

Malaria vaccine on clinical trial

Huge logistic and financial challenges remain before malaria is eliminated, but Shima Gyoh is heartened at the advent of clinical trials of a vaccine—albeit one that requires six injections and provides protection of only around 60%



The search for a vaccine against malaria took a big step forward when the World Health Organization (WHO) announced that the foremost candidate will undergo the last stage of clinical trials in Kenya, Malawi and Ghana. This very welcome news was sexed up in some news media, perhaps inadvertently, to suggest that at last a vaccine for malaria has been discovered and eradication is imminent. It isn't quite that rosy.

The vaccine, RTS,S consists of the surface antigens of *Plasmodium falciparum* incorporated into the outer coat of the Hepatitis B virus, so it also provides protection against Hepatitis B. The vaccine is aimed at protecting the newborn in the first six months of life, when it is most susceptible to malaria. It has to be given by injection, and its protection wanes fast and has to be repeated. By the time the baby is eighteen years of age, it would have had six injections. Earlier trials show that an efficacy of 57.2% can be achieved when given at the age of zero, one and two months. It is estimated that the overall protection will be 50–60% in the first year and 50% at the first five years. Thus it is not your ideal vaccine, but undoubtedly a valuable addition to the armamentarium in the war against malaria.

There are around 20 different types of malaria parasites transmitted by over 50 species of mosquitoes, but the most malignant of all, causing nearly all the problems of the disease is *P. falciparum* transmitted by *Anopheles* mosquito. Elimination of this would equate to eradicating malaria. However, mosquitoes have been in existence for over 100 million years and the plasmodium has adapted itself to its two hosts very well. It infects over 200 million people with an annual mortality of around 700 000 among children. Tropical climate, low standard of living and poor environmental

sanitation constitute the ideal environment for malaria propagation and sub-Saharan Africa carries 90% of the world malaria burden. Attempts at eradication must be approached from all these angles.

Much success has been achieved with drugs to kill the plasmodium in the human body, but unfortunately the output of newer, more effective drugs is hardly keeping pace with the development of drug resistance by the plasmodium. This also applies to the insecticides resistance by the mosquito. Genetic methods are being introduced to reduce their population, eliminate or reduce disease carrying capacity by both. These methods are expensive and often openly challenged by vocal advocates who raise public fears about the unknown.

Education on the environmental sanitation strategies for eliminating the breeding and hiding places of the mosquito, particularly around human habitation, should be taught from primary school, and African Governments should appreciate that raising the standard of living of the people is necessary for eradication of malaria.

Research into drugs that would benefit mainly poor developing countries is not commercially attractive to companies, and the RTS,S vaccine has been funded mainly by the Bill and Melinda Gates Foundation in its determination to work for the eradication rather than control of malaria. An effective vaccine is better regarded as addition to, and not a replacement of all the other measures that have, since the year 2000, reduced the mortality of malaria by 62%. The WHO hopes to further cut it by 90% by 2030.

The vaccine is about to be tried in three countries. Expected challenges are the cost of the vaccine and the commitment of families to turn up at the correct times for the injections. These obstacles can be surmounted by appropriate advocacy and sufficient allocation of resources, and the arrival of a good vaccine on the scene is good encouragement for the world to redouble efforts for eradication of malaria.

Shima Gyoh has held many posts ranging from village doctor to DG of Nigeria's Federal Ministry of Health and Chair of the Medical and Dental Council of Nigeria.



CHRONOLAB SYSTEMS

