

Giving older children preventive malaria drugs reduces cases and transmission

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Credit: CDC

The large randomised study of 200,000 children was led by the London School of Hygiene & Tropical Medicine and Université Cheikh Anta Diop, Senegal. It found Seasonal Malaria Chemoprevention (SMC) also reduced cases in those above 10 years of age by a quarter, demonstrating that the intervention had contributed to reducing transmission of the disease.

SMC provides a high degree of personal protection but until now it was assumed that it would not contribute to community-wide reduction in the transmission of malaria.

There were approximately 214 million malaria cases and an estimated 438,000 malaria deaths in 2015—89% of cases and 91% of deaths occurred in Sub Saharan Africa¹. SMC is a relatively new tool in the fight against malaria. It involves treating [children](#) with antimalarial drugs sulfadoxine-pyrimethamine and amodiaquine once a month during the rainy season, to prevent malaria where the disease is highly seasonal.

Following a series of successful studies² by the School and its partners in West Africa, the World Health Organization recommended that children under five years of age living in the African Sahel and sub-Sahel should receive SMC. National [malaria control](#) programmes have been quick to respond and SMC has now been rolled out to 11 countries, reaching about 15 million children in 2016.

However, with the relative number of malaria cases in the region's older children increasing, this new study was undertaken to examine the effectiveness of SMC extended to include children up to age 10. Between 2008 and 2011, 54 local health centres in central Senegal were randomised to provide SMC to children up to age 10, or act as controls. Over three years 780,000 SMC treatments were given to children. Malaria cases in each community were then monitored at outpatient clinics and hospitals, and deaths were recorded through surveys.

Dr Paul Milligan, lead investigator from the London School of Hygiene & Tropical Medicine, said: "Although progress is being made to tackle malaria, it remains one of the biggest killers of children in sub Saharan Africa. Seasonal Malaria Chemoprevention is designed specifically for situations where the malaria is intense but confined to a short period each year. We wanted to know if it was practical to include older

children in SMC programmes, and discover what the subsequent effect on their health and malaria transmission would be.

"We found that SMC delivered by district health teams using community health workers reduced the incidence of malaria in the under 10s by 60% and the incidence of severe malaria³ by 45%. The intervention also led to a 26% decrease in cases of malaria in those above 10 years of age, showing that SMC could contribute to reducing [malaria transmission](#). Although this effect was modest it is essential to winning the long-term fight against the disease. It is important now to strengthen national surveillance systems so we can define the regions where expanding the age range for SMC would have the greatest benefit."

Importantly, the team found that including [older children](#) did not greatly increase the time needed to deliver the intervention each month. The treatments also provided a high degree of protection for an average cost of \$0.50 per child each month and no severe side effects were recorded.

Dr Badara Cisse, lead investigator from the Université Cheikh Anta Diop, said: "The SMC intervention in Senegal is an example of a locally-adapted approach to malaria control that could be a blueprint for an effective strategy to tackle malaria in this part of Africa. The development of the SMC intervention illustrates the value of partnerships between researchers in endemic countries, malaria control programmes, and the London School of Hygiene & Tropical Medicine."

The authors acknowledge limitations of the study, including the need to better understand the effect of SMC on antimalarial drug resistance and the fact that they weren't able to demonstrate an effect on mortality.

However, since the study was completed, Senegal has started to introduce SMC for children up to 10 years of age as part of its national malaria control strategy. The monitoring and evaluation of this new

programme includes assessments of drug safety and efficacy, and measuring the impact on [malaria](#) and child survival.

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More information: Badara Cisse, El Hadj Ba, Cheikh Sokhna, Jean Louis NDiaye, Jules F. Gomis, Yankhoba Dial, Catherine Pitt, Mouhamed NDiaye, Matthew Cairns, Ernest Faye Magatte NDiaye, Aminata Lo, Roger Tine, Sylvain Faye, Babacar Faye, Ousmane Sy, Lansana Konate, Ekoue Kouevijdin, Clare Flach, Ousmane Faye, Jean-Francois Trape, Colin Sutherland, Fatou Ba Fall, Pape M. Thior, Oumar K. Faye, Brian Greenwood, Oumar Gaye, Paul Milligan. Effectiveness of Seasonal Malaria Chemoprevention in Children under Ten Years of Age in Senegal: A Stepped-Wedge Cluster-Randomised Trial. *PLOS Medicine*. [DOI: 10.1371/journal.pmed.1002175](https://doi.org/10.1371/journal.pmed.1002175)

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