

Brief Communication

Malaria Outbreak Resurgence in Ethiopia May Reverse Maternal and Perinatal Health Progress: Is This The Time to Implement Intermittent Preventive Treatment?

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Abstract:

Malaria remains a major public health challenge in Ethiopia. Despite earlier progress toward elimination, confirmed cases surged after 2021 due to disruptions from COVID-19, armed conflicts, displacement, climate change, and the emergence of insecticide-resistant mosquitoes.

Especially pregnant women are vulnerable to malaria and face increased risks of maternal anemia, preterm delivery, stillbirth, low birth weight, and neonatal death, which could reverse the effort made on the two decades' progress in maternal and perinatal health. Recent unpublished evidence from routine hospital perinatal audits highlights the potential impact.

Despite the World Health Organization's recommendation to use intermittent preventive treatment in pregnancy with sulfadoxine-pyrimethamine (IPTp-SP), Ethiopia has not yet adopted this intervention, which relies on previous malaria control successes and assumes low-to-moderate transmission levels. However, the recent surge in malaria cases, coupled with the persistent nature of contributing factors, calls for an urgent reassessment of this policy, as it may take a prolonged period to regain control. This brief communication underscores the urgent need to implement IPTp-SP in high-risk populations and strengthen collaboration between maternal health and malaria control programs for the ongoing monitoring of pregnancy outcomes. It emphasizes prioritizing pregnant women for interventions and enhancing healthcare providers' awareness of preventive strategies. Immediate action is vital to protect vulnerable populations and reverse the harmful effects of malaria resurgence.

Keywords: Malaria resurgence, pregnancy, intermittent preventive treatment, maternal and perinatal outcomes, Ethiopia

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Resurgence of the Malaria outbreak in Ethiopia

Malaria remains a significant public health and socio-economic challenge in Ethiopia, affecting millions annually (1, 2) and varying across the country, with some regions experiencing more severe outbreaks(3). From 2000–2016, malaria control efforts led to a sharp decline in malaria-related morbidity and mortality (3-5). The number of confirmed cases decreased by 42.7% between 2017 and 2019, and the number of malaria-related deaths decreased by 40% (6, 7). However, this progress was interrupted by a resurgence in the last three years. Between 2021 and 2022, the number of confirmed cases increased by 32.5%. In 2022 alone, 5.1 million people were infected, and approximately 75 million people were at risk (8). In 2023, malaria cases increased by 150% and 120%, respectively, compared with the same periods

in 2021 and 2022. In the first half of 2024, over 2.3 million cases and 554 deaths were reported(9).

This resurgence is driven by several factors, including programmatic disruptions due to the COVID-19 pandemic, armed conflicts, displacement, climate change-induced extreme weather events such as heavy rains and flooding, emerging insecticide resistant mosquitoes, and possibly increasing antimalarial drug resistance(1, 8). Additionally, prevention and control efforts have been hampered by limited funding for control and prevention programs(8).

Maternal and perinatal adverse outcomes of malaria infection

Ethiopia has experienced one of the fastest declines in maternal and perinatal mortality in sub-Saharan Africa

over the past two decades(10). The resurgence of malaria may threaten the maternal and perinatal health gains achieved over the past two decades(11). Pregnant women are vulnerable to malaria, which can result in severe complications such as maternal anaemia, preterm delivery, low birth weight, miscarriage, stillbirth, and neonatal death(12, 13). Pregnant women are three times more likely to develop severe malaria than non-pregnant ones, with mortality rates from severe disease reaching 50%(14, 15). While comprehensive data on the impact of recent outbreaks on maternal and perinatal outcomes in Ethiopia are lacking, recent audit reports from malaria-endemic regions, such as Hawassa University Hospital, highlight the severity of the issue. For example, perinatal mortality audits conducted in July and August 2024 revealed that malaria infection contributed to approximately 50% of perinatal deaths during this period (*unpublished but data can be shared upon request*). These findings underscore the urgent need for further investigation and intervention to mitigate the adverse effects of malaria epidemic on maternal and perinatal health.

