

Results: Although 84% of the patients reported having slept under a net the previous night, spot check results revealed that 40% of the nets were torn and had large holes. 30% of the nets were not hanged doubting their reported use the previous night.

It was not uncommon to find unpacked new nets reserved for visitors or diverted to other uses such as table clothes, wall hanging and curtains. 87 new nets (5.3%) were still unpacked. Another 1% of nets were reported to be reserved for visitors. 147 nets (9%) were reported not in use.

Conclusion: As more and more resources continue to be directed towards social marketing of mosquito nets, there is need to find out how the nets are being used and develop ways of increasing their efficient use.

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24.007

Low Access to Insecticide Treated Bednets by Non-Pregnant Rural Adolescent Girls in a Malarious Area

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Introduction: In malarious areas, insecticide treated bed nets (ITNs) are estimated to provide protective efficacy for mortality in children of 17%.¹ Low ITN adherence is linked to high external temperatures with increased use in those with higher income and better education.² Little information is available on malaria or the use of ITNs in adolescent girls.

Objective: To determine the access and utilisation of ITNs for malaria prevention in rural adolescent girls in Malawi.

Methods: Two community-based cross-sectional surveys were conducted during the dry (September–December 2005) and wet seasons (January–June 2006) in Chikwawa, rural southern Malawi. This area has high malaria transmission area. Single-stage cluster sampling was used. Information on availability and utilisation of ITNs was obtained by questionnaire. Malaria parasite prevalence was determined using Paracheck rapid test. Data was analysed in Stata 8.0.

Results: Participants were assessed in dry ($n=477$) and wet ($n=804$) seasons. Mean age was 13.1 ± 2.7 years. Malaria prevalence was 11.5% (dry) and 18.8% (wet), ($p=0.001$). Overall 81% of households owned at least one ITN but only 46.6% of non-pregnant adolescents had access to an ITN, with no seasonal differences. Among those with access, average household ownership was 2.4 ± 1.0 ITNs. Participants slept an average 2.6 ± 1.9 nights/week under an ITN in the dry season increasing to 4.9 ± 2.2 nights in the wet season ($p < 0.001$). Hot weather was often cited as the reason for non-use.

Conclusion: Adolescent girls have low access and moderate utilisation of ITNs in rural southern Malawi. This risk

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24.008

An Entomological Study to Plan Intervention for Prevention of Dengue in Gampaha District, Sri Lanka

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Background: Dengue is the most common and fastest spreading human arbo-viral disease worldwide. Most control efforts are based not on insecticides but on suppression of vectors by reducing the number of larval breeding habitats.

Methods: Total of 2000 houses in the District of Gampaha in the Western Province which had the second highest transmission of dengue in 2006 was selected using grid sampling technique, based on disease incidences during 2003–2006. Mosquito surveillance was carried out from 0900 hrs to 1400 hrs during June–August, 2007. Larval and pupal surveillances were carried out indoors and outdoors using standard larval surveillance techniques.

Results: The House, Container and Breteau indices for *Aedes* larvae were 49.3%, 26.1% and 26.9% respectively. The common breeding places for *Aedes* species were discarded containers 27.1% (559/2064), unused bowls 16.2% (334/2064), plant axils 11.7% (242/2064), water storing barrels 11.4% (236/2064) and coconut shells 5.4% (111/2064). Most productive container types for larvae were tyres (44.3%), plant axils (37.6%), ceramic jars (36.6%), discarded containers (29.5%) and fish tanks (25.0%). Most productive container types for pupae were discarded containers (13.4%), fish tanks (10.4%), unused bowls (8.38%), ceramic jars (7.31%) and coconut shells (6.3%). *Aedes albopictus* (larvae-85.3%, pupae-80.4%) was the most predominant vector in the district. Earthen pots, plant axils, discarded containers and buckets were the main sources for *Aedes albopictus* while tyres, barrels, tanks and bowls were for *Aedes aegypti*. Further, mixed breeding was observed in water storage containers and tyres.

Conclusion: Discarded small bowls/containers were the key containers with the highest pupal index. Natural breeding habitats such plant axils may also significantly contribute to pupal production. Therefore an integrated control effort to include community level awareness programmes, improved solid waste management for small containers and

efforts to prevent breeding in plants is suggested for prevention of dengue in the district.

