

ABSTRACT

BACKGROUND:

Plasmodium falciparum infection during pregnancy leads to adverse outcomes including low birthweight; however, contemporary estimates of the potential burden of malaria in pregnancy in Africa (in the absence of interventions) are poor. We aimed to estimate the need to protect pregnant women from malaria across Africa.

METHODS:

Using a mathematical model applied to estimates of the geographical distribution of *P falciparum* across Africa in 2010, we estimated the number of pregnant women who would have been exposed to infection that year in the absence of pregnancy-specific intervention. We then used estimates of the parity-dependent acquisition of immunity to placental infection and associated risk of low birthweight to estimate the number of women who would have been affected.

FINDINGS:

We estimate that, without pregnancy-specific protection, 12.4 million pregnant women (44.9% of all 27.6 million livebirths in malaria endemic areas in Africa in 2010) would have been exposed to infection, with 11.4 million having placental infection (41.2% of all livebirths). This infection leads to an estimated 900 000 (95% credible interval [CrI] 530 000-1 240 000) low birthweight deliveries per year. Around the end of the first trimester, when the placenta becomes susceptible to infection, is a key period during which we estimate that 65.2% (95% CrI 60.9-70.0) of placental infections first occur.

INTERPRETATION:

Our calculations are the only contemporary estimates of the geographical distribution of placental infection and associated low birthweight. The risk of placental infection across Africa in unprotected women is high. Prevention of malaria before conception or very early in pregnancy is predicted to greatly reduce incidence of low birthweight, especially in primigravidae. The underlying lifetime risk of low birthweight changes slowly with decreasing transmission, drawing attention to the need to maintain protection as transmission falls.

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