Current global strategies for malaria prevention during pregnancy

Current strategies for preventing malaria during pregnancy rely on two main approaches. The World Health Organization (WHO) recommends effective vector control methods, such as insecticide-treated nets (ITNs) or indoor residual spraying, and intermittent preventive treatment during pregnancy with sulfadoxine-pyrimethamine (IPTp-SP) in areas of moderate to high malaria transmission(1, 16). IPTp-SP has been shown to reduce the incidence of malaria during pregnancy, placental parasitemia, as well as maternal anaemia, and improve birth outcomes(17, 18). However, in 2018, only 30% of pregnant women in sub-Saharan countries received the recommended three or more doses of IPTp at ANC facilities. Limited access to ANC services, the unavailability of IPTp at health facilities, and healthcare workers failing to prescribe treatment contribute to this low uptake(19).

Malaria prevention during pregnancy strategies in Ethiopia

In Ethiopia, the use of IPTp-SP is limited because the healthcare system has not adopted the policy(5, 20, 21), even though more than 37 sub-Saharan African countries, including neighbouring Kenya, have done so (22). The WHO estimates that current IPT coverage in Africa has prevented over 500,000 low-birth-weight deliveries, highlighting its critical benefit in reducing perinatal mortality(1).

The 2021 National ANC guidelines(20) and the 2022 National Malaria guidelines (21) recommend only the use of insecticide-treated nets and the diagnosis and treatment of malaria for pregnant women attending

ANC, assuming that Ethiopia has low-to-moderate malaria transmission. The decision may be based on the national achievements of the malaria control and prevention program before the recent outbreak(5). Although there was success at the national level, the implementation did not benefit high-transmission districts or seasonal outbreaks. IPTp-SP is mentioned only as a WHO recommendation for moderate-to-high transmission areas, relying on individual healthcare provider preferences to prescribe it in the ANC guidelines(20). Furthermore, the guidelines fail to specify recommended dosages, gestational ages, or administration intervals, which hinders utilization even at the individual level, even when healthcare providers recognize the threat of infection and wish to prescribe it(20). There are no published papers in Ethiopia that address the utilization status of IPTp-SP or healthcare providers' knowledge and practices, despite numerous studies available from other sub-Saharan African countries(19, 22). This lack of research indicates the limited IPTp-SP use even at the individual level.

In contrast to the national ANC guidelines(20), the national malaria guidelines recommend chloroquine prophylaxis for women infected with *P. vivax* during pregnancy and breastfeeding to suppress reactivation (21). A weekly single dose of chloroquine (250–300 mg) is advised to prevent malaria recurrence and its associated adverse pregnancy and perinatal outcomes (23, 24). This recommendation is also endorsed by the WHO(18). However, this crucial intervention is not included in the national ANC guidelines, and lack of awareness hampers its implementation. Consequently, the use of chloroquine prophylaxis may be limited primarily to tertiary facilities with sufficient expertise.

Call to action

Given the persistent factors contributing to the increased malaria incidence and the limited global funding for control and prevention programs, considerable time may be needed to return to previous success levels(25). During these prolonged epidemics, pregnant women and children remain the most at risk populations for severe malaria complications, which affect maternal and perinatal health outcomes. This urgent issue demands immediate attention as well as innovative and equitable solutions to mitigate its impact on maternal and perinatal mortality and morbidity. Some of the interventions to be considered at the national level include the following:

- I. The collaboration between the maternal and child health directorate and the national malaria control and prevention program should be strengthened. This collaboration should focus on assessing the epidemic's impact on maternal and perinatal outcomes over the past three years for immediate intervention planning, ensuring continuous surveillance, and monitoring and evaluating implemented interventions.
- II. Implementing IPTp-SP at the national level or at least in high-risk populations. The changing epidemiology of malaria requires the adaptation of interventions. IPTp-SP is a clinically proven malaria preventive therapy recommended by the WHO that can prevent adverse maternal and fetal outcomes(1, 18). While previous guidelines did not adopt IPTp-SP due to the assumption of low-to-moderate transmission, the resurgence over the past three years has resulted in high transmission in specific regions, necessitating IPTp-SP implementation. In addition to minimizing pregnancy complications, IPTp-SP can support overall malaria control efforts. With limited access to ITNs and inconsistent use of those available(4) and the emergence of insecticide-resistant mosquitoes(1), chemoprophylaxis could be a more viable prevention method. Opportunities for IPTp implementation exist, such as the recent 8-visit ANC schedule, which allows for the administration of at least three doses of SP. Experts can develop implementation strategies, considering the facilitators and barriers identified in other countries (22).
- III. Prioritizing pregnant women for malaria control and prevention interventions, including the distribution and consistent use of insecticide-treated nets (ITNs), behavioural change communication, and access to diagnosis and treatment at facilities, should be strengthened. Interventions should also focus on promoting behavioural change, as evi-

