

Thematic brief

Nutrition and Malaria: Integrated approach for effective case management

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Preventable infectious diseases such as pneumonia, diarrhea and malaria account for one third of all under-five deaths. Globally, nearly half of all deaths among children under five are attributable to malnutrition (Caulfield 2004). In Asia Pacific, 351 million people are still undernourished, and the COVID-19 pandemic will only exacerbate this figure. UNICEF estimates an additional 6-7 million children under 5 globally will suffer from acute malnutrition as a result (UNICEF 2020). This means more people – especially children – will have weakened immunity and be at greater risk for infection including from malaria (FAO et al 2021). While the intersection between nutrition and malaria remains under-researched, particularly in Asia Pacific, evidence shows that children and pregnant women are the most affected by poor nutrition and are at the highest risk of adverse effects from malaria infection. Despite considerable progress to improve access to services for all, malaria and malnutrition remain two of the leading causes of death in children under-5 years of age, particularly in sub-Saharan Africa (WHO, 2019). Malaria (symptomatic or asymptomatic infections) is also one of the leading contributors to anaemia in children under 5 and pregnant women in sub-Saharan Africa (WHO, World Malaria Report, 2019) (UNICEF, 2020). Maternal anaemia puts the mother at increased risk of maternal mortality before and after childbirth (WMR 2019). The fetus and child born to a mother with maternal anaemia and/or infection with malaria is at risk of being born preterm and/or with a low weight at birth – which can lead to stunted growth and cognitive development issues (WHO, 2017). Populations affected by malaria, anaemia and malnutrition overlap and for this reason an integrated response that supports universal health coverage for all is recommended to achieve the sustainable development goal of ending all forms of malnutrition and malaria by 2030 (United Nations, 2015).

Key messages



Infections and nutrition are closely related due to effects on metabolism and immunity. Socio-economic conditions and limited health system capacities also impact risks of both infection rates and poor nutrition outcomes.

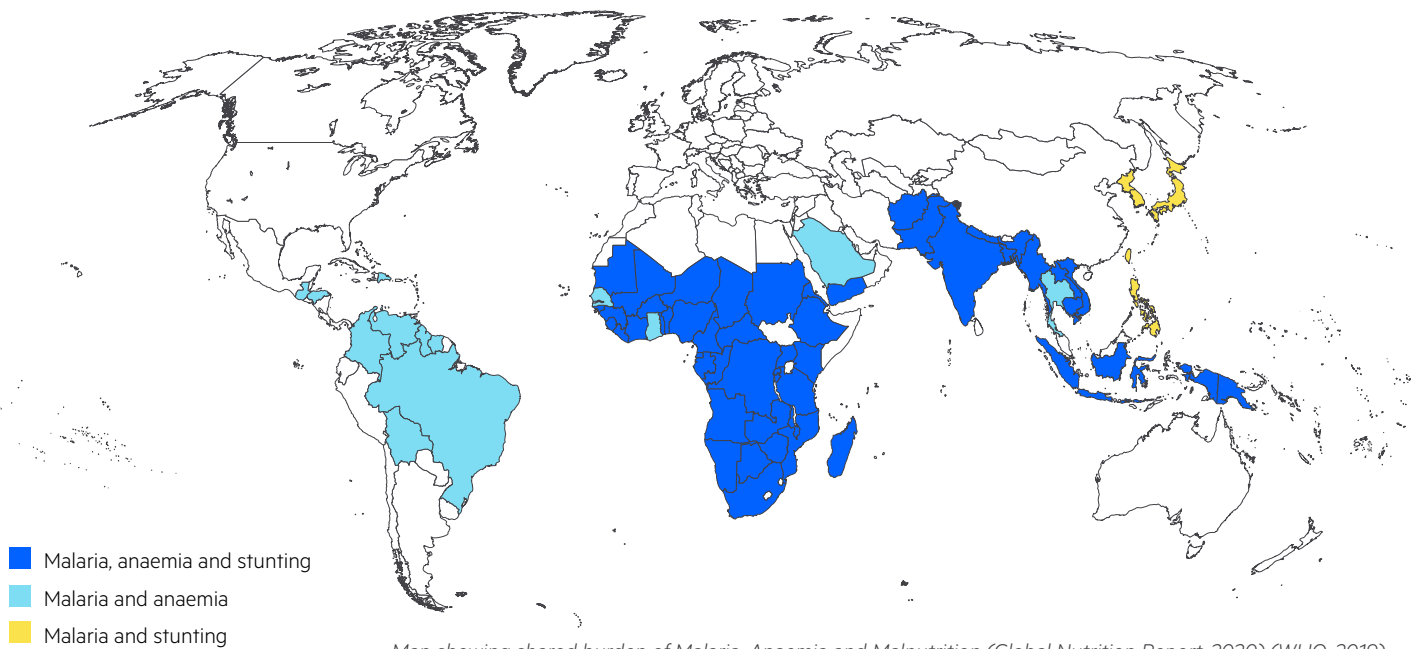


Malaria and malnutrition coexist in a vicious cycle: as malnutrition and key deficiencies can increase the risks of developing severe malaria and lead to increased morbidity and mortality from infectious diseases. Infection with malaria can push children and pregnant women into a malnourished state.



Low- and middle-income countries (LMICs), where resources to support health systems and access to health are often limited, bear the majority of the burden of malaria, malnutrition and anaemia. Integration of nutrition activities with malaria services should be considered for effective case management, especially in the vulnerable groups. Malaria workers can play a vital role in the delivery of malaria and nutrition services.

