



PROCESO SELECTIVO PARA EL INGRESO EN EL CUERPO DE MÉDICOS TITULARES

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TEXTO PROPUESTO PARA SU TRADUCCIÓN EN EL SEGUNDO EJERCICIO CELEBRADO EL 25 DE ABRIL DE 2023

Several new innovations aim to close gaps in anti-malaria efforts by targeting the mosquitoes that spread the disease

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Ever since Sir Ronald Ross discovered malaria parasites in an *Anopheles* mosquito in 1897, controlling insect vectors has played an increasingly important role in reducing the burden of the disease. For decades after World War II, indoor residual spraying (IRS) with insecticides was the only weapon against mosquitoes and proved a blunt and reasonably effective instrument for protecting people inside their homes. Then, beginning in the early 2000s, insecticide-treated nets (ITNs) became a new addition to countries' vector control strategies.

Thanks, in part, to the wide deployment of these 2 WHO-recommended interventions, the world made remarkable gains against malaria in the period 2000–2015. But progress plateaued, and this troubling slowdown was exacerbated by COVID-19. According to WHO's latest World malaria report, 2020 saw a rise in the global burden of malaria, with an estimated 627 000 deaths and 241 million new cases of the disease.

Getting back on track, and meeting WHO's targets of a 90% reduction in malaria case incidence and mortality rates by 2030, will require renewed global attention, increased funding, and continued research and development of new interventions, among other actions. In the field vector control, researchers are working on several innovations that aim to enhance efforts to combat the disease.

Improved nets: expanding chemistries to defeat resistance

While insecticide-treated nets are already a key part of the anti-malaria tool kit, their effectiveness has diminished in recent years as mosquitoes have become resistant to pyrethroids, the only class



of insecticides recommended by WHO, to date, for use in nets. Scientists are working to enhance pyrethroids' lethality or find other more potent insecticides suitable for the treatment of nets.

Several new types of nets are now being tested that include a pyrethroid (still a highly potent mosquito killer) and an additional chemical, sterilizing agent, or insecticide. One recent large trial in the United Republic of Tanzania suggested that the new Interceptor G2 nets – treated with both a pyrethroid and chlorfenapyr, a different class of chemical not previously used for vector control – showed a marked improvement in preventing malaria over pyrethroid-only nets.

“It’s really encouraging to see these results from a very robust clinical trial,” says Dr Hilary Ranson of the Department of Vector Biology at the Liverpool School of Tropical Medicine. But “there is a huge variation in mosquito populations across Africa, and extrapolating from one setting to a whole continent is a big step,” she added. Another large trial of new nets in Benin should provide more results by the end of the year.

Attractive targeted sugar baits (ATSBs): taking the fight outside

Current vector control tools are indoor-centric. “Right now, we have a lot of products that are very effective for indoor use such as IRS and bed nets,” says Mathias Mondy, director of Business Development and Strategy at the Innovative Vector Control Consortium (IVCC), “but we are desperately lacking products to prevent outdoor transmission.” In 2014, IVCC requested new ideas for outdoor control. One company pitched the idea of attractive targeted sugar bait (ATSB), an outdoor bait station to attract and kill mosquitoes.

An ATSB station is the size of an A4 sheet, with small pouches containing a sugary matrix laced with insecticide. The bait is covered by a soft black membrane that allows mosquitoes to feed through while being protected against rain and dust. Two bait stations are placed at a height of 1.8 meters on outside walls of every house, so they’re kept out of reach of young children and animals.

ATSBs are currently being tested in Mali, Zambia, and Kenya and have already shown great promise, while being much less arduous than spraying. “Compared to IRS,” notes Mondy, “it is much simpler to train health workers to nail ATSBs on the sides of houses.” Full results are expected by 2025.