

Table 1. Description of malaria vector control tools (VCTs) included in the review

VCT*	Description	Primary mode(s) of action against malaria vectors
<i>Interventions targeting immature mosquitoes</i>		
Larval source management (LSM)	Management of potential larval habitats to prevent the development of immature mosquitoes into adults; includes habitat modification and manipulation; biological control with natural enemies of mosquitoes; aerial and ground-based larviciding.	Reduced adult emergence and density
<i>Interventions targeting adult mosquitoes</i>		
Adult sterilization by contamination	Sterilization of adult mosquitoes through contact with pyriproxyfen, using delivery mechanisms other than ITNs.	Reduced adult reproduction and density
Other attract-and-kill mechanisms	Traps and targets that attract blood-seeking mosquitoes using a combination of odours from humans and other mammals (e.g. carbon dioxide, L-lactic acid, ammonia and short-chain fatty acids), some of which are treated with chemical or biological insecticides (e.g. pyrethroids organophosphates, entomopathogenic fungi).	Increased adult mortality
Attractive toxic sugar baits (ATSB)	Lethal traps that exploit sugar-feeding behaviour to attract mosquitoes using sugar and that contain insecticides (e.g. boric acid).	Reduced adult survival and density
Biological control of adult vector capacity/longevity	Infection of adult mosquitoes with bacteria (e.g. <i>Wolbachia</i> spp) or entomopathogenic fungi to reduce longevity and/or up-regulate immune genes.	Reduced adult survival and infection rates
Eave tubes and eave baffles	A variety of different eave (space between the roof and walls of a house or structure) modifications that kill mosquitoes with traps or insecticides when they try to enter or exit from those houses.	Reduced adult survival and density
Endectocide administration in humans	Mass administration to humans of a systemic insecticide, sometimes described as an endectocide (e.g. ivermectin).	Reduced adult survival and density
Endectocide administration in livestock	Mass administration to livestock of an endectocide (e.g. ivermectin, fipronil, eprinomectin) to kill zoophagic <i>Anopheles</i> .	Reduced adult survival and density
Genetic modification	Mass release of mosquitoes, which are genetically modified (e.g. homing endonuclease genes (HEG) and RNA interference (RNAi); radiation-or chemo-sterilized males (sterile insect technique, SIT)).	Reduced adult reproduction and density and/or reduced competence as the primary host for malaria parasites
Insecticide-treated clothing and blankets	Clothing and/or blankets treated with an insecticide (e.g. permethrin)	Reduced adult survival and density, as well as human exposure to biting
Insecticide-treated durable wall linings	Thin, durable sheets of insecticide-treated cloths that cover interior wall surfaces; insecticides remain efficacious for a period of three to four years	Reduced adult survival and density
Insecticide-treated fencing	Insecticide-treated netting used as fencing around livestock enclosures	Reduced adult survival and density
Insecticide-treated hammocks	Hammocks treated with an insecticide (e.g. permethrin)	Reduced adult survival and density, as well as human exposure to biting
Insecticide-treated livestock	Application of topical insecticide (e.g. pyrethroids) or entomopathogenic fungus to livestock to kill zoophilic mosquitoes	Reduced adult survival and density
Mosquito-proofed housing	Houses with features that reduce mosquito house entry (e.g. use of modern wall, floor and roof materials, use of insecticide-treated or untreated door and window screens, presence of a ceiling).	Reduced human exposure to biting mosquitoes
Push-pull systems	The simultaneous use of attractive and repellent volatiles (e.g. baited trap near home with insecticide-treated fabric in eaves).	Reduced adult survival and density, as well as human exposure to biting
Space spraying (ground application)	Liquid insecticide (e.g. pyrethroids, malathion) dispersed as fine droplets in the air (either thermal or cold fog) using hand-held or vehicle-mounted devices; can be used indoors or outdoors. Includes targeted spraying of male mating swarms.	Reduced adult survival and density
Spatial repellents	Products that release chemical active ingredients into the air as vapours, which repel, incapacitate or kill adult mosquitoes (e.g. mosquito coils and emanators to release pyrethroids).	Reduced human biting, increased adult mortality
Topical repellents	Insect repellent (e.g. DEET, citronella, picaridin, lemon eucalyptus) applied to the skin to provide personal protection from biting.	Reduced human biting
Zooprophylaxis	Presence of animals/livestock to divert vector biting away from humans (which if applied at the individual level may also result in increased individual human risk, known as zoopotential).	Reduced exposure of humans to infectious adult mosquitoes and mosquitoes to infectious human beings
<i>Interventions targeting immature mosquitoes via adults</i>		
Larvicide application by autodissemination	Delivery of larvicide (e.g. pyriproxyfen) to larval habitats by adult female mosquitoes that are exposed to contaminated artificial resting sites	Reduced adult density

*VCTs excluded from the study: adult mosquito traps with no kill mechanism, aerial application of larvicide or adulticide, electronic mosquito repellents, indoor residual spraying, insecticide-treated curtains and nets, insecticide-treated paint, insecticide-treated plastic sheeting in tents or in temporary shelters, insecticide-treated tents, live plants

as spatial repellents, nanoparticles for larviciding. Additionally, studies of the insecticidal properties of compounds and formulations were excluded.