IPTc found to reduce prevalence of malaria infection in children by up to 85 percent

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carried out in Burkina Faso and Mali– have found that combining intermittent preventive treatment of malaria in children (IPTc) with insecticide-treated bednets (ITNs) can substantially reduce the incidence of severe malaria.

A third study carried out in The Gambia supported the findings, reporting that IPTc treatment was not only easily administered by village health workers, but could also significantly reduce the incidence of malaria among children.

All three studies, published today in the journal *PLoS Medicine*, will further strengthen the evidence to support the integration of IPTc into malaria control strategies in areas of seasonal malaria transmission.

IPTc is a promising new approach to the control of malaria in areas of seasonal transmission. Previous clinical trials have shown that seasonal IPTc, which involves the administration of two or three doses of an effective antimalarial drug combination, such as sulphadoxine pyrimethamine and artesunate or amodiaquine during the high malaria transmission season effectively reduces the incidence of malaria. However, these studies were conducted in countries where the use of ITNs - an intervention that provide at least 50% protection against malaria and is the main tool used for malaria control in most of sub-Saharan Africa - was relatively low.

The authors sought to determine whether IPTc would be as effective in

children who sleep under an ITN as has previously been shown in communities where ITN usage is low.

These studies were conducted as a collaboration between the Centre National de Recherche et de Formation sur le Palidisme, Ougadougou, Burkina Faso, the Malaria Research and Training Centre, University of Bamako, Mali, the Medical Research Council laboratories, The Gambia and the London School of Hygiene & Tropical Medicine, UK.

The authors carried out individually randomised, double blind, placebo-controlled trials of seasonal IPTc in children aged 3 to 59 months. In Burkina Faso and Mali, the children were provided with a long-lasting insectide treated bednet (LLIN), and given three rounds of treatment with sulphadoxine pyrimethamine plus amodiaquine or placebos at monthly intervals during the malaria transmission season.

In the Burkina Faso study, 3,014 children were enrolled in the trial, 1,505 in the control group and 1,509 in the intervention group. 1,494 (99.3%) and 1,504 (99.7%) children completed the follow up in both groups respectively, and the proportion of children reported to sleep under an ITN during the period was similar in the two treatment arms (93%). The incidence of malaria in children who received IPTc was 0.87 per child compared with an incidence of 2.88 per child in the control group, a protective efficacy of 70%. There was a 69% reduction in the incidence of severe malaria. IPTc reduced the prevalence of malaria infection at the end of the malaria transmission season by 73%, and that of moderately severe anaemia by 56%. IPTc also reduced the risks of wasting and of being underweight.

In Mali, 3,017 children were enrolled in the study, 1,508 in the control and 1,509 in the intervention group. 1,485 children in the control group and 1,481 in the intervention group completed follow up. During the intervention period, the proportion of children reported to have slept

under a insecticide-treated bednet was 99.7% in the control and 99.3% in the intervention group. A total of 672 episodes of clinical malaria were observed in the control group, compared to 126 in the intervention group, indicating the protective effect of IPTc to be 82%. There were 15 episodes of malaria in the control group compared to two in the intervention group, giving a protective effect of 87%. IPT c reduced the prevalence of malaria infection by 85% during the intervention period and by 46% at the end of the intervention period. The prevalence of moderate anaemia was reduced by 47%.

The Gambian study set out to determine how IPTc could be delivered most effectively in a rural community. The catchment populations of 26 Reproductive and Child Health trekking teams in the eastern part of The Gambia were randomised to receive IPTc on three occasions during the malaria transmission season from either the trekking team or from village-based community volunteers (VHWs). Delivery by VHWs achieved a higher coverage rate for three courses of IPTc than delivery by the trekking teams (74% versus 48%) and there were fewer cases of malaria in children in the communities served by the VHWs than in those served by the trekking teams (21 versus 49).

The incidence of malaria in both sets of communities where IPTc was given was much lower than in neighbouring communities.

In a further study conducted in The Gambia and publish recently in the *Malaria Journal*, investigators from The Gambia and the London School of Hygiene & Tropical Medicine showed that VHWs could effectively combine administration of IPTC with treatment of any patients who did develop malaria. No serious side-effects attributable to use of sulphadoxine/pyrimethamine and amodiaquine for IPTc in each of these three studies was observed.

Brian Greenwood, Professor of Clinical Tropical Medicine at the

London School of Hygiene & Tropical Medicine, and co-author on all papers, comments: 'These findings indicate that IPTc is safe and well-tolerated in children, is easy to administer, and has the potential to substantially reduce the incidence of severe and uncomplicated malaria in children who sleep under an ITN in areas where malaria transmission is highly seasonal such as the Sahel and sub-Sahel of Africa, which have a population of approximately 300 million people and a persistently high incidence of malaria. The findings of these studies and of a recent review which suggests that IPTc can reduce can reduce overall child mortality substantially suggests that IPTc now warrants serious consideration as a valuable component of a combined malaria control strategy in areas where malaria transmission is seasonal'.

More information: The papers are available at:

www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000408

www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000407

www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000409

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