dence shows that both pregnant and non-pregnant women of reproductive age are often prioritized for net use within households(26). Primigravida women—those experiencing their first pregnancy—face a greater risk of poor outcomes than those with previous deliveries(27, 28). Therefore, in resource-constrained settings, interventions should specifically target and support first-time pregnant women and young individuals.

- IV. Enhancing healthcare providers' knowledge of preventive strategies is crucial, especially since the outbreak now affects areas previously not endemic to malaria. Particular attention should be given to increasing awareness of weekly chloroquine (CQ) prophylaxis for pregnant women with *P. vivax* infections during pregnancy and breastfeeding. While CQ is included in the national malaria program(16), it is not addressed in the national ANC guidelines, which most maternal and child healthcare providers follow. The absence of published studies on CQ prophylaxis utilization indicates limited experience among healthcare providers, highlighting the urgent need for interventions to address this gap, given that nearly 30% of infections are caused by *P. vivax* alone or in mixed forms(29).

Conclusion

The resurgence of malaria in Ethiopia threatens to reverse the progress made in maternal and perinatal health. Given the proven benefits of IPTp-SP and the current high transmission rates, it is imperative to implement this preventive therapy in at least high-risk populations. Doing so will not only protect pregnant women and improve birth outcomes but also support Ethiopia's efforts to regain control over malaria transmission. A focused, equitable, and innovative response is urgently needed to mitigate the impact of this outbreak on maternal and child health.

References

1. Organization WH. World malaria report 2023: World Health Organization; 2023.
2. WHO. World Malaria Report 2016 - IRIS Geneva: WHO; 2016 [cited 2024 September 27]. Available from: <https://iris.who.int/bitstream/handle/10665/252038/9789241511711-eng.pdf>.
3. Health Mo. National strategic plan for malaria prevention, control and elimination in Ethiopia, 2011–2015. Ministry of Health of Ethiopia Addis Ababa; 2010.
4. Girum T, Shumbej T, Shewangizaw M. Burden of malaria in Ethiopia, 2000–2016: findings from the Global Health Estimates 2016. Tropical Diseases, Travel Medicine and Vaccines. 2019;5(1):11.
5. Taffese HS, Hemming-Schroeder E, Koepfli C, Tesfaye G, Lee M-c, Kazura J, et al. Malaria epidemiology and interventions in Ethiopia from 2001 to 2016. Infectious diseases of poverty. 2018;7(06):1-9.
6. Bugssa G, Tedla K. Feasibility of malaria elimination in Ethiopia. Ethiopian journal of health sciences. 2020;30(4).
7. Dillu D, Reda H, Tesfaye G. Malaria Elimination Roadmap in Ethiopia 2017.
8. Organization WH. Malaria deaths fall, but vector resistance to insecticides a worrying trend: WHO 2023 [cited 2024 September 24/2024]. Available from: <https://www.afro.who.int/countries/ethiopia/news/malaria-deaths-fall-vector-resistance-insecticides-worrying-trend>.
9. WHO. WEEKLY BULLETIN ON OUTBREAKS AND OTHER EMERGENCIES, Week 29: 15 to 21 July 2024 [WHO Afro Bulletin]. WHO; July 2024 [cited 2024 September 27]. Available from: <https://www.afro.who.int/countries/ethiopia/publication/weekly-bulletin-outbreak-and-other-emergencies-week-29-15-21-july-2024>.

