Addressing Malaria in Pregnancy: A Comprehensive Approach to Maternal and Newborn Health Outcomes

Malaria is a major public health crisis, especially in sub-Saharan Africa, where 90% of all malaria-related deaths occur. The most vulnerable populations are pregnant women, their unborn babies, and children under five years of age. Approximately 25 million women become pregnant in high (stable) transmission areas of Africa each year and are at risk for malaria illness primarily through the Plasmodium falciparum parasite. This translates into an estimated 400,000 cases of severe maternal anemia, a potentially fatal condition, and from 75,000 to 200,000 infant deaths annually.[22] Women in stable transmission areas have the greatest risk of developing these complications during their first and second pregnancies.[23] The prevalence and intensity of malaria illness in pregnancy is higher among HIV-infected women and the risk to the woman and her newborn exists regardless of the number of times a woman has given birth.[24] HIV infection in pregnancy is also associated with reduced efficacy of malaria prophylaxis and treatment.

ACCESS APPROACH

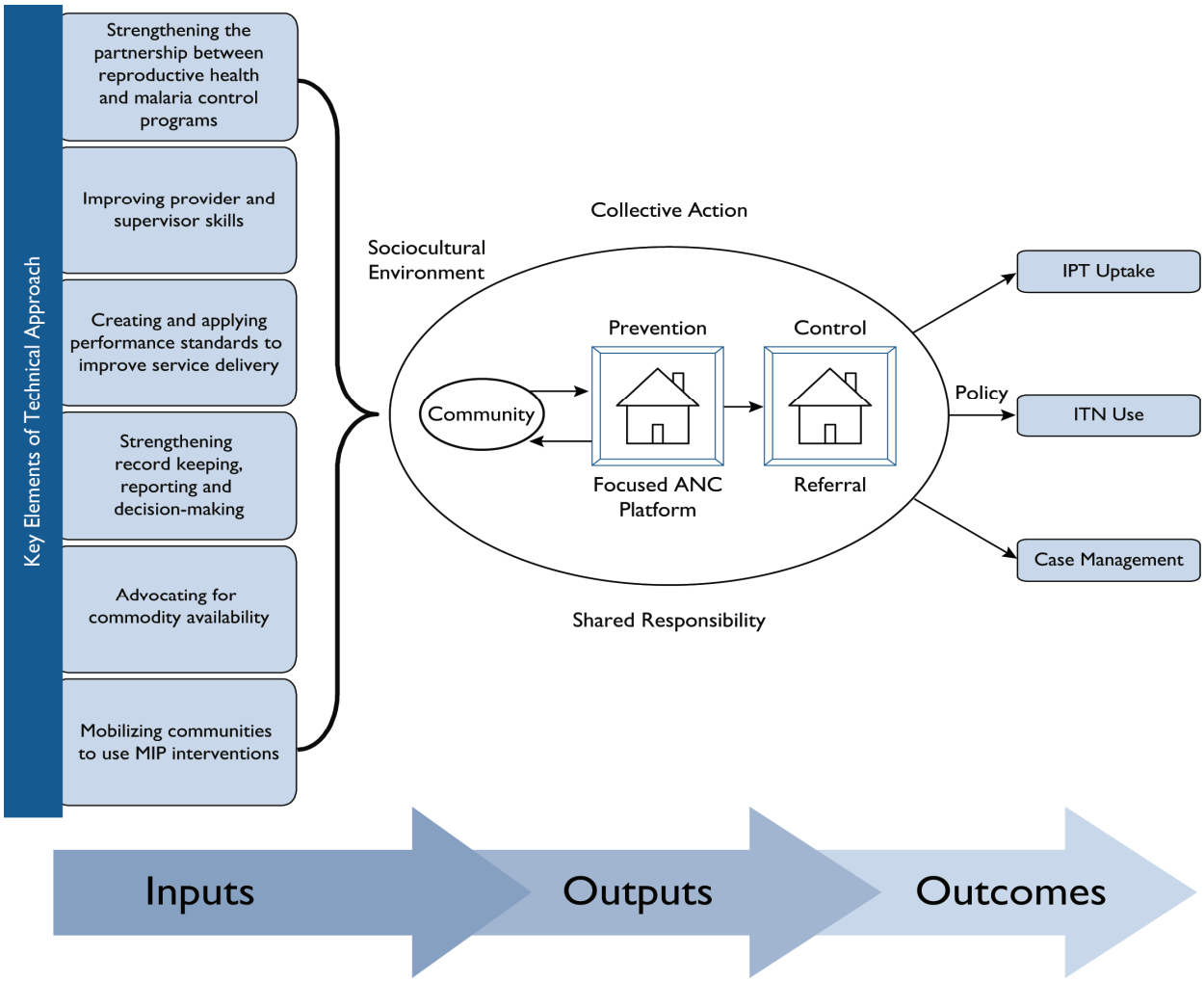
ACCESS was a committed partner to the Roll Back Malaria (RBM) Initiative and promoted the World Health Organization's (WHO) three-pronged strategy to address malaria in pregnancy (MIP) prevention and control in areas of stable transmission. The strategy addresses prevention of MIP through a platform of focused antenatal care (FANC) services. (*See text box*). To address MIP, FANC services include intermittent preventive treatment in pregnancy (IPTp) with an appropriate antimalarial (currently sulfadoxine-pyrimethamine, or SP), and insecticide treated bed-nets (ITNs). In addition, case management of MIP is addressed through prompt and effective treatment for pregnant women with a trained healthcare provider.

