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Assessment of a new strategy, based on Aedes aegypti (L.) pupal productivity, for the surveillance and control of dengue transmission in Thailand

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Abstract
In the countries where the disease is endemic, control of dengue is mainly based on the elimination or treatment of the water-filled containers where the main vector, Aedes aegypti, breeds, in interventions usually reliant on community participation. Although such control activities must be continuous, since vector eradication appears impossible, it should be possible to reduce the incidence of dengue significantly, in a cost-effective manner, by targeting only those types of containers in which large numbers of Ae. aegypti are produced. This strategy is now recommended by the World Health Organization, although it depends on the most productive types of container being carefully identified, in each endemic region. In Thailand, exhaustive surveys of 3125 wet containers in 240 houses in either an urban area (100-120 houses) or a rural area (120 houses) were conducted during a rainy and a dry season in 2004-2005. Indices based on the numbers of Ae. aegypti pupae observed were found to correlate with the 'classical' entomological indices that are based on all of the immature stages of the vector. Overall, 2.3 and 0.8 Ae. aegypti pupae were observed per person in the rural and urban areas, respectively. Although adult female Ae. aegypti laid eggs in all 10 types of wet container that were identified, large water-storage containers produced the majority of the pupae, especially at the end of the dry season (when such containers accounted for 90% of the pupae detected in the rural area and 60% of those in the urban area). Since these containers are large, easy to reach and account for <50% of all wet containers, it should be relatively easy and quick to treat them with larvicide or to cover them. If even such targeted treatment is to be sustainable, however, it will have to be integrated, as one of several activities in which the at-risk communities are encouraged to participate. © 2008 The Liverpool School of Tropical Medicine.

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