10. Melesse DY, Tadele A, Mulu S, Spicer N, Tadelles T, Wado YD, et al. Learning from Ethiopia's success in reducing maternal and neonatal mortality through a health systems lens. 2024;9(Suppl 2).
11. Farhan K, Saeed N, Khan SR, Tariq B, Ahmed A, Akilimali A. Malaria prevention during pregnancy: Implications for maternal and neonatal health in East Africa. *New microbes and new infections*. 2023;55:101186.
12. Bakken L, Iversen PO. The impact of malaria during pregnancy on low birth weight in East-Africa: a topical review. *Malaria journal*. 2021;20(1):348.
13. Brabin BJ. An analysis of malaria in pregnancy in Africa. *Bulletin of the World Health Organization*. 1983;61(6):1005.
14. Schantz-Dunn J, Nour NM. Malaria and pregnancy: a global health perspective. *Reviews in obstetrics and gynecology*. 2009;2(3):186.
15. Schantz-Dunn J, Nour NM. Malaria and pregnancy: a global health perspective. *Reviews in obstetrics & gynecology*. 2009;2(3):186-92.
16. Organization WH. WHO guidelines for malaria, 3 June 2022. World Health Organization, 2022.
17. Desai M, Hill J, Fernandes S, Walker P, Pell C, Gutman J, et al. Prevention of malaria in pregnancy. *The Lancet infectious diseases*. 2018;18(4):e119-e32.
18. Organization WH. WHO guidelines for malaria, 16 October 2023. WHO guidelines for malaria, 16 October 20232023.
19. Koita K, Kayentao K, Worrall E, Van Eijk AM, Hill J. Community-based strategies to increase coverage of intermittent preventive treatment of malaria in pregnancy with sulfadoxine–pyrimethamine in sub-Saharan Africa: a systematic review, meta-analysis, meta-ethnography, and economic assessment. *The Lancet Global Health*. 2024;12(9):e1456-e69.
20. (MOH) MoH. National Antenatal Care Guideline Addis Ababa: Ministry of Health 2022 [cited 2024 September 27]. Available from: https://www.moh.gov.et/sites/default/files/2024-07/National%20Antenatal%20Care%20Guideline_2022.pdf.
21. PMI. U.S. President's Malaria Initiative Ethiopia Malaria Operational Plan FY 2023 2023 [cited 2024 September 27]. Available from: <https://d1u4sg1s9ptc4z.cloudfront.net/uploads/2023/01/FY-2023-Ethiopia-MOP.pdf>.
22. Yaya S, Uthman OA, Amouzou A, Bishwajit G. Use of intermittent preventive treatment among pregnant women in sub-Saharan Africa: evidence from malaria indicator surveys. *Tropical medicine and infectious disease*. 2018;3(1):18.
23. Villegas L, McGready R, Htway M, Paw MK, Pimanpanarak M, Arunjerdja R, et al. Chloroquine prophylaxis against vivax malaria in pregnancy: a randomized, double-blind, placebo-controlled trial. *Tropical Medicine & International Health*. 2007;12(2):209-18.
24. Brummaier T, Gilder ME, Gornawun G, Chu CS, Bancone G, Pimanpanarak M, et al. Vivax malaria in pregnancy and lactation: a long way to health equity. *Malaria journal*. 2020;19(1):40.
25. El-Moamly AA. How can we get malaria control back on track? *BMJ*. 2024;385:q1408.
26. Ricotta E, Koenker H, Kilian A, Lynch M. Are pregnant women prioritized for bed nets? An assessment using survey data from 10 African countries. *Global Health: Science and Practice*. 2014;2(2):165-72.
27. Kurth F, Belard S, Mombo-Ngoma G, Schuster K, Adegnika AA, Bouyou-Akotet MK, et al. Adolescence as risk factor for adverse pregnancy outcome in Central Africa—a cross-sectional study. *PloS one*. 2010;5(12):e14367.
28. Gontie GB, Wolde HF, Baraki AG. Prevalence and associated factors of malaria among pregnant women in Sherkole district, Benishangul Gumuz regional state, West Ethiopia. *BMC Infectious Diseases*. 2020;20:1-8.
29. Ketema T, Bacha K, Getahun K, Portillo HAd, Bassat Q. *Plasmodium vivax* epidemiology in Ethiopia 2000-2020: a systematic review and meta-analysis. *PLoS neglected tropical diseases*. 2021;15(9):e0009781.