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STUDY SHOWS MALARIA DEATHS IN INDIA MASSIVELY UNDERESTIMATED BY WHO; FIGURES FOR ADULT MALARIA DEATHS WORLDWIDE NOW NEED URGENT REVISION

A new study published *Online First* (www.thelancet.com) and in an upcoming *Lancet* shows that there are more than 13 times more malaria deaths (205 000) in India than currently estimated by WHO (15 000). WHO should reconsider its estimates and revise its total global adult malaria deaths, conclude the **Article** authors, co-led by Professor Prabhat Jha, Centre for Global Health Research (CGHR), Li Ka Shing Knowledge Institute, St Michael's Hospital and Dalla Lana School of Public Health, University of Toronto, ON, Canada.

National malaria death rates are difficult to assess because reliably diagnosed malaria is likely to be cured, and deaths in the community from undiagnosed malaria could be misattributed in retrospective enquiries to other febrile causes of death, or vice-versa. In this study, the authors estimated plausible ranges of malaria mortality in India, the most populous country where the disease remains common.

Full-time non-medical field workers, trained by the Registrar-General of India, interviewed families or other respondents about each of 122 000 deaths during 2001-03 in 6671 randomly selected areas of India, obtaining a half-page narrative plus answers to specific questions about the severity and course of any fevers. Each field report was sent to two of 130 trained physicians, who independently coded underlying causes, with discrepancies resolved either via anonymous reconciliation or adjudication.

Of all coded deaths at ages 1 month to 70 years, 2681 (3.6%) of 75 342 were attributed to malaria. Of these 2681 deaths, 2419 (90%) were in rural areas and 2311 (86%) were not in any health-care facility. Death rates attributed to malaria correlated geographically with local malaria transmission rates derived independently from the Indian malaria control programme.

The data suggest that about 205 000 malaria deaths per year occur in India before age 70 years (55 000 in early childhood, 30 000 at ages 5-14 years, 120 000 at ages 15-69 years), with each person having a 1.8% cumulative probability of death from malaria before age 70 years (in the hypothetical absence of any other causes of death). Plausible lower and upper bounds for number of deaths were 125 000 and 277 000 respectively. Malaria accounted for a substantial minority of the approximately 1.3 million unattended rural fever deaths before age 70 years in India.

WHO currently attributes only 15 000 deaths to malaria each year in India, a figure far lower than that provided by this new study, and only 100 000 adult deaths worldwide. The authors say both figures require urgent revision.

The authors conclude: "If WHO estimates of malaria deaths in India or among adults worldwide are likely to be serious underestimates, this could substantially change disease control strategies, particularly in the rural parts of states with high malaria burden. Better estimates of malaria incidence and of malaria mortality in India, Africa, and elsewhere will provide a more rational foundation for the current debates about funding for preventive measures, about the need for more rapid access to malaria diagnosis, and about affordable access in the community to effective antimalarial drugs for children and adults."

In a linked [Comment](#), Professor Bob Snow, of the KEMRI—University of Oxford—Wellcome Trust Collaborative Programme, Nairobi, Kenya says that the findings are startling and it is notable that 86% of deaths from malaria do not occur in any formal healthcare facility that is linked to the national disease reporting system. These deaths, says Snow, represent a hidden burden and suggest that the routine information systems are inadequate entry points to define India's malaria morbidity and mortality burden.

The authors of this [Comment](#) go further by suggesting that other heavily populated, remote regions exposed to malaria with unreliable access to health care, such as Myanmar, Bangladesh, Pakistan, and Indonesia may also have a undocumented malaria burden. They conclude: "As countries strive to improve their measurement of diseases and deaths attributable to malaria, independent studies play a crucial part in drawing attention to the inadequacies of national statistics."

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The research paper, press releases in regional Indian languages, a video news release (including versions in Indian regional languages), quotes from noted scientists, frequently asked questions, and PowerPoint slides of the key results are on www.cghr.org/malaria .

A press conference for Indian media will take place in New Delhi on Thursday, 21st October from 11.30-13.30 hrs at the Taj Mahal Hotel, 1 Mansingh Road: for invitation, contact Ms. Prabha Sati.

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