Malaria, Malnutrition and Anaemia:



Map showing shared burden of Malaria, Anaemia and Malnutrition (Global Nutrition Report, 2020) (WHO, 2019)

Malnutrition and malaria: Nutrition related factors such as lack of calories and deficiencies in vitamins and other micronutrients are responsible for a substantial proportion of malaria morbidity and mortality (Caulfield, 2004) (Sakwe, 2019). The cycle of malnutrition depends on a range of factors from weight of child at birth, maternal nutrition, gestation at birth, mother's age, feeding practices, recurrent illness and poverty (WHO, Malnutrition). Nutrition received during fetal development can underpin a child's future well- or ill-health (WHO, 2019).

Children under five are particularly vulnerable to both malaria and malnutrition and malaria can be more severe in children that are malnourished. Evidence points out that malnutrition increases susceptibility to malaria and that undernutrition is an important risk factor for the progression to severe malaria, especially in children (Sakwe 2019). Socio-economic co-risk factors for children under five in LMICs for malaria and malnutrition include lack of financing, poor housing, lack of access to education (for both themselves and their mother) or employment status of the parents (Sakwe, 2019).

Anaemia and malaria: Anaemia is a condition in which you lack enough healthy red blood cells to carry adequate oxygen to your body's tissues. It can be caused by nutritional deficiencies in iron and folate, infectious diseases including malaria, HIV or schistosomiasis, or by genetic red blood cell disorders (Tolentino, 2007). The risks from anaemia during pregnancy such as still-birth, miscarriage and low-birthweight are high (Unger, 2016).

Malaria increases the risk of poor maternal and new-born outcomes including maternal anaemia, maternal death, spontaneous abortion, stillbirth, prematurity, low birth weight, and new-born and infant death (WHO, Malaria in Pregnant Women, 2017). Evidence shows that low birthweight can have adverse impacts throughout the lifecycle of the individual.

Malaria accounts for an estimated 3–15% of anaemia and 25% of severe anaemia in pregnant women in malaria endemic countries (Steketee RW, 2001). For this reason, it is recommended that pregnant women with severe anaemia in malaria endemic areas are treated presumptively with an effective antimalarial drug.



Solution

Integrating approaches to address the co-morbidities of malnutrition, anaemia, malaria and other infectious diseases could have positive benefits to maternal and child health. This warrants more synergistic investments across programs in support of better integrated surveillance systems. Bangladesh for examples uses eIMCI as a web-based management system for the Integrated Management of Childhood Illness (IMCI).

“Integrated programmatic interventions” approach:

The integration of maternal and child services with malaria prevention and treatment of preventable causes of child deaths through expanding access to services and treatments and improving quality of and demand for these health services.

The primary diseases of poverty like malaria, but also tuberculosis and malnutrition impact the most vulnerable first. This suggests integrated programmatic interventions for effective case management of both malaria and malnutrition in vulnerable populations, in particular to protect pregnant women and children.

Similarly, for pregnant women, the integration of infectious disease control services with antenatal care can result in better compliance and positive outcomes for both the pregnant women and unborn child.



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Focus On



Northern Nigeria

A study was conducted in Northern Nigeria to assess whether integrating SMC (Seasonal Malaria Chemoprevention) with Plumpy’doz™, a lipid-based nutrient supplement (LNS), has an impact on nutrition or malaria outcomes. It was found that among those who had taken SMC and LNS in the past 30 days, the prevalence of clinical malaria were 61% lower than among those who received SMC only. It also provided evidence of an enhanced protective effect of adding LNS to SMC against clinical malaria (Ward, 2019).



Sagaing Region, Myanmar

Malaria Consortium, funded by Comic Relief, implemented a project to expand rural access to community-led services and address malaria and common childhood illnesses among under-5 children in 6 townships of Sagaing Region, **Myanmar** over the period of 2017-19. The project demonstrated that iCCM closes service gaps for malaria and other childhood illnesses and is a widely accepted approach. Malaria volunteers were able to conduct growth monitoring and promotion for under-5 children and facilitate community referrals for malnutrition cases who needed care. The evidence from this project is helping to facilitate the policy shift for the Ministry of Health and Sports’ adoption of new Community-based Health Workers Policy.



Lao PDR

Donor organizations and development banks have a role to play in supporting an integrated approach to improving health and nutrition outcomes. With the aim of achieving universal health coverage in **Lao PDR** by 2025, a co-financing investment between the Global Fund, the World Bank and the Government of Lao PDR is dedicated to improving the quality and coverage of health and nutrition services by providing funds to health centers and departments using results-based instruments. The Health and Nutrition Services Access Project (HANSA) will help to tackle childhood stunting by increased access to and use of nutrition interventions. This will reduce co-morbidities among children of infectious diseases including malaria, Tuberculosis and HIV-AIDS (The World Bank, 2020).

Recommendations:

- Integration of malnutrition and anaemia interventions with malaria programs should be considered as part of universal health coverage. This also means strengthening equitable coverage of antenatal-care to deliver proven malaria prevention and treatment strategies. An integrated community case management for malaria, pneumonia and diarrhea and severe acute malnutrition can bridge gaps in clinical care in hard-to-reach communities.
- Additional research is needed to understand the immediate interaction of malaria, anaemia and malnutrition in different malaria endemic settings to better target integrated interventions.
- Integrated surveillance systems are required to produce a unified set of indicators to facilitate reporting, analysis and use of data for decision making. This will help to design effective integrated interventions.
- To support the integration of interventions, behaviour change communication and community dialogues that cohesively address more than one health issue and their interaction with each other, in this case malaria and nutritional health, can have exponentially beneficial effects for both child and maternal health.
- Lack of financial support remains a significant obstacle to service integration. It is important to consider 'horizontal integration' of financial and human resources when implementing integrated services for malaria and maternal and child health.

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For more information

Please contact the RBM Partnership to End Malaria at info@endmalaria.org or visit our website endmalaria.org.

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