

Malaria Consortium

Annual Review 2011 – 2012



Thank You

Malaria Consortium relies on donors, partners and supporters to help us carry out our work across the world. Collaboration and cooperation with others is fundamental to our achievements in the fight against malaria and other communicable childhood and neglected tropical diseases. It is thanks to these partnerships that we are able to provide some of the world's most vulnerable people with better health care and look forward to a future free from disease.

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Foreword

Chairman, Dr Julian Lob-Levyt, CBE



Malaria Consortium has continued to grow over the year, indicating how our supporters and partners value our undiluted yet comprehensive focus on malaria. Malaria remains at the heart of what we do, but we continue to recognise that control of malaria is not best done in isolation, but as part of a rational delivery of health services. We

therefore have further developed our exploration of how to deliver prevention, diagnosis and treatment of malaria through improved health systems, and which other health problems can be addressed by sharing these delivery channels. Malaria control forms an excellent entry point for control of neglected tropical diseases in all age groups and for integrated service delivery for the commonest childhood health risks of diarrhoea, pneumonia and malnutrition.

We continue to improve delivery of disease prevention, diagnosis and treatment by extending our research, monitoring, evaluation and surveillance, so that we have strong evidence, which we communicate and use. This year our innovative approaches to behaviour change communication, health worker motivation, retention and skills development through training and supervision

are helping to shape best practice that others are choosing to follow.

At a global level, our involvement in international health policy and advocacy has included intensive work on four areas. Firstly, in malaria we have focused on artemisinin resistance containment, insecticide resistance management, diagnosis, surveillance and private sector role definition. Secondly, in child health our focus has been on integrated community case management. We have reinforced our efforts in advocacy for more attention to neglected tropical diseases, and finally we are engaging in dialogue on what happens after 2015.

Our skilled and dedicated staff, most of whom are based in the countries we support, are a critical element in our success. Their expertise, and their thoughtful and creative approach to solutions provide the substance behind our reputation. Lastly, in 2012 the board and staff focussed on improving our governance, transparency and accountability for results. Malaria Consortium is in excellent shape for the next stage of its development and growth.

Next year is our 10th anniversary and amid the celebrations, we shall continue to play a significant part in reducing the burden of these diseases on the lives of those who are the reason Malaria Consortium exists.

Julian Lob-Levyt, Chairman

Executive Director, Sunil Mehra



In the nine years since Malaria Consortium became a non-profit organisation, the world of malaria has changed significantly. Malaria, from being one of the neglected diseases, has become a major development priority for the British government today, with almost a 10-fold increase in global funding

during that period. This is a massive achievement of malaria advocacy and the Roll Back Malaria Partnership. Those years were the beginning of momentous change - from a disease, pervasive but unchallengeable, to one that could be defeated with effective prevention, diagnosis and treatment tools; from neglect in research and development, to one of the largest investments in malaria diagnostic tools, drugs and vaccines. We are in a very different malaria world from the one a decade ago.

Malaria Consortium has also changed and as we move forward we need to continue to refine our approaches, streamline our operations, renew our partnerships, and deepen our country-

based capacity. Underpinning these future directions are core values of international development that aim to reduce disparities, ensure sustainable solutions which include recognition of environmental concerns, greater accountability and transparency. It is these values which will ensure that we continue to deliver better value for people who need and deserve effective prevention and treatment of ill health, and focus on local abilities to control and eliminate diseases. Already, Malaria Consortium is adding its thinking and practical contributions to the aspirations for malaria and neglected tropical disease elimination.

Challenges will remain but there are also opportunities to demonstrate how we can do what we do better. We shall continue to deliver good value to the people who need our services most by building on our organisational ethos to base our work on evidence of good and effective practice.

After nine years, I am moving on to new challenges with the confidence that I leave behind me a strong organisation that contributes a unique and grounded approach to improving the health of those in most need.

Sunil Mehra, Executive Director



A young girl looks on as a Malaria Consortium trainer explains the treatment guide to community drug distributors, Unity Province, South Sudan
Photo: Jenn Warren/Malaria Consortium

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Malaria Consortium is leading the way in developing and implementing prevention strategies across sub-Saharan Africa and Southeast Asia to reduce the number of preventable deaths from malaria and other diseases.



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Accurate diagnosis leading to the treatment of common and easily treatable diseases like malaria could save millions of lives. A key focus of Malaria Consortium is helping to ensure access to effective, reliable diagnostics at both community and health facility level.



Treatment 16

By improving access at all levels to lifesaving treatment for communicable diseases - especially those affecting young children - Malaria Consortium is working to improve community case management and strengthen health systems.



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A number of challenges threaten to halt or reverse progress to-date in the control of malaria and other communicable diseases. Malaria Consortium is helping preserve and strengthen achievements so far.

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Prevention

“Prevention is better than cure” has particular relevance in the global struggle to combat malaria. Properly and regularly used insecticide treated nets can reduce clinical episodes of malaria by 50 percent and all-cause mortality by 18 percent in children under five years. Malaria Consortium has been leading the way in developing and implementing prevention strategies across malaria endemic countries in Africa and Southeast Asia, including distribution of long lasting insecticidal nets (LLINs).

Achievements

In **Nigeria**, Malaria Consortium has continued to provide technical leadership and support for the implementation of a country-wide LLIN campaign through the Support to Nigeria Malaria Programme (SuNMaP). Since November 2008 around 47 million LLINs have been distributed in 28 Nigerian states. In addition, through SuNMaP and our other partnership projects, Malaria Action Program for States (MAPS) and NetWorks, we have directly supported the distribution of over 1.4 million LLINs through mass campaigns (in Oyo, Cross Rivers and Ogun states) and over two million nets through health facilities.

We are also looking for new and innovative ways of achieving and sustaining LLIN coverage in Nigeria. Through MAPS and NetWorks, we are providing leadership on community based distribution channels, including through schools. NetWorks has trained 20 community volunteers in Nasarawa state to carry out community activities to support radio spots around net care and repair. Through SuNMaP, we are seeking to strengthen the availability of private sector LLINs.

The Promoting Malaria Prevention and Treatment (ProMPT) programme in **Ghana**, implemented by University Research Co. LLC, Malaria Consortium and the Population Council, has worked with the country's National Malaria Control Programme (NMCP) to strengthen malaria prevention and control. Malaria prevention during pregnancy is a major focus and ProMPT has been conducting a pilot for the continuous distribution of nets through ante-natal clinics, schools and via the Expanded Programme on Immunisation in eastern Ghana.

Community health programmes have been running for over 30 years in **Mozambique** with government support. In 2009, revitalisation of the programme was begun by the Ministry of Health and partners. Since 2010, Malaria Consortium has been working with the provincial health team in Inhambane province providing training on health promotion and disease prevention for community health workers. In addition, we mapped those communities needing health support and undertook the pre-selection and selection of new community health workers for training.

In the northern region of the country, Malaria Consortium distributed over 230,000 LLINs in two districts of Nampula Province, and a further 1.2 million LLINs through other partners. Community health workers and their supervisors in the province received training and the health workers received medical kits, supplies and bicycles through a Malaria Consortium Ministry of Health partnership.

