24.001

Studies on Dengue Fever in Antigua: Prevalence, Distribution and Population Dynamics of *Aedes Aegypti*

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Antigua is an eastern Caribbean island in West Indies. Although dengue fever is endemic in this region and is reported on and off in Antigua, there has been no published report on its vectors in the island. This investigation aims at providing information on *Aedes aegypti,* the dengue fever vector, on the island.

Mosquitoes were collected weekly around human habitations with light traps from July, 2006 to October, 2007 all over the island and identified to species level. Sources of blood meal of most of the fed females were determined by agglutination tests. Larval mosquitoes were collected with dippers all over the island and the habitats containing those of *Ae. aegypti* were noted.

Aedes aegypti was the most common Aedes spp, constituting 4.34% of all mosquitoes encountered with large populations in the densely populated inland areas. Peak population was in December and lowest populations were in January to April. Others were *Ae. tortilis* and *Ae. taeniorhyncus*. Larvae of *Ae. aegypti* utilized household water tanks and old tyres and stagnant ponds at roadsides in the inland areas while abandoned boats were the predominant breeding sites in the coastal areas. Agglutination tests showed that about 86% of the blood meals of engorged females were from humans, 7% from cattle, 5% from sheep/goats and 2% from poultry. Nulliparous females were predominant throughout the year, ranging from 60—80% of weekly collections; in contrast, parous females gradually increased in numbers with the lowest population in April and highest peak in January.

The high number of *Ae. aegypti* collected around human habitation, the preponderance of breeding sites and its all-year round breeding, its wide distribution throughout the island especially in the densely populated inland areas, its predominantly anthrophagic feeding indicate the preeminence of this mosquito species as the major vector of dengue fever in Antigua.

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24.002

The Anopheles Belt on the Island of Antigua

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Malaria does not exist in Antigua, an eastern Caribbean island, but the recent report of the disease in neighbouring Jamaica created anxiety on the possibility of its spread to the country. This investigation was designed to ascertain whether there are potential vectors of malaria in Antigua.

2007 all over the island and identified to species level. Sources of blood meal of most of the fed Anopheles spp. were determined by agglutination tests. Larval mosquitoes were collected with dippers all over the island and habitats of Anopheles larvae were noted. Randomly selected unfed females were dissected to identify their state of parity.

The most numerous Anopheles was *An. albimanus*, constituting 2.53% of all mosquitoes collected. Other species were *An. aquasalis* and *An. argyritarsis*. *An. albimanus* and *An. aquasalis* were restricted to the coastal areas forming a belt around the island. *An. albimanus* had peak and lowest population in April and December respectively while the population of *An. aquasalis* was lowest in October and highest in February. Commonly used by all Anopheles spp was clear water in abandoned boats, household water tanks, old tyres and stagnant ponds on roadsides. Agglutination tests showed that all of the blood meals of the three Anopheles spp. were from humans. Nulliparous females were predominant throughout the year, ranging from 50—70% of weekly collections; parous females had the lowest population in December and peak in June.

An. albimanus is a major vector of malaria in South America. The considerable number collected around human habitation, its all-year round breeding in several sites, its wide distribution in the coastal areas heavily populated by hotels and its predominantly anthrophagic feeding make this species a potential vector of malaria in Antigua.

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24.003

Surveillance for Dengue Vector Mosquito in Kurunegala District, Sri Lanka

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Background: Dengue vector surveillance is an important tool to determine the time and area/s to initiate control action. Our objective was to identify entomological risk factors with regard to transmission of dengue in a dengue hot-spot.

Methods: In the study 75 human dwellings in a dengue hot-spot in the District of Kurunegala was selected based on high disease incidence during 2000—2004, high *Aedes* as well as human population density and increased building activities. House to house mosquito surveillance was carried out from 08.00 am to12.00 noon during May—August, 2007. Larvae and adult *Aedes* mosquitoes were collected indoors and outdoors using normal larval surveillance and human landing diurnal collection techniques respectively. Environmental and sociological data were obtained from households by interviewer administered questionnaires and observations.

