Malaria kills twice as many as previously thought: study

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New research published in this week's edition of *The Lancet* shows that malaria kills 1.2 million people worldwide each year: twice as many as previously thought. Furthermore, while many believe most malaria deaths occur in young children (under 5 years), the new study shows that close to half of all deaths (42%) occur in older children and adults. Encouragingly, the data clearly show malaria interventions scaled-up over the past decade are driving mortality down. The study is by Professor Christopher Murray, Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA, USA, and colleagues, and was funded by the Bill & Melinda Gates Foundation.

The authors systematically collected all available data for malaria mortality from 1980 to 2010. Their finding of 1.2 million deaths in 2010 is nearly twice as high as the figure in the World Malaria Report 2011, with substantially more malaria deaths in adults in Africa, as well as other parts of the world. They found that between 1980 and 2010, global malaria deaths have increased from 1.0 million in 1980 to a peak of 1.8 million in 2004. This increase is explained by rising malaria death rates in the 1980s and early 1990s and a growth in populations at risk of malaria. By 2010, this figure had fallen to 1.2 million malaria deaths, a 32% decrease since 2004. Between 1980 and 2004, Malaria deaths in children aged under 5 years in sub-Saharan Africa had almost tripled from 377,000 to just over 1 million. In 2010, some 700,000 malaria deaths occurred in African children younger than 5 years (around 56% of total global malaria deaths), a fall of around 350,000 since the 2004 peak. Despite these reductions, mortality risk in 2010 is highest in

western, eastern, and, in particular, central sub-Saharan Africa.

Although malaria deaths in children account for most malaria deaths, the number of deaths in adults is high. Malaria deaths in individuals aged 15□□ years, 50 years, and 70 years or older account for 20%, 9%, and 6% of malaria deaths in 2010, respectively (thus over a third of all deaths occur in adults). With few exceptions, the proportion of malaria deaths in adults in each country examined was almost always more than 40%. The exceptions are sub-Saharan African countries, which have the highest malaria transmission.

The authors found that, compared with the World Malaria Report 2011, their estimates of deaths were 1.3 times higher for children younger than 5 years in Africa, 8.1 times higher for those aged 5 years or older in Africa, and 1.8 times higher for individuals of all ages outside of Africa. They also found that 24% of child deaths in Africa were due to malaria in 2008, 50% higher than the 16% found by Black and colleagues in the same year (and whose methods were used in the World Malaria Report). This should place more emphasis, say the authors, on making reductions of malaria mortality a central strategy to achieving Millennium Development Goal 4 (reducing mortality in children under 5 years by two thirds from 1990 to 2015). They add: "That malaria is a previously unrecognised driver of adult mortality also means that the benefits and cost-effectiveness of malaria control, elimination, and eradication are likely to have been underestimated."

Crucially, 433 000 more deaths occurred worldwide in individuals aged 5 years or older in 2010 than was suggested by WHO estimates (524 000 versus 91 000). "You learn in medical school that people exposed to malaria as children develop immunity and rarely die from malaria as adults," said Dr. Christopher Murray, IHME Director and the study's lead author. "What we have found in hospital records, death records, surveys and other sources shows that just is not the case."

The authors say: "Since the global peak in 2004, there has been a substantial decrease in malaria deaths that is attributable to the rapid, although variable, scale-up of control activities in sub-Saharan Africa. This scale-up has been driven in part by an expansion in health aid targeted towards malaria and suggests that the investments made by major funders such as the Global Fund to Fight AIDS, Tuberculosis and Malaria have rapidly decreased the burden of malaria."

However, they add that more malaria mortality also means that short-term goals—eg, the reduction of malaria deaths to zero by 2015—might be unrealistic. The authors say: "We estimated that if decreases from the peak year of 2004 continue, malaria mortality will decrease to less than 100 000 deaths only after 2020."

The importance of the Global Fund in reversing mortality since 2004 is highlighted in the study. The authors say: "The announcement by the Global Fund that round 11 of funding would be cancelled raises enormous doubts as to whether the gains in malaria mortality reduction can be built on or even sustained. From 2003 to 2008, the Global Fund provided 40% of development assistance for health targeted towards malaria. This reduction in resources for malaria control is a real and imminent threat to population health in endemic countries."

A linked Lancet Editorial concludes: "What should happen now? WHO's new independent advisory body, the Malaria Policy Advisory Committee (MPAC), held its first meeting this week. But MPAC only has 15 members. We believe urgent technical and policy analyses must be initiated by WHO—involving a broader group of experts (eg, including those in child survival) and country representatives—to review these new data and their implications for malaria control programmes. This opportunity needs to be grasped with urgency and optimism."

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