Malaria in Pregnancy: Continuum of Care

The ACCESS Program aimed to strengthen health systems across the continuum of care, reaching pregnant women at both the community and facility levels, and fostering the synergistic link between communities and facilities to improve health systems for women and their families. Since more than 70% of pregnant women attend ANC at least once during pregnancy, ANC services provide an important platform to address MIP prevention and control. (See **Figure 3**.)

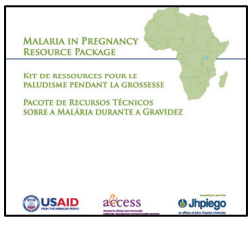
[22] Steketee RW et al. 2001. The burden of malaria in pregnancy in malaria-endemic areas. *Am J Trop Med Hyg* 64 (Suppl 1-2):
28-35.
[23] Brabin 1983; Jelliffe 1968; McGregor, Wilson and Billewicz 1983; Steketee et al. 1988.
[24] Verhoeff F et al. 1999. Increased prevalence of malaria in HIV-infected pregnant women and its implications for malaria control. *Trop Med Int Health* 4(1): 5-12.

Figure 3: Focused Antenatal Care/Malaria in Pregnancy



Global Leader in Advocacy and Global Learning

ACCESS established itself as a global leader in the prevention and control of MIP throughout Africa. In its work with the RBM MIP Working Group (MIP WG)—including as Secretariat for the Working Group from 2003 to 2006—ACCESS supported the development of a number of important consensus statements, including: SP for IPTp in areas with SP resistance, interactions between HIV and malaria and implications for service delivery, ITN delivery through ANC, and a global monitoring and evaluation guidance document for MIP.



ACCESS helped to develop and disseminate global, evidence-based materials, resources and tools. These materials include Prevention and Control of Malaria in Pregnancy in the Africa Region: A Program Implementation Guide,[25] which outlines seven essential programming components that are needed to put MIP policy into practice at the health facility level and draws on existing country experiences, best practices and lessons learned for practical implementation. ACCESS also updated the

[25] Developed in collaboration with WHO, the Centers for Disease Control and Prevention (CDC) and Rational Pharmaceutical Management Plus, through the Malaria Action Coalition.

global Malaria in Pregnancy Resource Package, available on CD-ROM and on the Jhpiego website. This package is a compilation of tools and resources for countries to adapt to their context as they work toward the prevention and control of MIP, including: the WHO Strategic Framework for MIP, Jhpiego's MIP Learning Resource Package, an MIP Implementation Guide, job aids and MIP key articles.