Results: The house index for *Aedes aegypti* and *Aedes albopictus* ranged from 1.33%—6.60% and

2.67%—5.33% respectively. The Breatu index ranged between 23.67%—29.33% for *Ae. aegypti* and 1.33%—18% for *Aedes albopictus*. Man biting rates of 0.43—5.78 bites/man/hour were estimated for *Ae. aegypti*, while it ranged from 0.49—1.33 for *Ae. albopictus*. The most common breeding place for *Aedes* species was plastic baskets (16%, $n = 12$). More than half of the households (61%, $n = 45$) stored water in large cement tanks for their daily activities. Majority of the group (99%, $n = 74$) had a basic knowledge on dengue mosquito breeding places (97%, $n = 73$), their life cycle (95%, $n = 71$) and mode of transmission (99%, $n = 74$). Domestic waste of majority of households was carried away daily by the local authorities ($n = 69$).

Conclusion: These results suggest that a vector control program should be adopted to reduce *Aedes* population levels below dengue transmission thresholds. Discarded containers of various types were identified as potential mosquitoes breeding habitats. Therefore, community must be educated on effective vector control measures to contain the transmission levels.

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24.004

Community Factors Affecting Long Lasting Impregnated Mosquito Net Use for Malaria Control in Sri Lanka

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Introduction: The Anti Malaria Campaign has distributed approximately 300,000 Long Lasting Impregnated Nets (LLINs) to malaria endemic areas in Sri Lanka during the years 2004—2005.

Methods: A community based cross sectional survey carried out among 2467 households distributed among the three major ethnic groups of Sri Lanka, to study the perceptions and practices with regard to use of LLINs, in order to improve its use.

Results: In a majority of households the number of LLINs available was not sufficient for the number of people, although there were a small percentage of households, which had excess nets. The information and advice regarding use of LLIN at the time of net distribution differed amongst the three groups and was not consistent. Dissemination of this knowledge within the family was not observed. A linear relationship between the knowledge regarding LLINs and the practices on washing and drying of LLINs was recorded. It was noted that net shape may influence net use, with cone shaped nets being more popular.

Conclusions: Attention to increase knowledge on LLINs using behavior change communication techniques would have more effectively contributed to achieve planned outcomes. Proper use of LLINs will undoubtedly contribute to further reduction of malaria in Sri Lanka.

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24.005

Neglected Tropical Diseases: An Example of Encouraging Control in Central Africa

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Sleeping sickness (human African trypanosomiasis, HAT) is a parasitic disease due to Trypanosoma brucei gambiense in Western and Central Africa and Trypanosoma brucei rhodesiense in Eastern Africa. According to the World Health Organization (WHO), about 50 million people are exposed to the disease in 36 sub-saharan African countries. In 2001, African Heads of States launched the Pan African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC), expressing through that initiative their determination to overcome this plague which severely handicaps the continent for more than two centuries. Central Africa, including Angola, Cameroon, Central African Republic (CAR), Chad, Congo, Democratic Republic of Congo (DRC), Equatorial Guinea, and Gabon, is particularly concerned by the disease. In 2004, about 3 150 000 people were screened for HAT (95% of the screened population in the entire African continent) and 14 815 new cases diagnosed and treated (87% of all new detected cases in Africa). Despite great difficulties (lack of technical, logistical, human and financial resources), the control of the disease has been carried out since 2001 with the support of international organizations (WHO, OCEAC) and various NGOs. In 2007, all HAT foci in Central Africa were screened, and the prevalence of the disease has dramatically fallen down, mainly in DRC and Angola where the epidemics have been controlled. In Cameroon, Equatorial Guinea and Gabon, elimination of HAT as a public health problem was practically achieved. Nevertheless, the situation in some foci (Mandoul in Chad, Haut-Mbomou and Ouham in CAR) is still worrying. In these foci, as in the others, control efforts must be sustained or improved. In coming years, vector control is also an essential tool to achieve the final goal of tsetse fly and trypanosomiasis eradication, as indicated in the PATTEC.

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24.006

Insecticide Treated Nets; Use, Misuse or Disuse

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Introduction: Mosquito nets treated with insecticide have received a great deal of interest as an effective means of controlling the risk of Malaria. This study investigates the use of mosquito nets in a malaria endemic region in south western Kenya. Extensive free distribution of treated mosquito nets has been promoted in the area through the local health care facilities.

Methods: Patients visiting a local health care facility were randomly sampled. Home visits were done and a semi-structured questionnaire was administered followed by a detailed spot check of all the mosquito nets in the house-