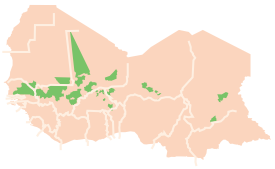
SMC at scale-saving lives

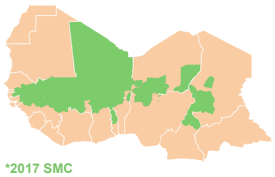
Malaria is preventable and treatable, but many children living in Africa die from malaria before their fifth birthday. The ACCESS-SMC project has proven the feasibility and impact of seasonal malaria chemoprevention (SMC) at scale. SMC, which consists of two to four doses of sulfadoxine-pyrimethamine plus amodiaquine (SP + AQ), is recommended by the World Health Organization (WHO) as one of the most effective interventions for the prevention of malaria in areas where malaria transmission is highly seasonal and resistance to SP + AQ is low, such as the Sahel region of sub-Saharan Africa. With areas in the Sahel having the highest incidence of malaria in the world, it is now an urgent priority to close the gap and reach all eligible children.

Scale-up of SMC

- SMC was recommended by WHO in 2012. As of 2014, fewer than 5% (2.99 million) of all eligible children were benefiting from SMC. ACCESS-SMC was initiated in 2015 to overcome barriers to SMC scale up.
- Through ACCESS-SMC, over 3.1 million children under the age of five years were protected from malaria in 2015 and 6.3 million children in 2016 in Burkina Faso, Chad, Guinea, Mali, Niger, Nigeria and The Gambia.
- Outside ACCESS-SMC, Cameroon, Ghana, Guinea-Bissau, Senegal and Togo now have SMC programs.



* 2014 SMC



*2017 SMC
*ACCESS-SMC AT ITS PEAK (2016)

Current demand

- Over 100 million treatments, using approved, quality assured medicines (SP+AQ), must be produced each year to meet potential demand for SMC. A second manufacturer is expected to enter the market in 2019, which will help meet this demand.
- By improving demand forecasting and centralized procurement, ACCESS-SMC led initial phases that catalysed the supply market volume from 9.9 million in 2014 to over 70 million by 2017, which resulted in stable pricing.
- A joint effort among partners culminated in the production of sweetened, dispersible tablets that are more palatable to children.

A new child-friendly, dispersible formulation was made available to millions of children

Millions of cases and tens-of-thousands of deaths can potentially be averted each year with SMC, which has been shown to have a substantial impact on the malaria burden

- Costing studies were undertaken in the seven countries to estimate the provider cost of SMC in 2015 (US $1 per child per month) and in 2016 (US $0.85 per child per month), giving estimates of the average cost per child for one year.
- US $3.40 is the estimated average recurrent cost to protect a child during the rainy season from malaria with SMC.
- SMC was found to be highly cost-effective in preventing malaria in all seven countries as per each country's GDP per capita.

60,000

deaths and

10 million

cases of malaria estimated to have been averted through ACCESS-SMC

SMC is inexpensive, safe and effective. Continued monitoring of SMC delivery, efficacy and safety are essential to ensure SMC programs remain effective. There is an estimated gap of 12 to 18 million children who could benefit from SMC but are not currently included in SMC programs. It is urgent to close this gap and maximize the impact of this intervention. **Malaria can be prevented, and in the Sahel and sub-Sahel regions of Africa SMC can make an important contribution.**

Tracking the impact of SMC

Monitoring the process of delivery: Health workers were trained in safe drug administration through cascade training programs for community health workers (CHWs) and health facility staff. Social mobilization was organized to explain the program and announce, days in advance, the dates of SMC campaigns. Each month, CHWs administered a dose of sulfadoxine-pyrimethamine (SP) and the first of three doses of amodiaquine (AQ), leaving the remaining doses of AQ with the caregiver to administer to their child over the next two days. They documented the treatment on tally sheets, in a register, and on the child's SMC card.

Over 50 million treatments administered through ACCESS-SMC

Measuring coverage: 14 cluster-sample surveys, including over 1,000 children in each country after each malaria transmission season, were used to measure SMC coverage. Focus groups and in-depth interviews with caregivers and health workers were used to assess the quality of delivery and check that treatment guidelines were being followed.

ACCESS-SMC reached 90% of eligible children in implementation areas. Overall, the mean number of monthly treatments received per child each year was three.

Measuring treatment and efficacy: Children who develop malaria are less likely to have received SMC than children who remain free of malaria. By comparing the proportion of confirmed malaria cases who had received SMC in the previous four weeks, with the proportion of children in the general population (the controls) who had received SMC in the previous four weeks, the protective efficacy can be calculated. Case-control studies in five countries in 2015 and 2016 were used to measure the protective efficacy of each SMC monthly treatment. 820 cases and 1,637 controls were recruited in 2015, and 1,433 cases and 2,867 controls in 2016.

SMC was associated with an 89% reduction in malaria incidence for 4 weeks after treatment, and 62% from five to six weeks after treatment, compared with children who had not received SMC or whose last dose was more than six weeks before.

Monitoring safety: SMC countries were supported to strengthen pharmacovigilance systems, with an emphasis on the known severe side effects of SMC drugs. A series of training workshops were held for national pharmacovigilance coordinators and malaria control program staff, and cascade training of health workers for SMC delivery included recognition and reporting of adverse reactions. Monitoring through targeted spontaneous reporting was supplemented by Cohort Event Monitoring.

ACCESS-SMC strengthened national pharmacovigilance capacity. SMC countries report to the Uppsala Monitoring Centre. Severe adverse reactions are uncommon, and a safety review in April 2017 found no safety concerns.

Drug resistance: The prevalence of molecular markers of resistance of *P. falciparum* to SMC drugs was measured using community surveys of about 4,000 individuals in each country before SMC scale-up. AQ resistant mutations were found in four samples (0.14% of samples from *P. falciparum* carriers) and SP resistant mutations in eight samples (0.33%). No samples contained both SP and AQ resistant genotypes.

Large-scale surveys of the prevalence of molecular markers of resistance to AQ and to SP found resistant genotypes were uncommon at the end of the 2015 transmission season, before full SMC scale-up.

Evaluating impact: The relative reduction in the number of malaria cases and malaria deaths under five years of age, compared to older age groups, observed when SMC was introduced, was estimated from the number of confirmed cases of deaths in-hospital that were reported in the national Health Management Information Systems, supplemented by data on malaria cases collected from clinic registers in selected health facilities in each country. To obtain approximate estimates of the total number of cases and deaths that may have been averted by ACCESS-SMC, estimates were derived from burden estimates from the Imperial College Malaria Model or based on project's estimates.

In countries with consistent reporting, introduction of SMC was associated with a reduction of about 50% in the number of malaria deaths in implementation areas. Similar reductions in the number of confirmed cases in outpatient clinics, and the number of inpatients with a diagnosis of malaria, were observed in facilities with consistent reporting.

ACCESS-SMC is a UNITAID-funded project, led by Malaria Consortium in partnership with Catholic Relief Services, which supported National Malaria Control Programs to scale up access to seasonal malaria chemoprevention to save children's lives across seven countries in the Sahel. By demonstrating the feasibility and impact of SMC at scale, ACCESS-SMC promoted the intervention's wider adoption.For more information visit www.unitaid.org and www.access-smc.org