

RESEARCH ARTICLE

Analysis of spatial mobility in subjects from a Dengue endemic urban locality in Morelos State, Mexico

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Abstract

Introduction

Mathematical models and field data suggest that human mobility is an important driver for Dengue virus transmission. Nonetheless little is known on this matter due the lack of instruments for precise mobility quantification and study design difficulties.

Materials and methods

We carried out a cohort-nested, case-control study with 126 individuals (42 cases, 42 intradomestic controls and 42 population controls) with the goal of describing human mobility patterns of recently Dengue virus-infected subjects, and comparing them with those of non-infected subjects living in an urban endemic locality. Mobility was quantified using a GPS-data logger registering waypoints at 60-second intervals for a minimum of 15 natural days.

Results

Although absolute displacement was highly biased towards the intradomestic and peridomestic areas, occasional displacements exceeding a 100-Km radius from the center of the studied locality were recorded for all three study groups and individual displacements were recorded traveling across six states from central Mexico. Additionally, cases had a larger number of visits out of the municipality's administrative limits when compared to