Malaria Consortium is also working on prevention strategies in Mbale, **Uganda**, where we trained 2,500 village health team members in health promotion and disease prevention skills, including the use of LLINs and the importance of early care seeking behaviour. In addition, we distributed LLINs to pregnant women attending ante-natal services through the Stop Malaria Project on behalf of the NMCP and in partnership with Johns Hopkins University Center for Communications Programs. Health workers were trained on LLIN distribution at clinics offering antenatal services as part of a

We distributed over **2.9 million LLINs** across Nigeria, Uganda and Mozambique, through net campaigns and national health systems

A young woman collects a long-lasting insecticidal net through SuNMaP's mass distribution campaign, Kano, Nigeria.
Photo: Vivid Digital/
Malaria Consortium



wider malaria in pregnancy package, including intermittent preventive treatment in pregnancy and malaria in pregnancy case management.

In **South Sudan**, a mass screening campaign was conducted by Malaria Consortium and the State Ministry of Health in Northern Bahr el Ghazal State in response to increased cases of severe acute malnutrition. The campaign took place in five villages within the returnees' camp of Apada in Aweil. Immunisation and health education on infant and young child feeding was also carried out, as well as referrals of children under five for treatment. Malnutrition is a chronic problem for young children in South Sudan, and increases the risks caused by infectious diseases such as malaria. This year, Malaria Consortium screened over 2,000 children for the condition, followed by referral to an outpatient therapeutic feeding programme.

A pilot project, in partnership with Lainya County Health Department, the Central Equatorial State Ministry of Health and the NMCP in South Sudan, was carried out to replace nets in households that have been damaged, destroyed or were not present. The 18 month project aims to test the effectiveness of community-based distribution systems in supporting universal net coverage. Over 190 health facility staff and community volunteers received training on net distribution and over 9,000 nets have been distributed so far. In addition, research was also conducted on commonly held beliefs about malaria and net use practices to improve future LLIN distribution. Awareness of the pilot was raised through the innovative practice of sending SMS text messages to community malaria workers, clergymen and community drug distributors.

Behaviour change communication activities were undertaken in over 40 districts of the Southern Nations Nationalities and Peoples Region (SNNPR) in **Ethiopia**, targeting a population of over five million. Over 2,900 community health extension workers and health workers were trained on community conversation activities to support a dialogue around malaria as a public health issue in the community. Following this, training was cascaded down to community health promoters and volunteers to encourage a dialogue around the role of the community in malaria control, how malaria is transmitted, and gaps in malaria control services used by the community. These included LLINs, indoor residual spraying, early treatment seeking and anti-malarial drug adherence. Initial findings indicate a slight increase in both net use and early treatment seeking behaviour.

In **Southeast Asia**, Malaria Consortium has been working with partners in **Cambodia**, including BBC Media Action and the Women's Media Centre of Cambodia, to produce radio messages on malaria prevention reaching over four million people. Mobile broadcast units have been established to reach at-risk migrant populations in 20 villages in the northwest of the country where malaria transmission and drug resistance are evident. Malaria messages have been disseminated in remote villages in southwest Cambodia, with malaria education routinely conducted by village health volunteers.

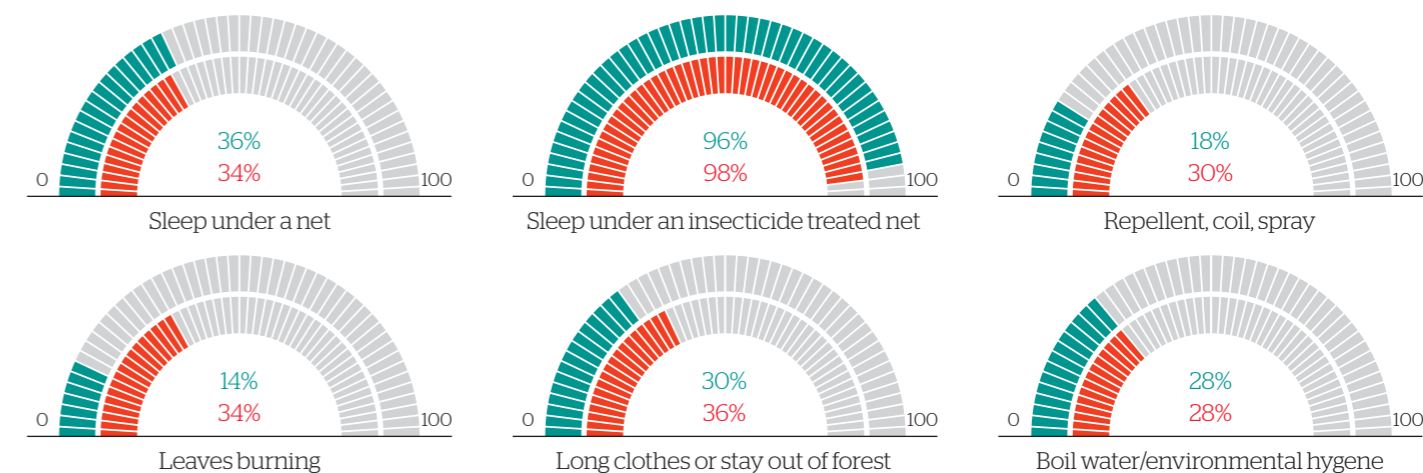
In Unity State, South Sudan, a child's arm is measured by a community drug distributor to check for signs of malnutrition
Photo: Jenni Warren/
Malaria Consortium

Learning to protect themselves

Knowledge of prevention methods by community members in Sampov Loun, Cambodia

Results from a pilot project using the innovative positive deviance approach to behaviour change

■ Baseline % ■ After 6 month pilot



Learning

Increasing knowledge and understanding of malaria and the human behaviours, which allow it to thrive, is critical if effective strategies to combat the spread and impact of the disease are to be found. Malaria Consortium invests in operational research to increase that body of knowledge.

In **Nigeria**, in the course of supporting ministries of health in the provision of malaria preventive services, some pertinent questions have been raised. Can the resource requirements and capacities of traditional health facility based distribution channels sustain the gains in ownership and use of LLINs achieved through mass campaigns?

Estimation and projection models developed with the assumption of a three year median life span of a net (using the Net Calc© modelling tool - see case study) have indicated that, even at optimum capacity, routine facility distribution to pregnant women at antenatal clinics may not be sufficient to maintain the high coverage that is needed. For a country with an estimated population of over 160 million, a more decentralised approach is being considered to fill gaps in coverage. This has given Malaria Consortium the opportunity to lead with relevant implementation research to fill the knowledge gap.

Malaria Consortium began field studies in **Uganda** on new strategies to slow down pyrethroid resistance, which is currently the only class of insecticides recommended for use with LLINs. Working with the Ministry of Health, the project aims to increase understanding of insecticide resistance patterns in Uganda and their impact on malaria control, as well

as the use of non-pyrethroid insecticides for indoor residual spraying in managing pyrethroid resistance.

Following reports of vector resistance against insecticides in Uganda, variations on the effect of exposure across different study sites will be used to formulate an appropriate resistance management strategy, taking into account the level of insecticide used in public health and agriculture. These outputs are expected to contribute to vector control strategies in support of continued effective malaria interventions in the region. Cross-sectional household, malariometric and entomological surveys are currently under way in 45 study sites in nine districts. As part of this process, the project also focuses on developing local capacity to monitor insecticide resistance in line with the Global Plan for Insecticide Resistance Management.

Malaria Consortium conducted a technical review of the **Mozambique** Ministry of Health's training curricula and materials for community health worker training. The course structure was comprehensively revised, including visual and illustrative materials for low-literacy audiences. The review also highlighted a need for further integration of Malaria Consortium and the Ministry of Health's activities into provincial plans, with a reinforced supervision structure including relevant monitoring and evaluation tools.

