**HOW MUCH MORE MALARIA CAN WE PREVENT?**

Measuring the global burden of malaria is difficult as many deaths from malaria occur outside the health care system and cases of other infections may be misdiagnosed as malaria unless a diagnostic test is performed. However, there is general agreement that there has been a substantial reduction in both malaria deaths and cases during the past decade.1,2 WHO estimates that between 2000 and 2015 the annual incidence of malaria cases fell by 37% and that of malaria deaths by 60%.3 This has been achieved largely through scale up of insecticide-treated bednets (ITN) and provision of prompt access to effective treatment. Can even better results be obtained employing more of the same? WHO estimated that in 2015 approximately 68% of subjects at risk from malaria slept under an ITN, likely a generous estimate which may not take into account intermittent use of nets, and only a much smaller proportion of cases received treatment with artemisinin combination therapy ( ACT). Thus, there is still room for further scale-up of these interventions.

In the Lancet Infectious Disease, Griffin et al.4 use a well established model of malaria transmission 5,6 that takes into account increasing population size to predict what would happen if coverage of established interventions was increased to 80% or 90% with or without the addition of rectal artesunate for treatment of cases of severe malaria and expansion of seasonal malaria chemoprevention (SMC) to additional areas where it has not been recommended because of a current lack of a suitable drug. Finally, they predict what would happen if the *status quo* is maintained or allowed to fall back to the 2006 level. If the current level of coverage with ITNs and ACT is sustained they predict that malaria cases would increase by 21% (95% CI 18%-23%) and malaria mortality by 11% (7%-16%) between 2015 and 2030 due to loss of immunity caused by successful reduction in the incidence of malaria during the previous years. With the scaling up of existing interventions to 90%, adoption of immediate treatment of severe malaria with rectal artesunate and expansion of SMC they estimate that by 2030, malaria cases would be reduced by 75% (70%-77%) and malaria deaths by 81% (76%-87%) with an estimated 3,370 (2,370-4,333) million cases of malaria and 11.5 (4.6-16.0) million deaths prevented over a 15-year period.

An important issue not covered by Griffin et al. in their paper 6 is the cost of scale up. As coverage improves extending this further will become more difficult and more costly as it will be necessary to access communities living in remote areas or those who are suspicious of the formal health system and prefer to seek treatment elsewhere. It cannot be assumed that increasing coverage from 60% to 90% will be half the cost of increasing this from zero to 60%. It is likely that some communities will be more receptive of one intervention than another and obtaining their views will be an important requisite to obtaining very high coverage levels.

Novel interventions for the control of malaria are being developed and some difficult decisions will be needed in determining how to balance investment in the deployment of these new tools with efforts to further scale up existing tools to very high levels of coverage. Use of models that include a range of costs for each intervention, old and new, may help in guiding the best approach in specific epidemiological situations, as has been recently shown in considerations of how best to deploy the malaria vaccine RTS,S/AS01.7

 WHO has recently published a technical report which sets out the strategy for malaria control for the period 2016 to 2030.8 This has targets for reducing cases and deaths from malaria from 2015 levels by 40% in 2020, 75% in 2025 and 90% in 2030 with 10, 20 and 35 countries achieving malaria elimination by these dates. The modelling undertaken by Griffin et al.4  suggest that these goals are not unrealistic but this is the case only if they are not derailed by the spread of high level resistance to currently used drugs and insecticides, a supposition that cannot be assumed and which is not included in the model. It is essential , therefore, that while strenuous effort to scale up existing interventions continue, research continues on the development of new insecticides and antimalarials and on the development of vaccines and novel vector control methods which will almost certainly be needed before malaria is finally vanquished.

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