TOPIC:

2) Mosquito-borne diseases (dengue, malaria, fiebre amarilla, zika, chikungunya)

APPROACH:

4. Vector control and surveillance including a) new surveillance and control alternatives, and b) insecticide resistance

Surveillance and control of *Aedes aegypti* in Uruguay, achievements and challenges.

Keywords: *Aedes aegyptii*, mosquitoes, surveillance, control, Uruguay

WILLAT, G.[1]; VERGER, L.[1,2]

[1]Zoonoses and Vectors Unit, Ministry of Public Health, Montevideo, Uruguay
[2]Department of Public Health, Faculty of Veterinary Medicine, University of the Republic, Uruguay
gwillat@msp.gub.uy

Uruguay has monitored the presence of *Aedes aegypti* since 1997, when its reintroduction was reported. Since then, different methodologies have been used (larval surveys, control of strategic points, method of rapid survey of *Aedes aegypti* indices, traps). The LIRAa methodology is effective in detecting the main containers that are acting as breeding sites for *Ae. aegypti* in a certain area. However, the larval indices obtained are not sufficient to estimate the risk of arbovirus transmission because they do not provide a reliable estimate of the adult population, they do not take into account the distribution in transmission clusters and are heavily operator-dependant. The objective of this work was to improve the surveillance system in order to identify sites and periods with high *Aedes* density and help prevent future outbreaks of arbovirosis. Following the advice from PAHO/WHO, we installed a net of ovitraps 400 meters apart, covering the entire area of the locality under surveillance. Initially, three pilot cities were selected and more were incorporated gradually. An instruction manual was prepared to guide the local referents in the surveillance process. Traps were installed and checked weekly, counting the *Aedes* eggs with a stereomicroscope. The number of eggs on each trap was registered using an electronic spreadsheet. In order to evaluate the temporal variation of *Aedes,* two indices were calculated weekly: the percentage of positive ovitraps, an approximation of the distribution of the vector in a locality; and the mean of eggs per ovitrap, related to the vector density. Spatial analysis was performed using a geographical information system. Each trap was georeferenced, and heatmaps were developed using the data obtained in each point. In order to make the data more accessible and easy to view and share, a computer visualization tool was developed. Temporal variation of entomological indices was described in each locality, allowing comparison between years and sites. Control and prevention measures were recommended for every stage of the seasonal variation (no activity, oviposition beginning and increase, peak). The spatial analysis allowed to detect hotspots of *Aedes* density in every locality. Moreover, the most important hotspots were conserved between years, despite the lack of vector activity in the winter months. Control activities (breeding sites detection and elimination, education) were planned in the spots of higher *Aedes* densities. The ovitrap surveillance system provided reliable entomological information that can be used in the design of control and prevention activities. Knowing the seasonal variation of the vector allowed focusing prevention activities in the period of low vector activity and the control measures in the peaks of activity. Mapping the sites of higher vector densities optimized the field work by limiting the interventions to a few sites in each city. Relations of entomological indices and density hotspots with arboviral outbreaks should be evaluated in the future.