As part of Round 9, the Global Fund gave civil society partners the opportunity to implement the Malaria Prevention and Control Project in Mozambique, which seeks to scale up universal access of community involvement in seven

Malaria Consortium distributed over 2.9 million LLINs across Nigeria, Uganda and Mozambique through net campaigns and national health systems.

provinces. A baseline study was carried out in collaboration with all partners involved and consisted of a structured household level survey of 2,177 households in the seven target provinces. Findings revealed that even though people know about the existence of malaria, they do not know how to prevent it. Many, for example, associate malaria transmission with inappropriate diet or untreated drinking water.

The study also suggests that we need to strengthen information on malaria prevention, care-seeking behaviour and treatment, and also intensify educational and communication activities to promote behaviour change, focusing on the community environment and the individual.

At the moment, the results of the study are being disseminated at provincial level through a series of workshops to ensure a strong connection between the results of the study and the implementation of the project, which in the first phase runs to June 2013. Some findings of the study will be explored in depth by qualitative research, which is being conducted at the end of 2012.

In **Southeast Asia**, Malaria Consortium's monitoring and evaluation activities for malaria prevention in the Greater Mekong Sub-region highlighted the need for qualitative research to support large-scale, nationally representative surveys and to identify further entry points for consumer preference, net durability and use.

In **Cambodia's** northeast border region, hard-to-reach migrant groups are most at risk from malaria, yet ensuring these populations have access to LLINs is a challenge. In an effort to engage these vulnerable groups in prevention and appropriate health seeking behaviour, we have been working through partners, to improve synergies with employers and business owners for the provision of LLINs to migrant populations.

What Next

In Southeast Asia, malaria control along the border areas between **Thailand** and **Cambodia** and Thailand and **Myanmar** remains a priority, where at-risk migrant populations have limited access to LLINs and information on how to prevent malaria infection. In support of Cambodia and Thailand's long-term elimination strategies, Malaria Consortium is proposing to conduct behavioural research to improve knowledge and understanding of barriers to LLIN usage in the region, while also conducting micro-planning and rapid coverage assessment of net distribution in Myanmar. In addition, the development of a behaviour change communication strategy to increase LLIN

Influencing

Malaria Consortium worked in collaboration with the Malaria Childhood Illness Secretariat in **Uganda** to create an advocacy platform in the region. Activities included the selection of lead civil society organisations as activity coordinators, followed by training and supportive supervision of staff in monitoring and evaluating activities to improve reporting. We also carried out a consultative process to establish district advocacy teams to support activities at both regional and national level.

We also provided support to the Ugandan Ministry of Health for the development of malaria in pregnancy manuals and ante-natal clinic distribution implementation guidelines for LLINs.

In **Southeast Asia**, Malaria Consortium remains committed to working closely with the national NMCPs to contribute to long term elimination strategies. We have contributed to the WHO Global Plan for Insecticide Resistance Management and, in addition, provided expertise in the development of drug resistance containment strategies for both Cambodia and Thailand. We played a lead role in developing multi-country coordination and organising a cross-border behaviour change communications harmonisation workshop to review the existing strategies, activities and messages aimed at key target audiences along the Thai-Cambodia and Thai-Myanmar border.

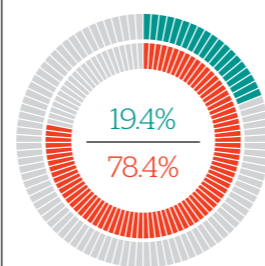
In **Cambodia**, Malaria Consortium is working closely with the NMCP providing technical support for the development of malaria messages. Flip charts, alert signs, billboards and pamphlets have been produced and shared with the Provincial Health Department and the Operational District Health Centres, among other partners. Messaging around malaria prevention has been broadcast on eight provincial TV stations.

promotion in Cambodia is being planned. Malaria Consortium is also exploring alternative personal protection from mosquitoes for migrant workers.

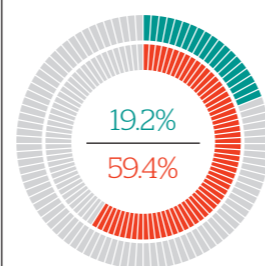
As part of Malaria Consortium's integrated community case management project in **Zambia**, we will be designing and developing a community dialogue approach with community health workers, caregivers and community members to encourage early care seeking for malaria, pneumonia and diarrhoea. This initiative provides communities with opportunities to challenge their own assumptions about health issues and to find solutions.

Net Use

Data from recipient households 18 months after mass distribution campaign (Pioneer), training of local community health workers (ICCM-CIDA) and behaviour change communications activities.



Proportion of households with at least one mosquito net



Proportion of children under 5 sleeping under a net the previous night

■ Baseline %
■ Mid-Term %



How many nets is enough?

In 2011 Albert Kilian, working for Malaria Consortium on NetWorks, created a user-friendly tool for predicting LLIN needs, building on a previously created, simpler model written for Uganda. NetCALC's purpose is to help malaria programmes in the management of a comprehensive ITN strategy by facilitating three major tasks:

- Estimating achieved insecticide treated net coverage between household surveys based on the last survey result and number of nets distributed per year since then through various channels.
- Estimating the number of insecticide treated nets initially needed and as replacements to achieve and maintain set coverage targets.
- Projecting the capacity of various continuous distribution channels to sustain high coverage levels and thereby assist in decisions regarding the best overall insecticide treated net strategy.

In addition, NetCALC allows the variation of the expected 'useful life' of nets and through this feature facilitates estimations of expected savings through products with better durability. Prolonged 'useful life' of insecticide treated nets can be achieved through behavioural change communication in terms of better care and repair.

Calculations in NetCALC use two major components. The first component is called the net crop, which is the number of nets available in a given system at a given time - i.e. the nets that are available for use by the population. The net crop is

the sum of every net cohort of annual distributions carried forward and reduced by an annual loss rate as defined by the loss function. The second component translates this net crop into a coverage rate. By making some assumptions based on empirical data on how nets accumulate within the household as their availability increases as well as their distribution within the household, this component calculates the proportion of households with at least one insecticide treated net.

Recently updated, NetCALC now includes additional modules for distribution via curative health services, communities or the retail market. In 2012, for version 2.0, the proportion of population with access to a insecticide treated net within the household was added as a new output variable, as recommended by Roll Back Malaria. All outputs were adjusted to comply with the WHO recommendation of 'universal coverage' being equal to one insecticide treated net per two people where the number of nets needed are equivalent to population.

As a tool for developing a comprehensive national system for net distribution, NetCALC is currently being used in Nigeria, Ghana and Uganda and will extend to other countries in 2013. In Ghana, staff were trained to use the tool as part of mass LLIN distribution activities for which Ghana received a commendation from the Alliance for Malaria Prevention.

Trucks loaded with long-lasting insecticidal nets arrive for distribution, Mayuge district, Uganda



Diagnosis

Rapid and accurate diagnosis of malaria and other childhood illnesses is critical and can mean the difference between life and death. Yet in resource poor settings, where expensive laboratory equipment and trained staff may not be available to confirm diagnosis, malaria and other diseases have often been treated based on symptoms alone. This leads to misdiagnosis or unnecessary treatment, and is thought to promote drug resistance. Malaria Consortium works to strengthen capacity at both health facility and community levels for effective diagnosis to control malaria and other common childhood diseases like pneumonia and diarrhoea.

