

## 2 Director's Message

Despite the global decline of mortality caused by malaria, the estimated number of deaths remains unacceptably high, particularly as infants and pregnant women are most susceptible. Death is just one of many outcomes; the World Health Organisation (WHO) estimates that there are over 216M people infected with malaria. For those who survive, the longer term effects of the disease vary, with some struggling to contribute to their household's economic survival. With the decline of malaria-caused mortality comes the risk that governments, funders and policy makers become complacent about this devastating disease.

The *plasmodium* parasite has shown itself to be highly adaptive to changing contexts and preventative drugs. With such an opponent it is clear that the best approach must be coordinated and multi-faceted. The London School of Hygiene & Tropical Medicine's Malaria Centre has led the way in bringing together researchers expert in a wide range of disciplines to work in a concerted way on malaria, looking at the disease at population, household and the individual levels and at the pathogen's fundamental biology and life cycle. Using their expertise, Centre members actively engage with policy development at both country and global levels, working with governments and international bodies such as the WHO.

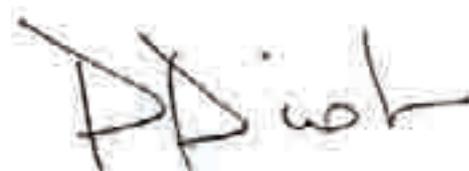
This report highlights some of the significant developments over the last two years which have been made possible by the Malaria Centre's leadership and partnerships, most importantly with collaborators in malaria-endemic countries. In particular, the



report highlights the strength that lies in its membership, not least Brian Greenwood (Page 113), whose life-long contribution to this field has undoubtedly played a major role in his being awarded both a knighthood and the Canadian Gairdner Prize.

As the Centre becomes more mature, its importance as an international Centre of excellence grows. In many ways, the Centre represents the very best that LSHTM can offer and leads the way in bringing an integrated, cross-disciplinary approach to a problem of global significance.

Malaria is a disease that remains a puzzle to humanity. One of the major challenges that the Centre and all those working in this important field face, is to ensure that this major killer is not overlooked in the post-2015 period, and remains a priority in the era following the Millennium goals.

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**Professor Baron Peter Piot**  
**Director, LSHTM**

The headlines from the frontline of malaria control continue to paint a mixed picture. On the one hand, a marked decline in mortality in the last 10 years is evident. However, new analyses of data have suggested that global mortality estimates for malaria may be higher than previously thought. This immediately draws attention to one of the great challenges currently facing those working in malaria control: reliable data for the monitoring and evaluation of systems and approaches. Therefore, the challenge remains to identify regional or country specific factors associated with success and failure to further optimise the current tools for malaria control. Similarly, malaria elimination is an increasingly well established concept and an aim for many countries. However, this is tempered by the increasing realisation that it will not be easy to achieve in the vast majority of endemic settings. Indeed, with reports of increasing levels of mosquito resistance to pyrethroid insecticides following on the heels of parasite resistance to anti-malarial drugs, the more pragmatic goal is to sustain the gains made in recent years while preserving the long-term effectiveness of our best malaria control tools.

Developing and refining the tools needed to control and eliminate malaria is clearly a high priority but similar emphasis is required in guiding the use or change in use of any approach. There is also a need to develop new tools and approaches, and to draw them together into a coherent framework to monitor progress. The effects will not only manifest as changes in biological endpoints but also as social, financial and health system performance indicators.



Addressing these complex issues requires the interaction of many partners from academic, manufacturing, governmental and non-governmental sectors to define research questions and influence policy. With its breadth of discipline, multiple overseas partners and interactions that range from the World Health Organisation to local secondary schools, the LSHTM Malaria Centre is uniquely placed to contribute to this and catalyse malaria research. This report covers work done on basic biology and the identification of potential targets for new drugs, vaccines and insecticides; the testing of these products in field settings; the social and economic evaluation of interventions; and their relevance to policy. The ultimate endpoint is translational research that can be implemented by governments and those involved in malaria control programmes wherever the disease exists.

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**Chris Drakeley**  
**Director, Malaria Centre**



(LLINs) and with the Bill & Melinda Gates Foundation in developing alternative insecticides to the pyrethroids for Indoor Residual Spraying (IRS). Along with the introduction of IRS in many African countries under the President's Malaria Initiative, studies are also presented on interventions where LLINs are combined with IRS and on integrated vector management which incorporates supplementary approaches such as larviciding and repellents.

- A variety of studies of the science of surveillance including those evaluating the best tools or combination of tools to identify infection and exposure to infection. Furthermore, studies that investigate what survey approaches in schools, health facilities or communities – and over what geographical scale - will generate the most appropriate information for malaria control programmes.

- Social and economic research that centres on work that improves our understanding of the patient provider interactions in terms of both diagnosis of malaria using rapid diagnostic tests and treatment with artemesinins, as well as the economic evaluation of the impact of malaria and community based delivery systems.

The work of the Malaria Centre provides a highly conducive environment for supporting the development of scientists of all disciplines and capacity development is a central component of our activities. Capacity development comes in a variety of guises; conventional teaching, training within specific research projects or dedicated post-graduate training programmes. One example of the latter, the Malaria Capacity Development Consortium, is run in partnership with 5 African Universities and is also de-

signed to promote support and supervision of research students.

In addition to research, Centre members provide a range of services that contribute to the diagnosis, treatment and research of malaria. These include insecticide and repellent testing through ARCTEC (at LSHTM) and PAMVERC (in Africa) and drug quality testing services as well as diagnosis and treatment of malaria through the Hospital for Tropical Diseases and the Malaria Reference Laboratory.

Communicating research findings and raising awareness of malaria research and development continues to be a major focus of the Centre. Activities around World Malaria Day have included press briefings to scientific and mainstream media on major research and future challenges while our 1930s tea dance for World Mosquito Day highlighted the historical discoveries that have shaped malaria control. In addition to fielding routine media enquiries, the Centre has also produced a range of dissemination outputs including educational videos for secondary schools and podcasts on research specific areas regularly made available via the updated website.

Dissemination also encompasses the important advisory roles that member of the Malaria Centre have to policy makers in the UK and abroad. In particular, members have continued to provide advice to the WHO and National Malaria Control Programmes in malaria endemic countries. Members have also authored or contributed to reports produced by UK Department for International Development and the UK All Parliamentary Group of Malaria and Neglected Tropical Diseases.