Policy Brief

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A Cost-Effectiveness Analysis of Preventing Malaria in pregnancy: Perceptions and Implications for Poverty Reduction and Growth in Cameroon

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Context

Although malaria affects men and women of all ages in highly endemic areas, it exerts its most deleterious clinical effects in adults during pregnancy. Young primigravid and secundigravid women are at greater risk of malaria as compared to older women of high parity. Out of all the known types of malaria parasites, *Plasmodium falciparium* is the most common parasite responsible for a large number of complications in pregnancy including moderate to severe anemia, low birth weight babies, premature onset of labour and increased risk of stillbirths and or neonatal mortality. This is a serious problem in Cameroon as malaria remains the first cause of morbidity and of mortality for the entire population (more especially among pregnant women and children below five years). This situation puts Cameroon far from the global target for 2015 of reducing the mortality rate by two thirds among new-born children and those aged below five years.

Indeed, the WHO recommended antimalarial strategies are key to preventing malaria in pregnant women and reducing the scale of its adverse clinical consequences. In May 2002, the government of Cameroon adopted a new chemoprophylaxis prevention policy for pregnant women. This chemoprophylaxis was formerly a weekly antenatal chloroquine (CQ) which was later replaced by intermittent preventive treatment (IPT) with amodiaquine (AQ) regimen taken in all the trimesters. In January 2004 during a national workshop on malaria treatment, amodiaquine was replaced with SP Fansidar with restriction that the drug was not to be taken in the first trimester of pregnancy.

This study analyzes the cost effectiveness of the above three possible malaria treatments at a prenatal clinic in Cameroon to understand the effect of these treatments on birth weights and survival probabilities of babies whose mothers were infected by malaria. The economic

burden in cost effectiveness studies like this one is limited to assessing the monetary advantage of using a particular drug regimen in terms of resources saved. Yet, data on perceptions regarding use of the drugs are scarce. Thus, part of this paper involves an exploratory study conducted to assess perceptions on anti-malarials during pregnancy in selected rural and urban areas respectively. We find out if malaria control in pregnancy could guarantee improved household welfare in terms of gain in labour time or resources.

Method of Analysis

The data used in this analysis came from two main sources. This include the Cameroon 2004 Demographic and Health Survey, (DHS) conducted by the National Institute of Statistics in coordination with Ministry of Health and a self-designed cross-sectional data.
The study applied a range of methods (quantitative and qualitative) to determine cost effectiveness and perceptions on strategies to prevent malaria in pregnancy respectively. The quantitative section or cost effectiveness analysis is based on the DHS data sets. The second part of the paper is based on qualitative techniques. The cross-sectional data is collected through focus group discussions, (FGDs) and expert interviews, (EII). The locations chosen are in the North West Region of Cameroon, specifically in Mezam and Ngo'ketunjia Divisions. Mezam Division is Urban and two groups are isolated for FGD and EII, and Ngo'Ketunjia Division which is rural and the indigenous Fulani women and men were used for FGDs and EII. In the urban setting, mixed groups in terms of socio-economic status and ethnicity, etc.

Four FGDs were conducted, distributed as follows: two with identified pregnant women users of Ante Natal Clinics services, and two with husbands of pregnant women users of ANC. It was not possible to identify couples who do not use ANC services. Respective FGDs were held with groups of at least 10 participants from the selected zones. Key informant interviews were conducted with maternity health workers and traditional birth attendants in the rural areas in Ngo'ketunjia Division and in the urban region. The interviews as well as the FGDs assessed participants' knowledge, attitudes, perception and practices about malaria prevention in pregnancy and expected benefits to households.
From the above information, the study assesses whether a drive to increase the coverage of strategies to prevent malaria in pregnancy is justified on the basis of cost-effectiveness and poverty reduction.

Based on the quantitative approach, the most cost effective drug regimen taken during pregnancy is determined. It involves assessing the clinical impacts of both chemoprophylaxis and intermittent preventive treatments. Effectiveness attributable to the drug regimens in the reduction of low birth weights and malaria related mortality among newborns. The determination of this effectiveness is based on regression models of neonatal mortality and birth weight. One of the models involves pregnant women exposed to prophylactic and intermittent treatment drugs and the other for pregnant women who did not take antimalarial drugs. The model of birth weight and child survival is then used to estimate the discounted years of life lost DYLLs averted, the mortality component of the disability

adjusted life year DALY averted by prophylaxis or intermittent treatment. With the cost of malaria prevention in pregnancy (i.e. combination of personnel costs, drugs, and supplies providing the cost of malaria prevention per pregnant woman), the cost effectiveness ratio is determined.