Achievements

According to the World Health Organisation, 34 percent of all deaths in children under five are caused by diarrhoea, pneumonia and malaria. In an effort to reduce these deaths and as part of government child survival strategies, one effective approach has been integrated community case management (ICCM). This is a holistic approach to childhood disease control that brings diagnosis and treatment of children to the community level. Working with Ministries of Health, Malaria Consortium has been implementing ICCM in a number of countries which, with diagnostic tools such as malaria rapid diagnostic tests (RDTs) and respiratory timers for pneumonia and training for health workers, is transforming the accuracy of diagnosis, especially at community level.

Malaria Consortium's ICCM-CIDA programme, running in **Mozambique, South Sudan, Uganda** and **Zambia** 2009, has been providing training and support for community health workers to diagnose and treat these three diseases. Activities over the year included ensuring continuous supplies of diagnostic tools and treatments at community level. Health workers were also trained to support community health workers in the diagnosis and treatment with assistance provided for monitoring and gathering data on their activities. We have now rolled out ICCM, through ICCM-CIDA and ICCM-UNICEF, in 17 districts in Uganda, making us the largest implementer of ICCM in the country.

In **South Sudan's** border state of Northern Bar el Ghazal, through support from the Global Fund, USAID (ADRA SSHINE) and the Common Humanitarian Fund, Malaria Consortium volunteers assessed and provided over 195,000 treatments for malaria for children under five.

Through the Pioneer project, Malaria Consortium supplied and provided training on RDTs to all 88 health centres in the region with no functioning laboratory services. The project also provided training in supply chain management to health workers with a focus on RDTs. We also developed standardised processes for malaria diagnostic quality assurance to support **Uganda's** NMCP. We are continuing to work with the Ugandan Ministry of Health to develop national quality assurance guidelines, to revise training materials and provide integrated support supervision, training and mentoring for health workers and laboratory technicians.

In other non-ICCM related projects, Malaria Consortium provided RDT training, supervision and supplies to lower level health facilities in seven districts in Uganda. As the reliability of RDTs can be impaired by storage and manufacturing conditions, we developed guidelines for training laboratory technicians in external quality assurance for RDTs (see case study) as well as laboratory safety and procedures. Laboratory technicians from across Uganda were assessed for competency in malaria microscopy, following the WHO Microscopy Certification Course.

Over **7,000** community health workers were trained in the use of RDTs in Uganda

A health worker applies her training in the use of rapid diagnostic tests for malaria, Uganda

Malaria Consortium **Ethiopia** extended access to parasitological diagnosis of malaria to peripheral health facilities, including newly constructed health posts. We reviewed and updated malaria diagnosis and treatment guidelines, procured and distributed diagnostic equipment and supplies, and carried out refresher training on malaria laboratory diagnosis.

As the lead implementing partner for SuNMaP in **Nigeria**, Malaria Consortium has continued capacity building efforts across states that are supported by the project. Around 13,000 health workers, including patent medicine vendors and community care givers in over 5,000 health facilities and service delivery points, have been trained in case management. One unique initiative is an NMCP capacity building package developed with support from SuNMaP. This identifies key areas of planning, general management, procurement and supply chain management, monitoring and evaluation, and integrated supportive supervision as an essential aspect to the running of a functional malaria control programme. By March 2012, 68 health management teams had benefited from these efforts. Support had also been provided through the provision of ACTs and RDTs to health facilities in SuNMaP states.

Under the five year Nigerian MAPS project to increase coverage and use of life-saving malaria interventions, we have supported the roll-out of service delivery training to over 2,000 health workers on malaria case management, parasite diagnosis with RDTs, and microscopy in six states. Caregivers have also been trained on symptom identification, referral, malaria prevention and specific support for pregnant women.

The NMCP and partners have also been assisted in establishing a malaria diagnosis quality assurance system at national and state levels through MAPS and SuNMaP.

Since 2000 the number of malaria cases in **Cambodia** has halved to just over 62,000. This is in part due to the village malaria worker project, which has demonstrated a decline in the malaria mortality rate from 4.67 deaths per 100,000 of the population in 2004 to 0.02 in 2011. Malaria Consortium has gradually scaled up the numbers of village malaria workers to cover all at-risk villages and provide early diagnosis and treatment.

Changing behaviour over childhood illnesses

A baseline survey* was conducted in October/November 2009 in mid-western Uganda prior to the start of both ICCM-CIDA and Pioneer projects. Following the implementation of both projects which included the training of 6,774 community health workers in ICCM through ICCM-CIDA, they received continued support with medical supplies and supervision for the next 18 months (June/July 2011). At this project mid-point, the survey was repeated with the following results:

■ Baseline %
■ Mid-Term %

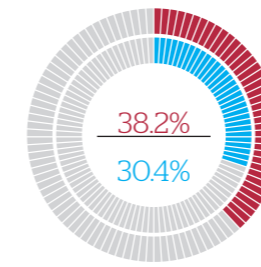
Learning

Routine data collection from Malaria Consortium's Pioneer project in **Uganda** showed that health facilities with continuous access to parasitological diagnosis, using either RDTs or microscopy, have started to dispense ACTs more rationally, thereby conserving supplies. As a result, no health facility has experienced stock-outs of anti-malaria drugs since the introduction of RDTs in the five districts in mid-western Uganda where the project is running.

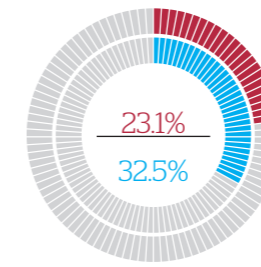
Giving access to diagnostic tools at community level as well as at health centre level is a key intervention to reduce mortality and days of suffering due to malaria. A mid-term survey for our ICCM work in Uganda found that caregiver awareness of community-based services has improved (see graphic above).

According to the World Health Organisation, assessment of fast breathing by counting the number of breaths in 60 seconds detects about 80 percent of children with pneumonia who need antibiotic treatment. However, it remains a challenge to diagnose pneumonia in rural settings today through an accurate measurement of respiratory rate. This proved particularly difficult for community based health workers in South Sudan, who had limited numeracy. Through ICCM-CIDA, Malaria Consortium trained community drug distributors to diagnose pneumonia through the use of respiratory beads (one length for use with children aged 2-11 months and another for those aged 1-5 years) with respiratory timers. As a quality measurement during training, we used a video developed by WHO with several clips of children with fast breathing.

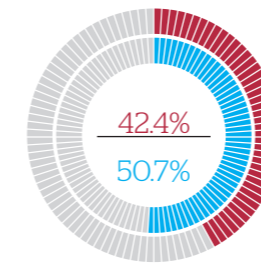
Child Morbidity



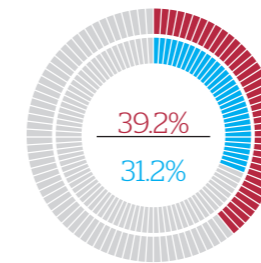
Percent of children with fever symptoms in last 2 weeks



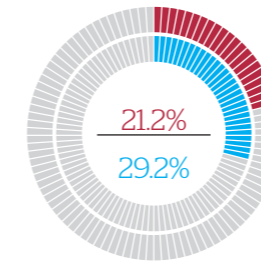
Percent sought treatment same day (within 24hr) for fever



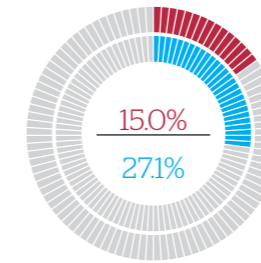
Percent sought treatment same or next day (within 48hr) for fever