ACCESS support to regional coalitions in Africa contributed to MIP activities in 29 countries.

ACCESS support and active participation in regional coalitions in Africa contributed to improved coordination and implementation support in 29 countries.[26] For instance, through the Malaria in Pregnancy East and Southern Africa Coalition (MIPESA) and the West African Regional Coalition for MIP (RAOPAG), ACCESS support led to improved regional capacity among national-level trainers, as well as the documentation and dissemination of best practices and lessons learned. ACCESS assisted MIPESA and RAOPAG in the development of regional global fund proposals, which yielded improved capacity i
n grant writing and regional planning among MIPESA and RAOPAG representatives. ACCESS also helped document MIPESA countries' experiences through the report, Assessment of MIPESA Country Experiences in the Adoption and Implementation of Malaria in Pregnancy Policies including Best Practices and Lessons Learned. The Program also provided continued support to the RBM East Africa Roll Back Malaria Network (EARN) and the West Africa Roll Back Malaria Network (WARN).

RESULTS

ACCESS contributed to the acceleration and scale-up of MIP prevention and control in a number of countries, including: Burkina Faso, Kenya, Madagascar, Tanzania, Uganda, Nigeria, Rwanda, Mali, Ghana and Malawi. Summarized below are the major results from the first five of these countries.

In Burkina Faso, more than 3.5 million people were covered by these services.

Burkina Faso (2002–2004): ACCESS supported the Ministry of Health (MOH) in Burkina Faso to expand implementation of FANC/MIP services by building on achievements of an MIP pilot study implemented through USAID's flagship Maternal and Neonatal Health (MNH) Program and the CDC. The pilot study in Koupéla District resulted in notable improvements in maternal and newborn health indicators and IPTp uptake, which increased dramatically to over 90% during the study intervention. Influenced by evidence from this study and two similar studies conducted in Mali and Benin, Burkina Faso adopted a new MIP policy in 2004 promoting the WHO three-pronged approach.

With the new policy in place, ACCESS went on to train 114 service providers from 49 facilities in five districts of one health region in FANC and MIP. An estimated population of 3,849,335 was covered by these services.

Kenya (2004–2010): The ACCESS Program in Kenya built upon previous work by Jhpiego and the MOH, which involved the introduction of FANC/ MIP services to 16 malaria endemic districts. ACCESS supported the MOH to expand these efforts further by:

