Seasonal Malaria Chemoprevention: Demonstrating Efficient and Effective Implementation at Scale

Improving Malaria Care (Burkina Faso)

Project Overview

The Improving Malaria Care (IMC) project is a $19.8 million award funded by the U.S. President’s Malaria Initiative (PMI) within the U.S. Agency for International Development (USAID), and implemented by Jhpiego, in partnership with the Programme de Marketing Social et de Communication pour la Santé, known as PROMACO, a local affiliate organization of Population Services International (PSI). The goal of the 7-year project (2013–2020) has been to support the National Malaria Control Program (NMCP) to meet its national malaria strategic plan objectives, which include reducing the 2015 malaria morbidity and mortality rates by 50% by 2020. In 2017, the project received additional funding from the Global Health Security Agenda to support the integration of infection prevention and control activities.

IMC advanced the quality of malaria prevention, diagnosis, and treatment in all public health centers in Burkina Faso. The project’s intermediate results (IRs) are synergistic with and reflect key strategies outlined in the national malaria strategic plan and are as follows:

- IR1: Improved malaria prevention;
- IR2: Improved malaria diagnosis and treatment; and
- IR3: Improved NMCP capacity to plan, design, manage, and coordinate a comprehensive malaria control program.

The IMC project approach is defined by five key strategies:

1. advocacy, policy change, and dissemination;
2. capacity-building;
3. facilitative supervision;
4. performance and quality improvement; and
5. social and behavior change communication.
Introduction

Seasonal malaria chemoprevention (SMC) is one of the Ministry of Health (MOH) of Burkina Faso’s strategies to decrease morbidity and mortality from malaria, especially among the high-risk, under-5 age group. The World Health Organization (WHO) recommends SMC as an approach to prevent malaria in children under 5 years of age and consists of administering monthly treatment cycles of the combination of antimalarial medication, sulfadoxine-pyrimethamine and amodiaquine (SP-AQ), in order to maintain sufficient concentrations of these medicines in the target population’s blood throughout the high-transmission period. It is implemented as a campaign with four monthly cycles during the months of high malaria transmission (July through October) in Burkina Faso. Each cycle consists of three doses of AQ taken over 3 days, plus a single dose of SP on the first day. If implemented properly, SMC:

- Prevents approximately 75% of all malaria episodes
- Prevents approximately 75% of severe malaria episodes
- May result in a decrease in child mortality (1 fewer per 1,000)
- Is likely to reduce the incidence of moderately severe anemia (19 fewer per 1,000)

At the time of adopting SMC in 2014, malaria remained a major burden in Burkina Faso, with an incidence rate of 463 per 1,000 inhabitants and a total of 5,632 deaths due to malaria. Of those deaths, 4,166 (or 74%) occurred among children under the age of 5.¹

The SMC intervention was implemented in seven health districts in 2014, and gradually expanded each subsequent year to cover all 70 districts by 2019, with financial support from the World Bank, Malaria Consortium, PMI, Global Fund, and the United Nations Children’s Fund (UNICEF). Within the expansion of this intervention, the IMC project increased the number of districts supported to implement SMC from two in 2017 to 12 for 2018–2020. (See Figure 1).

Figure 1: PMI target districts for the annual SMC campaigns 2018-2020

Approaches and Interventions

Expansion of SMC: After demonstrating the ability to deliver SMC efficiently and achieve impact in two districts in 2017, the IMC project was mandated to expand its support for SMC delivery to 12 districts from 2018 to 2020. Lessons from microplanning in two districts were used to plan two workshops to examine the budget and needs for each of the 12 new districts in 2018, and in subsequent years. To support the expansion, IMC signed memorandums of understanding with the 12 districts to take charge of the payments for community distributors (CDs) and supervisors instead of IMC staff. IMC trained annually 5,522 health workers for the program.

Minimize costs of SMC delivery: Using a roadmap for IMC implementation developed by the NMCP, the IMC project minimized costs by cost-sharing training activities with partners. For example, the World Bank supports conference room and meals while IMC provides participant transport and accommodation. As an additional cost-saving measure, IMC purchased materials for the program in bulk.