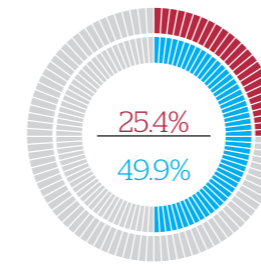
Children with malaria parasites present



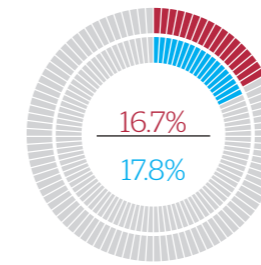
Percent of children with symptoms of acute respiratory infection (ARI) in the last 2 weeks



Percent sought treatment same day (within 24hr) for ARI

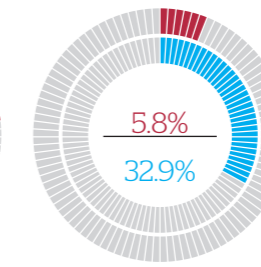


Percent sought treatment same or next day (within 48hr) for ARI

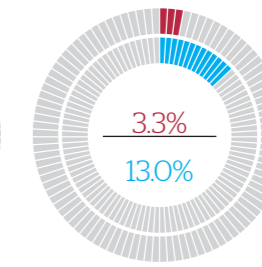


Percent of children with diarrhoea symptoms in last 2 weeks

Knowledge and Attitude



Knowledge of RDTs as tests for malaria



If baby is sick, would visit a CHW first

* The baseline was a household survey assessing the existing level of:
 ● health-seeking behaviour
 ● prevalence of childhood illnesses
 ● prevalence of children with malaria
 ● level of mosquito net ownership and usage
 Those interviewed were heads of households from nine districts.

Influencing

Malaria Consortium has been active in behaviour change communication activities and advocacy to raise community awareness and influence policy.

We continue to advocate for the improvement of malaria diagnosis through improved national guidelines and standard operating procedures in **Ethiopia**. We are also very active members of the **Zambia** Ministry of Health Child Health Working Group, where our field experience is used to advise on policy decisions.

In **Uganda**, we played a role in improving national capacity for effective use of RDTs by revising the national RDT facilitators' and users' manual and orientating RDT trainers on the use of adult learning methodologies during the training of district trainers and health workers.

Key messages have been developed in **Southeast Asia** on malaria prevention, early diagnosis and treatment and were harmonised on both sides of the Thai/Cambodia border to reinforce consistent messaging on malaria control across mobile and migrant populations.

Through the Roll Back Malaria Case Management Working Group, Malaria Consortium collaborated on an inter-agency operational manual on Universal Access to Malaria Diagnostic Testing and contributed updates for a handbook on malaria in complex emergencies.

Over 5,000 health systems staff trained in the management, diagnosis and treatment of malaria in Ethiopia, Nigeria, Uganda and Cambodia, treating over 1.2 million cases of malaria



What Next

Malaria Consortium will help strengthen the health system in **Mozambique** by providing support at national and provincial level on malaria diagnosis, laboratory testing, quality assurance, staff training and equipment maintenance. We shall continue community health worker training on malaria prevention and diagnosis.

In **Ethiopia**, Malaria Consortium is committed to establishing External Quality Assurance schemes for malaria microscopy in 50 health facilities in the Southern Nations, Nationalities and People's Region, and will facilitate distribution of those External Quality Assurance guidelines and tools. Other plans include procurement and distribution of laboratory supplies and staff training, whilst conducting supportive supervision once an External Quality Assurance system has been established. Similarly, in **Nigeria** and **Mozambique** we are supporting the development of a quality assurance framework, while in **Uganda** we have been requested to develop national quality assurance guidelines.

An innovative approach to simplifying the process of measuring breaths in children suspected of having pneumonia at community level, will be the introduction of the Malaria Consortium Mobile Respiratory Timer, by inScale in the mid western region of Uganda. This is a mobile phone application for use by community health workers in **Uganda** and **Mozambique**, which switches itself off after one minute. The application will require the community health worker to start the timer and press a button on the phone for every breath observed without having to count the respiratory rate or look at the mobile phone display. From the click count displayed after one minute the community health worker will be able to determine if the child has fast breathing or not by comparing the cut-off points of the respiratory rate for a child's age.

A community health worker leads a discussion with villagers on good health seeking behaviour for sick children, Inhambane, Mozambique



Getting the diagnosis right

There is increasing concern about emerging parasite resistance to current effective artemisinin combination therapies used to treat malaria. The short supply of quality raw material derived from *Artemisia annua*, as well as a worldwide trend of decreasing malaria incidence, makes it imperative that only people with confirmed presence of malaria parasites should be treated for the disease. A cost effective approach to ensure this is achieved is through the wide scale implementation of high quality parasite-based diagnosis. This will also reduce time and lost income due to absenteeism from work or school due to sickness and the unnecessary purchase of expensive medicines.

To increase the confidence of health workers at all levels of the health sector that the results of the rapid diagnostic tests are reliable, diagnosis needs to be underpinned by regular quality assurance (QA). This should address the performance of the test or competence of the health worker, and also other factors that can influence the quality of the test results, such as leadership, commitment, infrastructure and resources.

Malaria Consortium is working with the Ministries of Health in Uganda and Nigeria to develop holistic, feasible QA systems for malaria diagnosis. The system framework will draw on evidence from assessments and the testing of different mixes of methodologies for quality control, as well as external QA to establish best practices. The system will provide the National Malaria Control Programmes with sufficient information of local context for continuous improvement that is not reliant on donor driven resources. During

this development process, Malaria Consortium is supporting health facility assessments, establishing or revising national standards, conducting laboratory workers' competency assessments and training, and testing methods for external quality control of rapid diagnostic tests.

While the QA system will initially function in a vertical fashion focusing only on malaria, as it becomes embedded in best case management practice, it will need to integrate into the wider clinical laboratory service and other quality assurance networks, such as those for HIV and tuberculosis.

To achieve long term effectiveness and sustainability, it is necessary to increase advocacy for resource mobilisation at national and state/district levels as well as commitment, active involvement and ownership - by both political and service providers - within the process. At the same time, focussing on critical performance standards and feasible targets will allow the process to evolve and adapt to local contexts. Finally, absorption of the QA systems into the laboratory of that country will mean that a quality malaria diagnostic service has become part of a diagnostic service 'culture'.

Over 180 laboratory scientists in Nigeria have been trained on malaria microscopy and RDTs

A lab technician in Niger State, Nigeria, examines blood slides for malaria



Treatment

Malaria Consortium is working to improve treatment for communicable, neglected tropical diseases and childhood illnesses that are often related to malaria morbidity and mortality. By leading implementation and developing innovations for the scale-up of an integrated approach to the diagnosis and treatment of the three most common killers of children under five - malaria, diarrhoea and pneumonia - Malaria Consortium is working to reduce the burden of these diseases which collectively account for the loss of millions of lives every year in the developing world.

Achievements

In **Uganda**, Malaria Consortium has provided training for integrated community case management (ICCM) of childhood illnesses at national, district and health facility levels, providing over 12,500 community health workers with training in ICCM. These community health workers are responsible for the diagnosis, treatment and referral of malaria, pneumonia and diarrhoea in children under five in their communities and are provided with the medicines, medical supplies and supervision that are essential for effective diagnosis and treatment.

CHWs in **Zambia** received ICCM training in an additional three districts of Luapula province through Malaria Consortium's ICCM-CIDA project, bringing the number trained across a total of seven districts to 1,062. Community health workers continued to receive support supervision, and were provided with the necessary medicines and medical supplies to treat children under five for malaria, diarrhoea and pneumonia.

