GlobalData»

In the war against dengue, Zika, and other arboviruses, one fact is clear: prevention and control efforts — if they are to succeed — cannot rely on a single 'magic bullet' approach to reduce and eventually eliminate transmission, according to GlobalData , a leading data and analytics company.

Fortunately, the fight against mosquito-borne diseases has produced a broad arsenal of tools to combat the spread of either the pathogen or the vector itself. These approaches include the use of air conditioning, insect nets, and protective clothing to minimize contact with infected mosquitoes, antimicrobial agents and vaccines to combat the pathogens themselves, and prevention of vector proliferation through breeding ground disruption, insecticides, and direct genetic or microbiological manipulation.

Elliot Gardner, Healthcare Analyst at GlobalData , comments: "The last of these strategies, specifically the use of bacteria such as Wolbachia, prevents arbovirus transmission from Aedes aegypti to humans by significantly reducing the mosquitos' susceptibility to malaria, dengue, or chikungunya."

In addition, Wolbachia can also result in a significantly reduced life-span of the mosquito itself, as breeding between an infected male and non-infected female will result in cytoplasmic toxicity in the larvae, preventing the development of Wolbachia-free larvae, while breeding between an infected female and non-infected male will result in viable but infected larvae.

Gardner continues: "While preliminary studies have yielded encouraging results, this tactic must be evaluated in a large-scale study before it can be put to widespread use. Potential issues, such as how it might affect other insect populations, muse must also be addressed. Nevertheless, GlobalData believes this strategy represents an increasingly attractive approach because it allows for direct manipulation of the vector population without the use of potentially toxic insecticides."

Research into the use of microbiological (Wolbachia, Chromobacterium Csp_P) and genetic (sterile male) approaches to combat the spread of arboviruses has produced exciting results thus far, but these efforts have been frequently overshadowed by vaccine R&D, particularly in

the areas of dengue and malaria.

Gardner adds: “Experts consulted by GlobalData have cautioned that, while vaccines can play a crucial role in disease control and prevention efforts, they must be leveraged as part of an integrated approach, which GlobalData believes should eventually include Wolbachia and methods like it.”