

# Reduced susceptibility of *Anopheles gambiae* to permethrin associated with the use of permethrin-impregnated bednets and curtains in Kenya

Vulule, J M; Beach, R F; Atieli, F K; Roberts, J M; Mount, D L; Mwangi, R W

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## **Abstract:**

Susceptibility of the malaria vector *Anopheles gambiae* to permethrin decreased following the installation of mosquito nets impregnated with 0.5 g permethrin per square metre in four villages near Kisumu, Kenya. During the first year that permethrin-impregnated bednets and curtains were in place, the exposure time to 50% mortality (LT50) increased 2.5-fold from 13 to 33min, while the LT50 for *An.gambiae* was unchanged in two other villages where no intervention measures were used. Two years after permethrin-impregnated mosquito nets were distributed the LT50s for *An.gambiae* were 28, 28 and 16min, respectively, in the villages with bednets, curtains and with no such intervention. Using a colony of *An.gambiae* derived from females collected in the villages using permethrin-impregnated mosquito nets, we lengthened the LT50 from 28 to 41 min in two generations by exposing all females to permethrin-treated papers for 60 min and rearing offspring of the survivors. Permethrin-impregnated bednets and curtains are intended to reduce vectorial capacity. Reduced susceptibility to permethrin could counter this beneficial effect.