Through the Stop Malaria Project, led by John Hopkins University Center for Communication Programs, we have supported clinical audits at hospitals and local health centres in 34 districts across **Uganda**, which has resulted in an increase in the number of health facilities with functional triage systems for the timely recognition of severely ill patients, lower waiting times for severely ill patients and improved management of severe febrile illness.

Malaria Consortium, through the SuNMaP programme in **Nigeria**, has trained over 2,500 health workers both in health facilities and at community level on malaria. Some 38 health workers at national level and 211 at state level were trained on case management through the MAPS project in preparation for roll-out of training in supported states.

As part of nationwide efforts to improve malaria case management in **Ethiopia**, Malaria Consortium revised and distributed national guidelines for the proper management of malaria for health workers and health facilities across the country.

In **South Sudan**, access to the appropriate treatment for neglected tropical diseases is a major public health problem. In 2011, as part of Malaria Consortium's efforts to support disease control in the region, we assisted in mass drug administrations for schistosomiasis and soil transmitted helminths through door-to-door and school-based distribution of treatments.

Containing resistance to anti-malarial medicines by the malaria parasite, including artemisinin, is a critical focus of Malaria Consortium's work in **Southeast Asia**. Since there are no equally effective alternative drugs, the spread of artemisinin resistance in Asia and potentially into Africa could be a catastrophic setback to global efforts to control malaria. Reducing the risk of resistance requires that malaria be diagnosed and treated efficiently. In **Cambodia**, Malaria Consortium has been

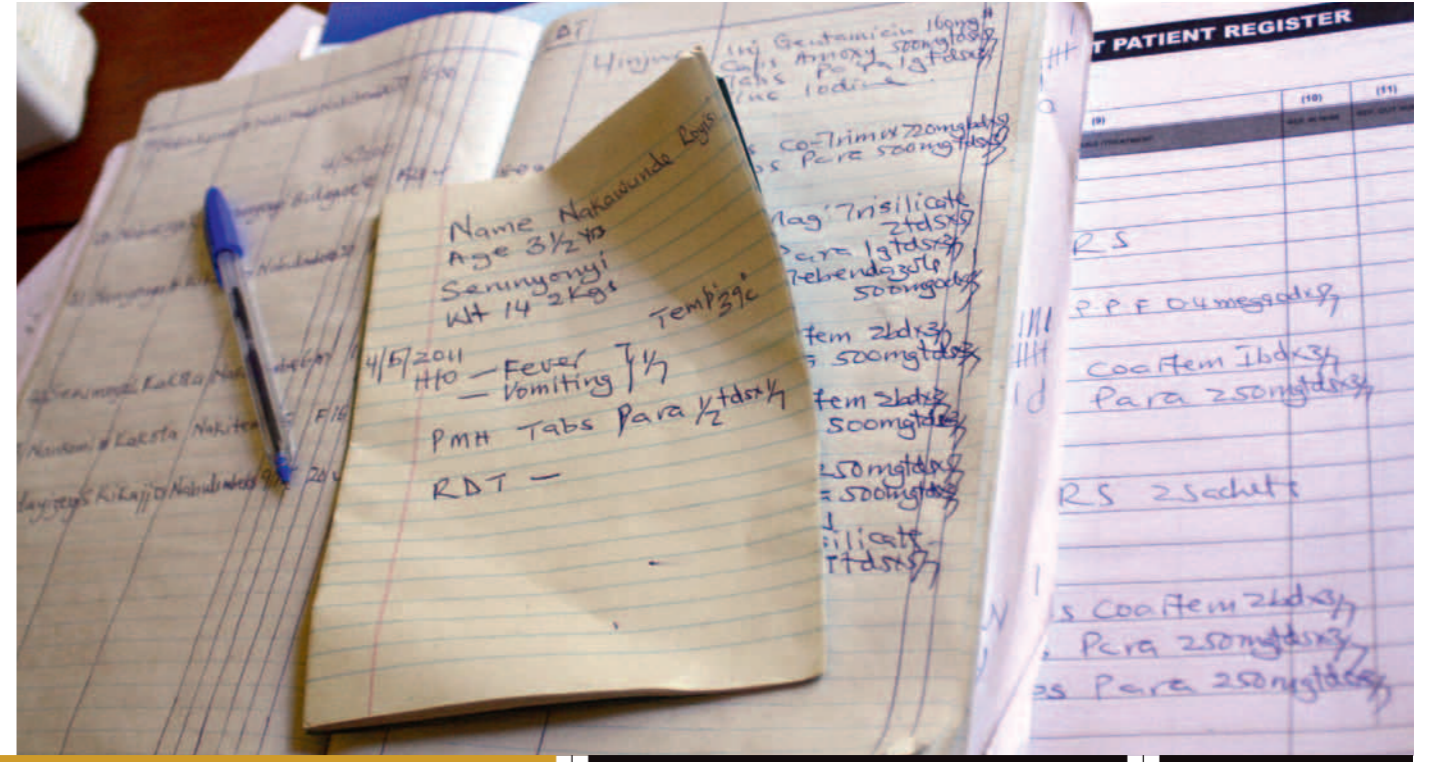
In just one mass drug administration in South Sudan, 230,000 people were treated for schistosomiasis

In Unity State, South Sudan, a baby receives oral treatment for trachoma, a neglected tropical disease and the leading cause of preventable blindness
Photo: Jenn Warren/Malaria Consortium

working closely with five key partners - FHI360, Institut Pasteur du Cambodge, BBC Media Action, Association of Medical Doctors of Asia and the Women's Media Centre for Cambodia - to support the implementation of a quality assurance system to ensure effective diagnosis and treatment.

Malaria Consortium also supported training for village malaria workers and migrant malaria workers in how to use rapid diagnostic tests for early diagnosis and treatment of malaria as part of resistance containment in the region.

An additional 500 police, border police and soldier officers were trained to recognise symptoms of malaria and refer suspected cases to local health workers. Malaria screening points were established at border checkpoints to screen people crossing the borders for the disease. Health staff and village health volunteers were trained in malaria behaviour change communications and malaria education methods.



Learning

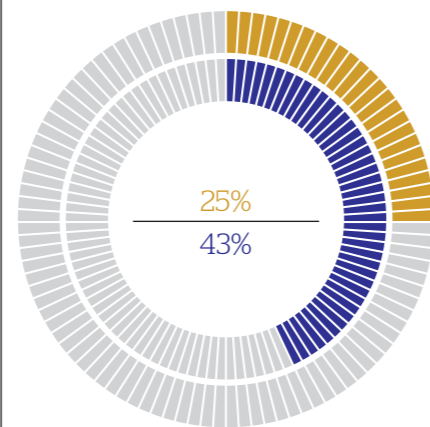
Malaria Consortium is the lead partner of the inSCALE project, a partnership initiative with the London School of Hygiene & Tropical Medicine and University College, London, which aims to harness knowledge and expertise from researchers and practitioners on techniques to motivate and retain community health workers. In 2011, inSCALE successfully completed its baseline survey in eight Ugandan districts, visiting over 6000 households and interviewing more than 400 health workers.

Among other findings, the survey reported that children who saw a community health worker were more likely to receive appropriate treatment for pneumonia, fever and diarrhoea than those who sought care at a public facility, yet only 22 percent of sick children were taken to a CHW during their illness 3-8 months after ICCM implementation started. The survey concluded, however, that the amount of supervision CHWs received appeared to be positively related to their motivation and performance, reinforcing the need for regular supervisory visits.