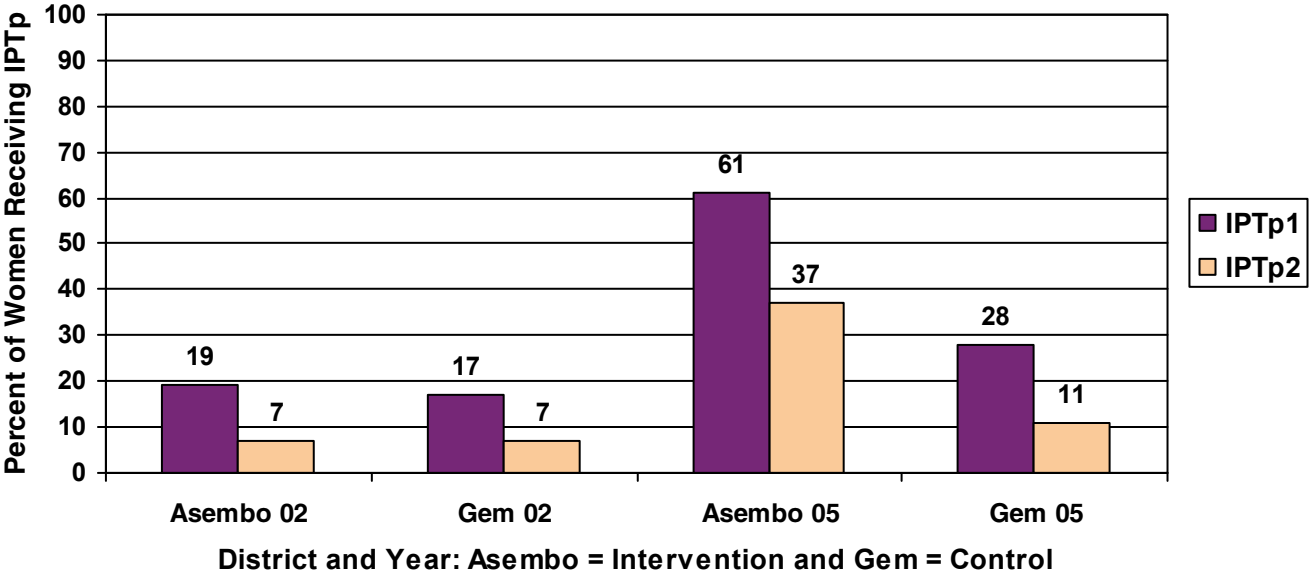
- Strengthening clinical services in an additional seven endemic districts, reaching approximately 3,000 healthcare providers through training and supervision;
- Disseminating comprehensive reproductive health messages, including MIP, to communities in three districts through community leaders; and

[26] MIPESA, RAOPAG, EARN and WARN countries are: Bénin, Burkina Faso, Burundi, Cape-Verde, Comoros, Côte d'Ivoire, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Malawi, Mali, Mauritania, Niger, Nigeria, Rwanda, Somalia, Sudan North, Sudan South, Sénégal, Sierra Leone, Tanzania, Togo, Uganda and Zambia.

- Supporting rollout in Coast Province of Kenya's new malaria treatment policy, including guidance for MIP.

In four of the original 16 districts, IPTp1 uptake increased to 77%, providers who reported they were giving SP increased to 93%, and colleagues updated on MIP increased from 27.5% to 52.5%.[27] In 2005, CDC conducted an evaluation for MIP based on the training of service providers and sensitization of communities by Jhpiego in Asembo, and the results showed increased use of SP in the intervention area.[28] In Coast Province, 9[28] healthcare providers were sensitized to the national treatment policy.

Figure 4: IPTp Coverage among Recent Mothers Who Attended ANC in Intervention and Control Districts in Kenya; Baseline (2002) and Follow-up (2005)



Data Source: Ouma et al, TMIH; 2007.

Photo credit: Rene Salgado/PMI Tanzania

Madagascar (2004–2010): Following Madagascar's adoption of an MIP policy in 2005, ACCESS worked with the MOH/Family Planning Unit to facilitate the development of the national policy and service delivery guidelines for MIP and all aspects of malaria. In addition, ACCESS identified five health sites—in a highly endemic province covering a population of 103,609 with 4,700 pregnant women—in which to initiate MIP prevention and control. ACCESS interventions included: developing learning materials, training health providers, and introducing a performance and quality improvement (PQI) process at five model sites.

The training, supervision and PQI approach used in the five model health facilities led to notable improvements in IPTp coverage. Second dose IPTp coverage increased from 0% to 65% in the five sites compared to 35% nationally.[29] Facilities improved their average performance score from 20% of standards achieved at baseline, to 65% at 6 months and 76% at 25 months follow-up.

[27] MOH, 2004.
[28] Ouma PO et al. 2007. The effect of health care worker training on the use of intermittent preventive treatment for malaria in pregnancy in rural Kenya. *Trop Med Int Health* 12(8): 1-9.
[29] National Malaria Control Program, 2006.

