Human

Combining a malaria vaccine with Seasonal Malaria Chemoprevention reduces child hospitalisations and deaths from malaria by at least 60% compared to either intervention alone

Giving young children the world's first malaria vaccine RTS,S/AS01E and antimalarial drugs before the rainy season could substantially reduce cases of life-threatening malaria in the African Sahel, where malaria is highly seasonal. In this trial, 6,000 children were split into three intervention groups – one that received the RTS,S/AS01E vaccine alone, another that received seasonal malaria chemoprevention (SMC) alone, and a third that received a combination of vaccine and SMC.

Episodes of clinical malaria, hospital admissions with WHO-defined severe malaria and deaths from malaria were reduced by 62.8%, 70.5% and 72.9% respectively in the combination group compared to the SMC alone group. Similarly, these outcomes were reduced by 59.6%, 70.6%, and 75.3% respectively in the combination group compared to the vaccine alone group.

The combination of the RTS,S vaccine with SMC results in much greater impact on malaria transmission than either intervention on their own. This innovative use of the first vaccine in combination with SMC provides an effective way to reduce cases in seasonal settings across Africa.

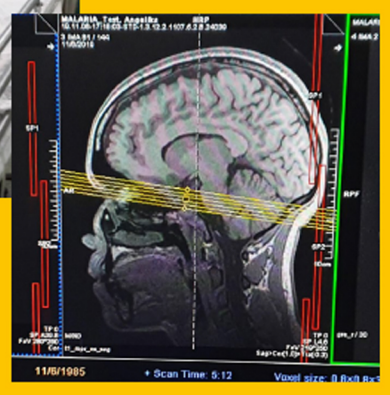
Silent disease – cerebral malaria more common than previously thought

Cerebral malaria is the most severe neurological complication of *Plasmodium falciparum* infection. It is currently characterised by a rapidly progressive coma, has a high fatality rate, and leads to long term health repercussions for survivors. Understanding the mechanisms leading to this syndrome is crucial to inform effective treatments.

Long-term neurological effects usually seen in cerebral malaria survivors were also recently reported in malaria cases without coma. These surprising new findings indicate that the brain can be affected irrespective of the patient's state of consciousness. The study used magnetic resonance imaging (MRI) to investigate the occurrence of brain changes in malaria patients without coma in India.

It found that malaria infection caused by the *Plasmodium falciparum* parasite often causes undetected brain changes, which suggests many more malaria patients could be experiencing neurological damage that remains undiagnosed as they fall between the current diagnostic cut-offs.

This research highlights the need for new ways to identify cases with 'silent' cerebral malaria and improve their treatment pathways.



Targeted spraying strategy in low-transmission setting halves the cost of current practice

Indoor residual spraying (IRS) has been used effectively in South Africa since 1945. However, increasing insecticide costs and constrained malaria budgets could make universal vector control strategies, such as IRS, unsustainable in settings where there is low malaria transmission. More efficient approaches are therefore urgently required to sustain elimination efforts in South Africa and other low transmission settings.

This trial compared reactive, targeted IRS, where only houses of index cases and their immediate neighbours were sprayed, with the standard practice of annual mass spray campaigns, in northeastern South Africa over two malaria seasons. Disability-adjusted life-years (DALYS) were estimated for each strategy based on trial endpoints, and health service costs of real-world implementation were modelled.

Targeted IRS was non-inferior to mass spraying, at less than half the cost. At the incidence observed in the trial (less than 1 case per 1000 people in a year), a targeted strategy would have a 94–98% probability of being cost-effective.

This is the first study to evaluate whether routine blanket vector control can be safely replaced with a reactive, targeted strategy. Findings indicate that targeted IRS could be cautiously implemented in areas with very low malaria transmission and strong surveillance systems, enabling scarce resources to be used more effectively for other life-saving activities.

Optimising the impact of Seasonal Malaria Chemoprevention with operational research adapted to the local context

The most intense malaria transmission occurs in West and Central Africa during and shortly after the rainy season. Seasonal malaria chemoprevention (SMC) is a proven strategy developed specifically for these areas, which was first introduced in 2012.

SMC was rapidly expanded through the ACCESS-SMC project, which showed that high coverage could be achieved and there were marked reductions in the number of malaria cases, severe cases, and deaths in hospital malaria due to malaria when SMC was introduced.

But the impact could be greater if delivery was better adapted to the local context, to ensure all eligible children are reached throughout the high-risk period each year. Through the OPT-SMC partnership, 13 national malaria control programmes (NMCPs) involved in SMC are being supported to conduct operational research to improve delivery of SMC, and to put their findings into practice, through small grants and technical assistance.

In 2021, SMC programmes reached about 43 million children in west and central Africa. The OPT-SMC project aims to help NMCPs ensure these programmes have optimum impact.

Getting rid of *Plasmodium vivax* in Cambodia: Let's get radical!

P. vivax is difficult to eliminate. The part of its life cycle that causes multiple relapses, known as hypnozoites, can only be killed by drugs such as primaquine. However, primaquine can cause life-threatening breakdown of red blood cells in individuals with G6PD-specific deficiency and has therefore not been deployed widely. Now, point of care testing for G6PD deficiency makes it feasible to implement a radical cure for *P. vivax*.

This study developed, implemented, and evaluated a new model of care for *P. vivax*. Patients diagnosed in the community with *P. vivax* infection were referred to the local health centre for point of care testing, then commenced 14 day or 8 weekly radical cure treatment with primaquine depending on their G6PD test result, and were then followed up in the community.

The new model of care was highly feasible and acceptable to health care workers and to patients who were finally cured of recurrent malaria. Overall, tolerance and adherence to the primaquine course were high, leading to scale up of this method throughout Cambodia.

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