Background. WHO recommended seasonal malaria chemoprevention (SMC) in 2012 for Sahel countries in Africa with the aim to reduce malaria among children less than 5 years of age by using sulphadoxine-pyrimethamine and amodiaquine (SP+AQ). This strategy was scaled up in Mali from 2012. The use of millions of doses of SP+AQ could generate potential Plasmodium falciparum resistance mutant parasites. The aim of this study was to monitor the prevalence of Pfdhfr+Pfdhps+pfcrt+pfmdr1 mutations in parasites infecting the target population.

Methods. Two cross-sectional surveys were conducted before (August 2012, n=662) and after (June 2014, n=670) a pilot implementation of SMC in the health district of Koutiala. Children aged 3–59 months received 3 and 4 rounds of curative doses of SP+AQ over two malaria seasons in 2012 and 2013, respectively. Genotypes of P. falciparum Pfdhfr codons 51, 59, 108 and 164; Pfdhps codons 437 and 540, Pfcrt codon 76 and Pfmdr1 codon 86 were analysed by PCR on DNA of parasites from SMC population blood samples (after and before) and non-SMC patients aged 7 years or above (November 2014, n=500).

Results. In the SMC population 191 and 85 children were included in the molecular analysis. In the non-SMC patients 220 were successfully PCR analysed. In the SMC population, the prevalence of the six-mutation Pfcrt [Pfdhfr-dhps quintuple+Pfcrt-76T] genotype increased significantly after SMC implementation, from 0.0% to 7.1% (p=0.0008). The post-intervention prevalence of the six-mutation Pfmdr1 [Pfdhfr-dhps quintuple+Pfmdr1-86Y] and the seven-mutation Pfcrt+Pfmdr1 [Pfdhfr-dhps quintuple+Pfmdr1-86Y+Pfcrt-76T] genotypes were both 1.2% among the SMC population. No six-mutation and seven-mutation genotypes were observed neither among SMC population at baseline nor in the non-SMC patient population (p=0.30).

Conclusion. SMC increased the prevalence of the six-mutation Pfcrt genotype of P. falciparum that can lead to resistance in a population exposed to SMC with SP+AQ.