Tanzania (2004–2010): Building on efforts begun under the MNH Program, ACCESS supported the MOH to standardize FANC/MIP in-service training and is supporting comprehensive scale-up of this training FANC/MIP nationally. ACCESS also supported integration of FANC, MIP and screening and treatment of syphilis in pregnancy into the nursing/midwifery pre-service education schools, revising the ANC curricular component and training tutors and clinical preceptors from all certificate, diploma and higher-level nursing/midwifery schools in the country.[30] To ensure that learning is transferred to practice, ACCESS supported both pre-service and in-service health care providers to implement a standards-based quality improvement approach for ANC. Additionally, while improving the quality of ANC services at the facility, ACCESS also worked to create demand for such services within the target population through collaboration with local nongovernmental organizations (NGOs), advocacy with religious leaders, and the development of radio messages in collaboration with a local project called T-MARC.

The Tanzania approach led to improved MIP results: in the program's FANC/MIP sentinel surveillance sites where HMIS data were reported, IPTp2 doubled over baseline DHS IPT2 coverage in 2004, and the program has moved towards a model of scale-up quite rapidly. A total of 4,536 (76%) of ANC providers in Tanzania have had their knowledge and skills updated in FANC/MIP with ACCESS support. To date, 2,633 ANC facilities (or 55%) have at least one provider trained in FANC, and 880 in-service clinical trainers have been trained since the start of the program in 2004. Moreover, due to national-level advocacy efforts, stock-out days for SP at sentinel site surveillance facilities decreased by 50%.

Uganda (2006–2007): ACCESS supported the MOH in the implementation of a 10-month pilot project that targeted the faith-based sector, drew on best practices and lessons learned from the Kenya program approach, and built upon existing structures and systems. Despite the short duration of the intervention, significant improvements were made. The program brought together stakeholders from the MOH and the faith-based sector and other national partners (including WHO) to adapt training materials to the Ugandan context. With materials in place, providers were trained using national trainers. Following implementation, supportive supervision visits were incorporated, which offered reinforcement for the trained providers and assisted them in recognizing and correcting service delivery gaps. Orientation of community leaders empowered them to take key messages about FANC and MIP to the community.

Challenges and Lessons Learned

Implementation efforts across countries have demonstrated a number of challenges and yielded important lessons learned, summarized below, that should be considered as MIP programs move toward wide-scale implementation.

[30] This is a total of 53 schools, with more than 3,200 graduates updated/trained in FANC/MIP/SIP to date.

CHALLENGES	LESSONS LEARNED/RECOMMENDATIONS
No attendance or late attendance at ANC	Involve communities early to engage women and their families and mobilize demand for services.
The forgotten prongs: ITNs and case management	Address the three prongs comprehensively in MIP programs, including IPTp, ITNs and case management.
Lack of MOH policy and program coordination	Advocate for stronger MOH relationships, especially between reproductive health and malaria control programs, as well as HIV, Tuberculosis, diagnostics and lab.
Human resource shortages	Collaborate with Ministries to address the use of unskilled providers, including developing a plan for their training and supervision.
Stock-outs at ANC clinics	Advocate for continuation of SP supplies for prevention at the ANC facility, especially as countries transition to artemisinin combination therapies for treatment.
Weak monitoring and recordkeeping	Integrate monitoring and recordkeeping into programs as a routine component to explain program trends and inform the direction of the program.
Little support for pre-service education	Incorporate MIP programs into pre-service education for medical, nursing and midwifery schools for ultimate sustainability and cost-effectiveness.
Inconsistent involvement of the private sector	Target public and private sectors together throughout program implementation.

WAY FORWARD

Moving toward scale-up is a process that will lead to increasing the program's impact while maintaining its quality. Policy dissemination and program implementation need to move forward at the same time, complementing one another for wide-scale impact. A platform of ANC, coupled with community mobilization efforts, leads to improvements in MIP intervention coverage. However, to achieve national coverage, programs should consider additional proven approaches—such as quality improvement, pre-service education and engagement with the faith-based sector—to augment existing strategies.