedes control

Study objectives

1. Evaluate the uptake and acceptability of tools in both intervention arms (ITC and PFS)
2. Evaluate the effectiveness of both tools, on top of the routine, in the control of Aedes aegypti (in comparison to the effect of the routine programme alone)
3. Compare the cost-effectiveness of both tools with the routine Aedes control strategy

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethical Committee, University Hospital Antwerp, 14/11/2011 ref: 11/34/227

Primary study design
Interventional

Study design
Interventional cluster-randomized controlled trial single-center study

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Effect of intervention on Aedes aegypti infestation level (vector of dengue fever)

Interventions
Control group: routine aedes control programme (entomological surveillance, source reduction, larviciding and selectiveadulticiding, health education)

Insecticide treated curtains: made from long-lasting, insecticide-treated (pyrethroid deltamethrin is applied during manufacture) polyester netting that requires no re-impregnation (PermaNet®; Vestergaard-Frandsen company). PermaNet materials are special UV protected and retain their insecticidal properties and efficacy for about 2 years (information from producer). The material has been approved by WHOPES for use as bednets.

Deltamethrin perifocal spraying (PFS): K-Othrine 25 WG, supplied by Bayer Environmental Sciences co. (25% deltamethrin formulation) will be sprayed every 4 months (3 times/year). It is a granular formulation that need to be solved into water (20 gram in 8 Liter of water, sufficient to treat 200 m^2 and attaining 25 mg a.i./m^2). It has a long lasting residual activity. Where deposits remain undisturbed, residual activity depends upon the nature of the surface. Sustained residual activity beyond 12 weeks post-application is observed on non-porous surfaces. Deltamethrin is photostable and the particulate suspension enhances availability to insects.

The insecticide will be sprayed on the outside of the ground-level water tanks and the walls behind them; and on the adult Aedes resting sites (for example under beds, in and under closets) in the intradomestic area.

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
1. Effectiveness: Breteau Index (number of containers positive for immature aedes stages per 100 inspected houses)
2. House index (number of houses positive for at least one container with aedes immature stages per 100 houses inspected)
3. Pupae per person index (number of pupae per inhabitant), (adult mosquito infestation), confirmed Dengue cases (if any)

Key secondary outcome(s)
1. Uptake and use of ITC
2. Acceptance of PFS and ITC (and identification of underlying lay dimensions of acceptability)
3. Change in intra-and extradomiciliary risks for Aedes infestation
4. Cost- effectiveness of ITC and of PFS
5. Residual insecticidal activity of deltamethrin applied in ITC and in PFS

Completion date
31/12/2013

Eligibility

Key inclusion criteria
All households of houseblocks, chosen at random in urban Santiago de Cuba

Participant type(s)
All

Healthy volunteers allowed
No

Age group
All

Sex
All

Key exclusion criteria
1. Houseblocks without community approval
2. Houses without household approval

Date of first enrolment
01/05/2011

Date of final enrolment
31/12/2013

Locations

Countries of recruitment
Belgium

Cuba

Study participating centre
Institute of Tropical Medicine
Anwterp
Belgium
2000

Sponsor information

Organisation
Institute of Tropical Medicine (Belgium)

ROR
https://ror.org/03xq4x896

Funder(s)

Funder type
Government

Funder Name
Directorate-General for Development Cooperation (Belgium) ref: 95900

Funder Name
Institute of Tropical Medicine (Belgium)

Funder Name
Ministerio de Salud Pública [MINSAP] (Cuba)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/05/2016	18/01/2019	Yes	No
Results article	results	08/11/2017	18/01/2019	Yes	No
Results article	results	02/01/2018	18/01/2019	Yes	No