The qualitative approach uses information from FGDs and EII to determine whether malaria prevention in pregnancies guarantees reduced neonatal mortality and good health for the children. This is expected to result to poverty reduction or improved welfare via additional labour time gained (i.e. couples will then spend less time in pregnancy and child caring). Thus, improved health status enables the household to free some labour time that would have otherwise been locked up in child rearing or ill health. This effectively increases labour supply at the household level. The extra time is quantified in monetary terms. Based on FGDs and EII, it involves posing questions to individuals concerned to figure out what they do during the free time and the obstacles encountered. Secondly, they determine where they channel the returns or resources gained from the activities they perform and what should be done to promote greater use of this time? Lastly are the returns consumed or invested in productive activities.

Key Findings

One of the objectives of this paper was to conduct cost effectiveness analysis of three drug regimens for malaria prevention among pregnant women in Cameroon. For babies born to women using primigravida and secundigravida, the two-dose SP saves 0.015 of discounted year life (DALYs) as against 0.016 and 0.010 for those using Amodiaquine (AQ) and chloroquine (CQ) regimens respectively. The average costs-effectiveness ratios, CER or cost per DALY averted were $42, $ 75 and $ 249 for the SP, AQ and CQ regimen respectively. The analysis was extended to all gravida but the CER did not change the results, an indication that the SP regimen is the most cost effective prophylactic for malaria prevention among pregnant women.

Based on the explorative survey, malaria is perceived as a serious illness among pregnant women and children, and there is high awareness on the benefits of malaria prevention. Malaria comes with loss in terms of mother to child transmission, fever, increased death rate, reduction in life span, increased hospital visits, increased health spending, and loss of time for work and other projects. The average loss to a family in monetary terms as a result of a malaria infected pregnant woman falls between $ 16 and $ 200 per week.

Apart from prophylaxes, other methods of malaria prevention practiced by pregnant women include: sleeping under mosquito nets, cleaning the compound, frequent check up, use of drugs and traditional herbs. However, as concerns mosquito nets few people use them mainly because of affordability and the perception that the chemicals used to treat them have dangerous effects on pregnancy and the foetus. Some complained about the

inconveniences associated with the use of mosquito net that it generates heat. Most of them just hang it above their beds and do not use them.

Policy Implications

The results of this study are likely to be of considerable interest to policy-makers for it sheds light on whether malaria treatments should be bundled with reproductive health programs, and if so, how this can be done in a cost-effective way.

In brief, assuming the hypothesized link between an increase in birth weight and reduction in malaria related death, holds SP regimen as the most cost-effective intervention compared to AQ (IPT) and CQ prophylactic for malaria control and interventions for other health problems. However, because resistance to SP is likely to grow rapidly especially as it is widely currently used in Cameroon and in sub- Saharan Africa, amodiaquine (AQ) alone could still be given to pregnant women; combination of AQ with SP require urgent evaluation for use in pregnancy.

The qualitative survey which included FGDs and expert interviews to assess perceptions and use of malaria prevention strategies brings to light more information hidden in the cost effectiveness study. The prevention of malaria is one of the most important interventions for promoting safe motherhood in malaria endemic areas at the present time, and warrants more active promotion. Governments can rely on this health measure to fight against poor reproductive health and poverty, thereby improving productivity in pregnancy and reproductive health. These include: demystifying the negative perceptions on the chemicals used to treat nets and subsidizing the cost of and increasing the supply of bed nets in order to increase access to them, make drugs more affordable and develop radio programmes to provide couples with pregnancy and reproductive health information including other methods of malaria prevention. More especially, increase awareness on the benefits of preventing malaria. Lastly, ensure an increase in health centers and staff and constant advice to pregnant mothers to take their drugs always. Pregnant mothers should respect and practice the various strategies to prevent malaria that they leant during ANC with those that they know and the government should promote the services of traditional birth attendants.