Achieving coverage: The objective of each SMC campaign was to reach 100% coverage of children in the target group during each cycle. The total SMC targets in IMC-supported districts for 3–59-month-old children was 94,136 children in 2017, 420,533 children in 2018, 429,478 children in 2019, and 438,681 in 2020. By focusing on the training of CDs and daily supervision during each cycle, IMC ensured that no child was missed by the CDs in their areas. Each CD has daily targets and returns to the household within the same day, evening, or next day to reach a child not available previously. CDs have re-visit cards for children missing from households. Awareness about SMC was conducted through megaphones before and during SMC cycles. A review of the first cycle in 2018 showed CDs visited 99.93% of households.

Monitoring the process of delivery: Daily supervision was implemented to monitor the distribution of treatments. Supervisors reviewed CD data, left a card with mother as proof of visit, and marked the child (by inking the little finger of the left hand) and doors to the compound (with a chalk mark on the outside of the home). Supervisors from central region did a quick assessment of total number of children who received their doses versus total number of children in the area, check finger marks, and ask mothers whether they received information about the campaign. Independent monitoring was carried out by non-health providers (e.g., teachers from other areas) by checking coverage in randomly selected locations, usually after the first and last cycle.

Measuring adherence and efficacy of treatment: Although each cycle was intended to last 3 days, IMC included a fourth day for supervisors to go back to the compounds to check that the mothers provided the tablets to the children. This happened either during the cycle or after. Parents were receptive to giving the doses to prevent malaria in their children. To determine the efficacy of treatment, IMC measured the number of malaria cases among the target population (3–59 months) in the health facilities.

Monitoring safety: IMC trained CDs to ask about side effects of SMC treatments, use “Events Forms” when side effects occurred, and refer children to health facilities for care when necessary. CDs would ask and check for vomiting, rash, diarrhea, and fever, and investigate other illnesses/morbidities that may be present. Once reported, the severe side effects were reviewed by supervisors from the regional level.

Evaluating impact/outcome: IMC evaluated the impact/outcome of this intervention by reviewing data from each cycle against targets, and by observing malaria cases among the target population for trends during the SMC campaigns and comparing with previous years. Data showed reduction in the number of
cases of severe malaria and deaths among the target population. When children are not sick with malaria, families go to work in their farms, improving the wellbeing of the family.

To achieve these successful outcomes, IMC used the process outlined in Figure 2 below.

**Figure 2: SMC planning flowchart**

**National-Level Support**

At the national level, the IMC project worked with the NMCP to revise and adapt standardized SMC tools for the context of Burkina Faso. This entailed a review of tools for administration and supervision, as well as commodity management, training, and reporting. IMC also supported the NMCP to conduct cascade training from the central level to the Direction Régionale de Sante (DRS, the regional health office), the district health management teams (DHMTs), and health facility workers, down to CDs in the villages. To ensure smooth implementation, each cycle’s supervision was preceded by a supervisor’s meeting at the central level to enable knowledge exchange and an orientation to supervision guidelines; this helped stakeholders identify strengths and challenges to better address gaps.

In preparation for the 2019 SMC campaign, IMC supported the dissemination of the national assessment results from 2018 during a national workshop held in Ouagadougou. This meeting was an opportunity to present results of studies of the 2017 and 2018 SMC campaigns and to share best practices.

Preparations for the 2020 SMC campaign began in early 2020 during the beginning of the COVID-19 pandemic, which necessitated a comprehensive review and revision of all the SMC tools to integrate infection prevention and control (IPC) guidance and measures. The IMC project supported the NMCP in revising: 1) the commodity and pharmacovigilance tools to include IPC and COVID-19 commodities; 2) the communication tools (reminders, banners, radio spots) to include key educational messages about COVID-19; and 3) training tools (CD modules, health agent modules) to include a COVID-19 module and corresponding checklist within the training package. These updated tools were distributed nationwide to all regions and districts implementing SMC.

