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Shaoman Yin 4/18/2013

**Analyzing Durability and Efficacy of Long-lasting Insecticide-treated Bed Nets: A Longitudinal Monitoring Study at Western Kenya**

**By**

**Shaoman Yin**

**Degree to be awarded: MSPH**

**Department of Biostatistics and Bioinformatics**

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An abstract of

A thesis submitted to the Faculty of the
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2013

**Abstract**

**Analyzing Durability and Efficacy of Long-lasting Insecticide-treated Bed Nets: A Longitudinal Monitoring Study at Western Kenya**

By Shaoman Yin

Malaria is a mosquito-borne disease caused by parasite infection. Long-lasting insecticide treated nets (LLIN) are becoming one of the primary malaria prevention strategies in many parts of sub Saharan Africa. However, the durability and efficacy of these nets in the field condition is not well known. To answer these questions, a mosquito bed net study with followed up surveys (rounds) has been carried out in Western Kenya to monitor physical conditions and maintenances of seven net brands. Here, we first performed descriptive summaries by bands and rounds in four aspects of the study: 1) net attrition and reasons of net loss; 2) physical integrity, such as net hole areas and counts; 3) net care and use, such as net wash, net use, and bed type; 4) side effects of net use. Next, general linear regression, logistic regression, Poisson regression and Negative Binomial regression were used to analyze associations of net hole areas or net hole counts with brands, rounds and practices of net use and care. Results show that net hole areas and net hole counts were significantly affected by net brands and time of collected rounds. Net hole counts were also significantly affected by net use conditions. LLIN brands Olyset and PermaNet2.0 may have a poor physical integrity compared to other brands. These results may have implications of understanding physical durability and efficacies of LLIN nets in the field conditions for malaria control and prevention.

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