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24.009

Effect of Repeated Application of Biological Larvicides on Malaria Transmission in Central Côte D'ivoire

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Introduction: There is growing political and financial commitment to eradicate malaria, and hence integrated control approaches, including biological larviciding, deserve attention. The purpose of this study was to investigate whether repeated application of *Bacillus thuringiensis* (Bti) and *B. sphaericus* (Bs) have an effect on malaria transmission.

Material and methods: Larvae collection surveys conducted during 9 months showed the effectiveness of Bti and Bs. After the 8th treatment, Anopheles larvae were absent from the breeding sites. Culex larvae decreased after the 3rd treatment. Adult mosquitoes were captured by 56 man-nights in 2006 (February, May, August, and November), inside and outside households during two consecutive days.

Results: From a total of 2361 mosquitoes captured, 59.5% belonged to Anopheles genus. *An. funestus* s.l. was the most abundant, accounting for 82% of total Anopheles caught, followed by *An. gambiae* s.l. (17.2%). Peak abundance was observed during the rainy seasons, while, lowest biting rates were observed during the dry seasons. The comparison of entomological transmission parameters recorded, with data from 2005, showed that larvicide treatments permitted a significant decrease of *An. funestus* (5.1 bites/person/night; $P < 0.001$) and *An. gambiae* (18.7 bites/person/night; $P < 0.001$) biting rates. The infestation rate was stable for both species, with a much higher rate observed for *An. gambiae* (15.1%) when compared to *An. funestus* (2.1%). The annual entomological inoculation rate (EIR) for *An. gambiae* (281 infective bites/person/night; $P = 0.088$) was similar in 2005 and 2006, while the annual EIR of *An. funestus* (142 infective bites/person/night; $P = 0.005$) has been drastically reduced.

Discussion and conclusion: The routine application of larvicides in mosquitoes breeding sites decreased the number of breeding sites containing Anopheles and Culex larvae, which could have favoured the significant reduction of *An. funestus* and *An. gambiae* biting rates, and a drastic decrease of *An. funestus* EIR.

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HIV/AIDS: Treatment Including Side Effects (Poster Presentation)

25.001

Steady-state Pharmacokinetic Comparison of Generic and Branded Formulations of Lamivudine, Stavudine, and Nevirapine in HIV-infected Ugandan Adults

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Background: Triomune is standard of care for HIV in Uganda. We aimed to determine the steady-state PK, bioequivalence and tolerability of generic and branded formulations of 3TC, d4T, and NVP in HIV-infected Ugandans.

Methods: This randomized, open label, cross-over study included HIV-patients on Triomune 40® (3TC 150 mg, d4T 40 mg, NVP 200 mg) for at least 1 month. On day 1, patients were randomized to generic or branded formulation. After at least 28 days, 3TC, d4T and NVP plasma PK was assessed over 12 h. The day after, the alternate formulation was administered and 28 days later drug PK was re-assessed. Plasma PK was determined by a fully validated method using HPLC-UV detection. Bioequivalence was achieved if the 90% confidence intervals (CI) for the geometric mean ratio (GMR) of generic/branded for maximum plasma concentration (C_{max}) and the area under the concentration-time curve (AUC) was within 0.8–1.25 (US Food and Drug Administration bioequivalence criteria). Questionnaires were administered to assess the tolerability of the 2 formulations.

Results: 16 (10 females) patients completed the study. Median (IQR) age, weight, CD4 count were 37y (33.7–40), 65 kg (63.4–66), 292c/ul (220.7–344.5). All were on daily cotrimoxazole. The GMR (90%CI) for 3TC, d4T, and NVP were 1.11 (0.95–1.30), 0.92 (0.78–1.08), and 0.84 (0.64–1.11) for C_{max}; and 1.06 (0.94–1.20), 0.83 (0.70–0.97), and 0.88 (0.71–1.10) for AUC. d4T plasma concentrations were significantly lower for the generic formulation (18% decrease). 3TC, d4T, and NVP PK parameter interindividual variability ranged from 28% to 99%. There were no differences in tolerability for the 2 formulations.

Conclusions: Although the strict definition of bioequivalence was not met, drug exposures were similar for the 2 formulations, with the exception of d4T. However, the clinical significance of this remains unclear.

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