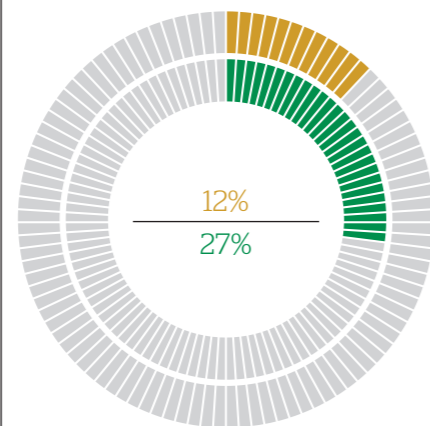
A key learning that has come out of Malaria Consortium's work in Nigeria is the simplification of rollout training by clustering the training of hospital, primary health care and community based staff. The content is delivered using adult learning techniques and makes use of local resources. This has reduced the time taken to roll out the training.

Working with those most at risk

Knowledge of treatment methods by community members in Thailand and Cambodia*

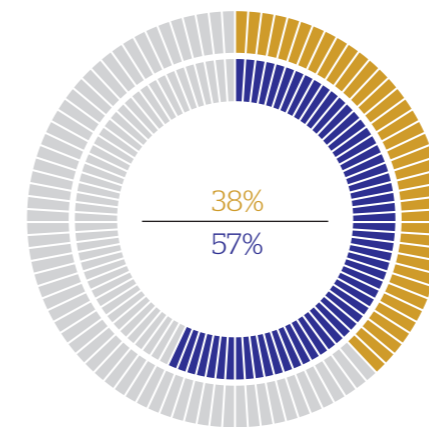


Know to seek treatment from a village malaria worker or health centre



Know to get tested before taking anti-malaria drugs

Knowledge of treatment methods by mobile and migrant workers in Thailand and Cambodia*



Know that most malaria treatment should be taken for three days

■ Baseline %
 ■ After 6 month pilot
 ■ End 2011

* Results from a six month pilot project using the innovative positive deviance approach to behaviour change

Influencing

In Uganda, Malaria Consortium supported the NMCP to finalise the 2011 National Malaria Control Policy and develop Integrated Management of Malaria training manuals which are being used to train health workers throughout Uganda. Support was also provided to the Ministry of Health Maternal and Child Health cluster to develop the indicators and training manual for the community component of mTRAC: a health information system which uses rapid SMS technology on standard mobile phones to capture and transmit critical disease surveillance and commodity data. This includes information on malaria cases and use of ACTs to facilitate planning, procurement and accountability for medicines.

Malaria Consortium took the lead in the development of the curriculum and tools for the implementation of service delivery capacity building in Nigeria, working with the NMCP and other Roll Back Malaria partners. The curriculum and modules are now adopted by the NMCP. The framework for future revision and management of versions is currently being worked out.

Malaria Consortium has been supporting Ministries of Health in both Mozambique and Cambodia to improve the monitoring, evaluation and surveillance of malaria control activities, including treatment, through development and management, which is used for policy development and implementation. In Cambodia we have also worked closely with the Cambodian NMCP to develop key malaria messages for community education, currently being broadcast by BBC Media Action and other partners.

To date, we have trained approximately **13,000 health workers** in ICCM, who have treated more than 1.5 million children in South Sudan, Zambia, Uganda and Mozambique

Opposite: A Malaria Consortium staff member interviews a migrant worker as part of a behaviour change communication survey, Pailin, Cambodia

Above: Patient records and register at a health centre in Wattuba Sub-country, Uganda



What Next

In **Ethiopia, Zambia, Uganda** and **South Sudan** Malaria Consortium will continue to assist health authorities for further training in ICCM. In Zambia, Malaria Consortium aims to complete ICCM training of 270 remaining community health workers in Luapula Province to achieve full coverage of 1,332 community health workers according to national guidelines.

In addition to providing supervision and refresher training for community based health workers, Malaria Consortium will continue to supply rectal artesunate in **Uganda** for treatment of severe malaria for under fives in the community. We will also be conducting operational research on the use of artesunate suppositories for referral and community health referral seeking practices. As transport to health facilities is often a major obstacle for access to health care in remote areas, we will develop a pilot in three districts to facilitate transport of sick children to health facilities following referral by community health workers.

Training community health workers is the first critical step to improving access to health care at community level, but keeping them motivated remains a challenge. After a rigorous process that combined theory with mixed methods research, the inSCALE project identified potential solutions to increase community health worker motivation and performance through two interventions. These include village health clubs, which use participatory methods to increase community awareness and

uptake of community health workers' services, and a system which uses mobile phones for community health workers to submit data more easily, receives performance based feedback and motivational messages, and improves the quality and frequency of support supervision. These innovations will be implemented between September 2012 and November 2013 in **Uganda**. In **Mozambique** the mobile phone innovation will be rolled out fully in February 2013. In both countries, implementation will be fully evaluated and findings will be disseminated via the inSCALE microsite, launched earlier this period.

The roll-out of training has reached an advanced stage in **Nigeria**, and the challenge now is how to maintain and improve the skills of health workers in order to deliver quality services in the management of malaria. We are working with NMCP and other partners, including Health Partners International, to do this through on the job capacity building, and have commenced discussion on how this process can be synchronised with supportive supervision.

Malaria Consortium will continue to work with the NMCP in **Cambodia** in the achievement of its strategic goal of eliminating malaria in the country by 2025. We shall provide support for the revision and dissemination of the National Treatment Guidelines for Malaria in accordance with new artemisinin combination therapy decisions and local needs.

Community health workers attend a training session conducted by Malaria Consortium, Zambia



When it is not malaria

"I heard a radio programme about the village health teams, that there is a village health team member (VHT) in each village and how they were chosen by the community. So I asked around where the nearest VHT was. There is one in this village, so when Rosemary fell sick, I brought her."

Mariam Massa lives in Kihambya village in Hoima District, western Uganda. She takes care of her granddaughter, Rosemary, while her mother works as a housekeeper and cares for her elderly great-grandmother, who lives alone. She described the time when she first came across a change in the way her two-year-old grandchild was treated by the community health worker or VHT as they are known in Uganda.

"I first came to see the VHT, Mary, some time ago, when the child had fever. The VHT tested Rosemary for malaria and the test was positive, so I was given the medicine and I gave all as she explained to me, and the child got better. She was cured completely."

"That was when I learned about the rapid diagnostic test. It was the first time I saw a test on a baby like this because before, we used to go to the health centre where we get the treatment but we do not get the test. I was surprised, because the VHT will treat only if she has found malaria in the body. She does not give out the malaria drugs without the test being positive."

"But one morning, early, I went to see Mary because the child was coughing and had fever, and also difficulty in breathing. I could see that from her chest going inside her belly. Mary also tested the child for malaria but the test was negative."

As well as testing for malaria, the VHT is taught to check their breathing if they also have a cough. This is done with a timer which, when the button is pressed, will tick for exactly one minute then sound an alarm. During that time the VHT counts how many times the child takes a breath. As Rosemary had both a cough and was then found to have fast breathing, Mary knew it was pneumonia and prescribed an antibiotic according to guidelines.

"It was the first time I saw this thing [respiratory timer]. I asked what it was and the VHT explained that it was used to know if the child is breathing fast. She explained to me that not all fevers are malaria and that pneumonia also caused fever."