**Regional- and District-Level Support**

The IMC project has provided technical assistance to the quantification and validation workshops for district microplanning, which gathers DHMTs and DRS representatives to review all SMC activities and corresponding budgets. The workshop also includes the quantification exercise for CDs and the total
number of commodities required per district, per established targets of children to be reached. In 2019, IMC supported the training of 36 DHMT members on the administration of SP-AQ, supervision of CDs, and data recording using the revised data collection tools. In 2020, the microplanning was conducted remotely, to respect COVID-19 prevention measures.

From 2017 to 2020, IMC trained 39 district trainers, 839 supervisors, 4,644 CDs, and 1,867 town criers who supported the implementation of each year’s SMC campaign in the 12 PMI-supported districts. IMC also supported preparations for the campaigns, which included procurement and distribution of SP-AQ, checklists, training manuals, supervision grids, monitoring and summary sheets, and other key materials used by the actors.

During the SMC cycles, cascading supervisory visits were conducted from the central level, DRS, DHMTs, Infirmier Chefs de Poste (ICP, the head nurses of the local health facilities) down to the CDs. Additionally, communication activities promoting SMC were broadcast over the radio and television, as well as being presented by local authorities during community-wide events.

Monitoring and evaluation efforts included rapid polling from the second day of each cycle, daily monitoring of coverage in each Centre de Santé et de Promotion Sociale (CSPS, Health and Social Promotion Center), collection and transmission of daily data, and independent monitoring after the first and fourth round of each campaign.

Key Results

In addition to the 5,522 health workers trained at all levels, a number of tools were produced for the SMC campaign. The procurement and pharmacovigilance forms were used for recording consumables received and any other observations. Tools for the administration of SP-AQ and data management included a tick sheet, map, monitoring and summary sheet, reference sheet, and data entry form. The project produced training modules for CDs and health providers as well as supervision tools, including: a supervision guide for the regional health directorate, CDs, and DHMTs; quick survey sheet; and report forms. Lastly, communication tools to aid in promotion and implementation were produced, including job aids and banners.

Independent monitors conducted a survey of the first cycle of the SMC campaign in July 2019 at the regional level, which reached 4,304 children aged 3–59 months in 1,439 concessions (120 concessions per district). The data collected showed that CDs visited 99.93% of households, a near universal coverage. When polled, 98% of children received SMC treatment according to their parents, above the goal of 95% coverage. However, for subsequent doses of SMC, only 93.29% of children received the second and third dose at home according to their parents. Finally, only 83.39% of children treated had supporting evidence, such as completed SMC cards or informational brochures, indicating that self-reported levels may be inflated or that CDs need more supervision in order to reach the stated goal. Of those surveyed, 100% of parents in the household visited were satisfied with the SMC campaign. At the national level, the coverage of the targets in the PMI-funded districts was over 100% in all districts in 2017, 2018, and 2019.

For the 2020 campaign, the administrative coverage of all four cycles was 89%, nearly reaching the annual target of 95%, and just above the national average of 88%. The independent monitoring conducted in October 2020 revealed that 3.7% have received treatment with proof.

From 2017 to 2020, the SMC campaigns in the 12 PMI districts reached 1,344,319 children aged 3–59 months (see Figure 3); in 2020, the IMC project met or exceeded most of the targets for children.
receiving SMC (See Figure 4). These results contributed to the decrease in the malaria mortality rate for children under 5 years at national level during the same time period (see Figure 5).

Figure 3: Children 3–59 months who received the full doses (4) of SMC course, 2017–2020

![Figure 3](image1.png)

Figure 4: Percentage of targeted children (3–59 months) who receive a dose of SMC in intervention area (12 PMI districts), by cycle, 2020

![Figure 4](image2.png)
Challenges and Lessons Learned

Below are some of the challenges faced during the implementation of the SMC and how the project was able to resolve them through innovative approaches.

**Target setting**

A challenge faced in implementing this SMC approach was that the use of census data to determine estimates leads to underestimation, resulting in the campaign planning to reach a lower number of children than the actual number of children to be found in the targeted SMC districts. Since the targets are set based on the 2006 census projection for children aged 12–59 months, for children aged 3–11 months, a proportion of 2.75% was considered. An adjustment was made for Cycle 2, Cycle 3, and Cycle 4 to account for the children who fall into the different age groups. These data were verified during the microplanning workshops organized with the support of IMC including adjustments for internally displaced population sites.

