Getting more out of hut trials

Improving the quality of entomological field studies through efficient study designs and quality control systems

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While World Health Organization Pesticide Evaluation Scheme (WHOPES) guidelines[1,2] are available for vector control tools, there continue to be major discrepancies in outcomes both within and between trials presenting a major barrier to product translation. Part of the observed variation may be due to the ecological context in which these studies are carried out, yet entomological field studies are often flawed by **insufficient statistical power** and **lack of quality control systems**. In our teaching and training effort we address these issues by providing training and mentorship in study design and data analysis in combination with supporting test facilities to put in place quality control systems.


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To address the issue of inefficient study design a **statistical support team** (SST) was formed, consisting of experts in applied statistics, medical entomology and ecology. During **study site visits** the SST familiarised itself with the specific field context and research objectives, often quite different from standardised WHOPES trials due to the unique nature of novel vector control tools. On this background **training workshops** with an emphasis on **reviewing study designs** and **power / sample size calculations** were delivered in which **African entomologists were trained in applied statistics** using the framework of generalised linear mixed models[3] (GLMM) together with the freely available statistical software package R[4]. The support is still on-going via face to face contact and on-line support.

Study directors from African test facilities joined together during two one week **workshops**. The first workshop was held in Liverpool, UK in 2012 introducing the principles and elements of quality control systems for R&D activities in the field of malaria vector control. Following the workshop the participants completed a self-audit form for their test facility. This has allowed for identifying additional needs in teaching and training and to provide **mentorship**. In 2013 a second workshop was held in Moshi, TZ, where the participants developed a study protocol together with the key **standard operating procedures** (SOPs) for a hut trial. The documents developed during the second workshop were then tested under real field conditions. The SOPs will be made publically available at **http://www.avecnet.eu**.

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References

1 WHO (2006) WHO/CDS/NTD/WHOPES/GCDPP/2006.3
2 WHO (2013) WHO/HTM/NTD/WHOPES/2013.1
3 Bolker et al. (2009) Trends Ecol Evol 24(3):127-135
4 http://www.r-project.org

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