

## RAM Scientific Committee Coordinator Report June 2020

### Scientific Developments (not exhaustive):

- a) **FDA approves IV artesunate for severe malaria:** Intravenous (IV) artesunate received approval from the U.S. Food and Drug Administration to treat adults and children with severe malaria in May. This approval marks the first for **severe malaria** since the marketing of quinine was discontinued in early 2019. Before the current approval, U.S. patients with severe malaria and those with uncomplicated malaria who were not able to take oral medications were treated with IV artesunate under an investigational new drug protocol through the FDA Expanded Access program. For more details on the two randomised trials undertaken in Asia and Africa follow the link below: [https://medicalxpress.com/news/2020-05-fda-iv-artesunate-severe-malaria.html?utm\\_source=Global+Health+NOW+Main+List&utm\\_campaign=288cfd70ff-EMAIL\\_CAMPAIGN\\_2020\\_05\\_28\\_01\\_27&utm\\_medium=email&utm\\_term=0\\_8d0d062dbd-288cfd70ff-2883217](https://medicalxpress.com/news/2020-05-fda-iv-artesunate-severe-malaria.html?utm_source=Global+Health+NOW+Main+List&utm_campaign=288cfd70ff-EMAIL_CAMPAIGN_2020_05_28_01_27&utm_medium=email&utm_term=0_8d0d062dbd-288cfd70ff-2883217)

**Relevance to RAM:** Ideally RAM's efforts in Vector Control and malaria elimination will lead to less cases of malaria in general and even fewer cases of severe malaria, but it is useful to know progress has been made in dealing with severe malaria when it occurs.

- b) **Politics versus Science:** 66 million doses of chloroquine and hydroxychloroquine are "stranded in a federal stockpile" after the FDA abruptly pulled an emergency authorization for the drugs as COVID-19 treatments. [The New York Times](#)

**Relevance to RAM:** This is just one example of how the COVID-19 pandemic and associated human behaviour is hindering disease control and elimination across several programs of importance to Rotary, including malaria elimination and polio eradication.

- c) ***Plasmodium vivax* in Hematopoietic niches: Hidden and Dangerous:** The essence of this study is that quantification of *P. vivax* in the peripheral blood stream underestimates the total *P. vivax* load so there is no clear correlation between measured *P. vivax* load and disease severity. The research indicates that *P. vivax* parasites expand out of the circulation and in to the haemopoietic niche of the bone marrow and possibly into the spleen.

Link: [Plasmodium vivax in Hematopoietic Niches: Hidden and Dangerous](#)

**Relevance to RAM:** No direct relevance to current RAM activities but underscores that significant knowledge gaps remain in our understanding of host-parasite interactions and the implications for diagnosis and treatment of *P. vivax* reservoirs in infected individuals.

- d) **Flying Robots and Malaria Eradication:** Using industry-standard drones (with modifications,) scientists in Brazil have developed a new method to safely air-drop sterile male mosquitoes into areas of high infection to trick female mosquitoes in mating with them -- subsequently creating non-viable eggs and driving down the overall population.

Air-dropping these male mosquitoes, instead of manually releasing them on the ground, was just as effective at driving down mosquito populations as ground releases but was 20 times cheaper. This steep

price decline means that efforts to control these populations could be much more widespread for the same original budget.

**Link:** [https://www.inverse.com/innovation/drones-to-fight-malaria?utm\\_source=Global+Health+NOW+Main+List&utm\\_campaign=0276940ff8-EMAIL\\_CAMPAIGN\\_2020\\_06\\_17\\_02\\_53&utm\\_medium=email&utm\\_term=0\\_8d0d062dbd-0276940ff8-2883217](https://www.inverse.com/innovation/drones-to-fight-malaria?utm_source=Global+Health+NOW+Main+List&utm_campaign=0276940ff8-EMAIL_CAMPAIGN_2020_06_17_02_53&utm_medium=email&utm_term=0_8d0d062dbd-0276940ff8-2883217)

**Relevance to RAM:** No direct relevance in the short term but something to keep in mind if our next PhD project extends research into mosquito breeding behaviour and RAM gets involved in field programs aimed at deploying mosquito control techniques.

- e) **Fighting Malaria with Mouldy Cereal:** An infectious disease specialist at the University of Central Florida (UCF), recently received a \$3.8 million grant from the National Institutes of Health to use fungus-derived compounds to develop better treatments for malaria. He is partnering with a natural-product chemist from the University of Oklahoma, who has collected over 65,000 fungal isolates mostly from fungi naturally occurring in soil samples. They have found that the doughnut-shaped cereal, Cheerios, provides the ideal growing condition to cultivate fungi that are being studied for their ability to kill *Plasmodium*, the parasite that causes malaria. The sugar in Cheerios is a good nutritional source for the fungus and the cereal's symmetry in size and shape provides a precise, uniform growing environment. Small variations in media can alter fungi growth, meaning researchers can't consistently produce the same set of results with each experiment.

The team has so far screened about 4,000 fungal species as well as pure compounds derived from fungi. Their preliminary screening identified more than 150 fungal extracts and compounds with potent antimalarial activities. Their five-year project hopes to narrow this number to 25 compounds, with verified antimalarial benefits at various stages of infection that can be developed into therapeutic drugs.

**Relevance to RAM:** Detailed drug discovery studies continue to identify promising leads for potential therapeutic drugs. However, any such therapies are still a long time away from surviving the drug development and registration process. In the meantime, RAM will have to continue doing the best we can with the traditional tools available.