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New strategies for the eradication of *Aedes aegypti*: what challenges do we face in Latin America?

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Dear Editor,

The emergence and re-emergence of diseases transmitted by the vector *Aedes aegypti* (yellow fever, dengue, chikungunya, and Zika, among others) is of great concern, particularly in Latin America. Vector densities are linked to multiple factors that can be related to globalization, international and domestic travel, unplanned and uncontrolled urbanization, climate change and the increase in global temperature, poverty, lack of education, just to mention some [1, 2]. Thus, such vector-borne diseases would even be considered neglected but have become a worrisome threat for healthcare professionals in endemic and non-endemic areas.

Between 1960 and 2014 there were roughly twenty thousand reported locations around the world where the Aedes aegypti mosquito was geo-positioned, most of them in Latin America [3]. Considering its increasing presence, conventional control methods (as vaporizers, insecticide, spirals, among others) have not attained an effective level of vector management.

For this reason, countries where the mosquito is endemic are searching for novel methods of vector control.

One of these new alternatives bases in applying the control through the Gram-negative bacterium *Wolbachia* and transgenic mosquitoes (endorsed by the World Health Organization), with the aim of reducing the incidence of diseases transmitted by *Aedes aegypti* [4].

These two methods have shown a big potential for success in the fight against the vector. Using *Aedes aegypti* infected with the wMel strain of *Wolbachia,* which are currently being released in in Colombia and Brazil, these mosquitoes have reduced their vector competence [5]. These results support the use of *Wolbachia* biocontrol as a multivalent strategy against *Aedes aegypti*-transmitted viruses. While the results of these experiences are encouraging as new alternatives of vector control, they still require further studies to show whether they are sustainable.

Some authors have described the cost-effectiveness of the control measures of *Aedes aegypti*. Genetic control strategies have a lower cost (about US$ 2-30 per case prevented), compared to disease treatment (US$ 86-190 per case) [6]. In addition, the exciting benefit of these new strategies is the decrease in the environmental impact of control strategies by reducing the use of insecticides, larvicides, anti-mosquito spirals, amongst others measures [3].

These new methods are very effective for low- and middle-income countries where the mosquito is endemic, where a synergistic effect between controlling climate change and the illness can be achieved.

Still, the usefulness of usefulness of these new control strategies has raised concerns and doubts in the population worldwide [7].

For this reason, we believe it is important to take

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in consideration the following recommendations for the time being to make an intervention with these new technological alternatives.

1. Provide information regarding the magnitude of the problem surrounding *Aedes aegypti* and the increasing inefficiency of the current methods.
2. Obtain the commitment and permission of the public to guarantee the utility of the new methods of vector control.
3. Generate synergies between researchers and community leaders, with the aim to obtain expert opinions on the efficiency and/or dangers that these new alternatives can present during their implementation.
4. Continually educate the population on the latest updates of *Aedes aegypti*.
5. Presentation of the results obtained during the first phases of the biocontrol project to generate greater confidence and commitment from the population in the study [8].

These recommendations strive to obtain a reciprocal investigation, fair and objective, sharing knowledge between the community and the researchers to achieve the complete eradication of *Aedes aegypti*, that would be used together to achieve a real, effective and sustained control.

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