**Issues around second and third doses of SP/AQ**

Another challenge found after implementation of the 2018 campaign was that the second and third doses of each round, left to the parents to administer, were less consistent. This may be partly due to CDs not being present to observe administration of second and third doses, and partly due to the lack of training on interpersonal communication for CDs. To resolve this issue, some districts started a pilot test of Directly Observed Treatment during the 3 days of the cycle. In addition to this, CDs have become more insistent on the need to administer the second and third doses. They now tell the parents to keep the packages for future verification. Rapid surveys on the second or third day also verify that the intake has been successful.

**Confirming the child reached in all four SMC rounds**

Coverage with SMC needs to be throughout the 4 months of risk for each child, but it is often difficult for counties to track each child and confirm that the child was reached through all four cycles. To overcome
this challenge, SMC reviews each card to know if previous doses have been taken by the child. The back of the check-marked card allows verification of the number of children who have received previous doses as reported by the parents. At the end of the fourth cycle, independent monitoring is carried out to ensure effective coverage.

**SMC data use and inclusion in the health management information system**

A lot of data is collected during the campaigns; however, this data is not collated and interpreted fast enough to be used to adapt in the next day’s process. This affects coverage and impact. Also, SMC data is not integrated into the health management information system (HMIS) for use alongside other data. To correct these shortcomings, IMC put in place a data collection, compilation, and analysis system with daily coverage estimates, and used the data in debriefing meetings for appropriate decision-making. IMC ensured that this system worked properly and participated in meetings at all levels (health facility, district, and region). IMC has integrated SMC data into the HMIS. Weekly malaria surveillance data enabled assessment of the impact of SMC on malaria cases and deaths. Analysis of the evolution of malaria cases and deaths during the campaign and comparison with data from years without campaigns showed the impact of SMC.

**Leveraging SMC to deliver other interventions**

Given competing priorities for districts and community health workers, as well as opportunities to combine activities, some countries have piggybacked other interventions on SMC and vice versa. The project coupled SMC with screening for malnutrition. This strategy was effective in that it allowed early detection of cases of malnutrition at the community level, as well as improved the quality of the SMC campaign (e.g., severely malnourished children who cannot receive SMC drugs are identified and managed).

**Implementing SMC during COVID-19**

As countries grapple with the restrictions around COVID-19, SMC was delivered safely in the midst of the pandemic. The project emphasized raising the awareness of parents and populations around COVID-19 prevention and IPC practices. CDs and supervisors used barriers for infection prevention (masks, hand sanitizers, single-use cups) in delivering SMC to children, and parents administered the medication to avoid direct contact between the child and the CD.

**Recommendations**

- Implement a method for verifying the second and third doses of SMC are given to children.
- Include in the questionnaire a question on whether the child received the previous dose for each of the other cycles.
- Include training on interpersonal communication for CDs in subsequent years of SMC to help them better communicate the benefits and instructions to parents. This will help parents better accept SMC and understand the instructions for second and third doses of SMC. Stronger supervision at the central, intermediate, and district level was also recommended to combat this problem.
Success Story

Mrs. Kaboré, a 23-year-old mother from the village of Sourgou takes care of 4-year-old Mohamed. “Since the beginning of the rainy season, he has had a fever only once. When we went to the health facility, the nurse did a rapid diagnostic test and told us it was not malaria,” she explained. The nurse treated Mohamed for his fever and cough, and he has fully recovered.

Mrs. Kaboré had been visited by her local community health worker during the SMC campaign. She tells us, “Mohamed took the medicine correctly during all four visits and I gave him the medicine for the second and third days.” During this time, when most cases of malaria occur, Mohamed is safe. “I can now go out to work in the field without fear. SMC is saving us,” said Mrs. Kaboré.

Supervision of a team of community distributors by the Chief Medical Officer of Sabou with the Minister’s advisor and Jhpiego. Photo by Youssouf Sawadogo.

Quick assessment in the village of Pouni. Both children received their doses of SP-AQ. Photo by Youssouf Sawadogo.