ICCM-CIDA trained the VHTs and supplied them with diagnostic tools and medicines to treat malaria, pneumonia and diarrhoea in children under five. A total of 6,774 VHTs, including Mary, were trained across nine districts in mid-western Uganda.

Community health workers follow instructions in the use of the respiratory timer to diagnose pneumonia
Photo: Tine Frank/Malaria Consortium



Protecting Progress

While considerable gains have been made in the last decade in malaria and disease control, a number of challenges - including drug resistance, limited funding and weak health systems - threaten to halt or reverse progress made to-date. Much of Malaria Consortium's work is increasingly focused on ensuring that progress is both protected and enhanced.

Achievements/Activities

The lack of accurate information on the prevalence and impact of disease is a major obstacle faced by Ministries of Health in effectively responding to disease outbreaks and protecting progress made by disease control programmes.

In **Southeast Asia**, Malaria Consortium has been working with the **Cambodian** health authorities to overcome that challenge, providing extensive support to strengthen the Malaria Surveillance System, run by the National Malaria Centre (CNM), in the country. Given the extreme constraints faced in funding, lack of human resources in the field, and limited technical capacity at central level to develop and manage systems, disease control in Cambodia requires simple, sustainable and cost effective solutions.

The variety of conditions and transmission areas that exist in the country also means that no single tool can capture the mixture of routine and real time data necessary. We therefore provided technical assistance to develop innovative tools to improve malaria surveillance and provide national and district staff with the information they need to respond to malaria outbreaks as well as responding to individual cases as they move towards elimination.

This new system allows for improved access to relevant information for the CNM's operational activities. The system is also capable of capturing real-time data through SMS alert systems. One of the key outputs of this system is the so-called Malaria Bulletin, which is currently being used for monitoring trends, planning and reporting activities by the CNM.

The most recent malaria survey in **Cambodia** (2010), completed with Malaria Consortium's support in 2011, recorded an overall decline in malaria prevalence in the country. As well as highlighting progress in mosquito net coverage, the survey identified some of the key challenges to further progress in malaria control in the country, including the high proportion of mosquito nets not treated with insecticide, and a high number of health facilities reporting regular drug and rapid diagnostic test stock-outs.

Ensuring that at-risk and vulnerable communities understand the threat of malaria and act in ways that minimise the risk of infection is also essential. Behaviour change communications in the region, targeted at the most at-risk and hard to reach communities, has therefore been crucial.

Malaria Consortium was also part of a team undertaking a major strategic assessment of efforts to contain artemisinin resistance in the **Greater Mekong Subregion**.

Malaria Consortium is also assisting governments in sub-Saharan Africa to confront and control malaria. In **Ethiopia**, we have been supporting the Ministry of Health in the design and development of disease control guidelines. Serving as secretariat for national Malaria Control Support Team and technical advisory committee since 2005, we have provided essential technical expertise for the development of the national strategic plan for malaria prevention, control and elimination (2011-2015), as well as supporting development of the national plan for controlling neglected tropical diseases.

A child is tested for malaria as part of a school based survey, Oromia, Ethiopia



Learning

Malaria Consortium is committed to working with the Ethiopian Ministry of Health to improve and expand the reach of health services to underserved communities. Through an innovative health extension programme, an average of two health extension workers have now been made available to every 1,000 households across the country, and we are providing them with support to plan health related interventions in their respective communities across Ethiopia. This programme, as well as strengthening the progress made in improving access to health care among underserved communities, and we are also helping to improve disease surveillance activities at the community level.

In **Nigeria** Malaria Consortium is working with NMCP through the SuNMaP programme to establish monitoring areas to evaluate the local-level impact of malaria control interventions by measuring trends in various transmission settings. Such studies directly contribute to NMCP monitoring and evaluation of malaria in country and supports the strengthening of their sentinel site structure. We are working with the NMCP to ensure that these centres, used for drug therapeutic efficiency testing, are also able to track other malaria indicators to monitor the impact of malaria control efforts. We have also been building the capacity of health workers involved on this process in all locations.

Using an innovative technique developed by the London School of Hygiene & Tropical Medicine, Malaria Consortium is working in **Ethiopia** to generate a map of malaria risk based on zero prevalence. By confirming the presence of antibodies to malaria in dried blood spots, the technique can be used to show if a person has been infected or exposed to malaria in the previous few years. Using the data collected, we are able to build a statistical model linked with environmental data to predict the transmission intensity across Oromia, the largest and most populous state in the country. This knowledge will be used by regional health authorities to target packages of interventions appropriate for different levels of transmission intensity. It is anticipated that the map will also identify the areas where malaria elimination is possible or close. By conducting these surveys periodically, it will be possible to see whether progress in reducing transmission has been sustained.

With the aim of responding immediately to problems of artemisinin resistance in **Southeast Asia**, Malaria Consortium piloted a number of projects in the region. In one pilot, we assessed the day 3 community and health facility-based surveillance systems for feasibility and cost. Day 3 cases are those where the malaria parasite has not cleared the patient's blood three days after being given artemisinin combination therapy and is viewed as a possible indication of resistance.

Malaria Consortium has been working with inSTEDD, a local software developer, to create a

In Niger state, Nigeria, hospital staff are trained under SuNMaP's capacity building programme to help them treat malaria more effectively

unique SMS system as part of a larger effort to try and track 'day 3' positive cases in the community. Village malaria workers take slides of blood samples at day 0 and day 3; health facility staff then read these and send a simple coded SMS to the open source software. The software links with the Malaria Information System, a database which processes incoming information, as well as to Google Maps. The day 3 positive cases are mapped to identify potential hotspots of resistance. This system has now been expanded for all *Plasmodium falciparum* cases in Cambodia as the country moves towards elimination.

Another study in **Cambodia** provided an assessment of the overall performance of village malaria workers' activities in behaviour change communications activities, diagnosing malaria and providing appropriate treatment where needed. The assessment indicated high performance levels at around 80 percent. Some key challenges were also identified, such as barriers to implementing directly observed therapies, where the patient is treated in the presence of the health worker, and monitoring of stock-outs of essential medicines. The experience of implementation and use of results from the monitoring areas have been adopted in sentinel sites operated by NMCP. The roll-out of the Beyond Garki project (see case study) will also build on this experience and structures.

Influencing

Much of Malaria Consortium's work to influence policy for protecting progress in malaria and disease control over the past decade is based on building access to better information to ensure that policy making is based on evidence.

At an international level, we have been supporting policy development to protect progress in malaria control through the Roll Back Malaria initiative. We serve as the Secretariat to the Case Management Working Group and as joint focal point for Roll Back Malaria's drug resistance work. We have also been involved in the dissemination of WHO's strategy for management of anti-malarial drug resistance and conducted a review of regional surveillance networks for drug efficacy and resistance.

We are also a member of WHO's Malaria Policy Advisory Committee and Drug Resistance Technical Expert Group.

In **Thailand**, we have been working to harmonise behaviour change communications across borders and among all partners working on this issue. As well as convening harmonisation workshops for key partners in the Greater Mekong sub-region, we have provided technical support to partners to ensure that messages conveyed to migrant, mobile or refugee populations are consistent and the methods used are effective nationwide. We also provide technical assistance to help establish effective monitoring and evaluation systems to ensure that the activities are having the required effect.

Village malaria workers receive tools for the day zero SMS based Malaria Alert System in Kampot, Cambodia



What Next

In remote settings, one of the main challenges to identifying and responding to disease outbreaks, including malaria epidemics, is the difficulty in data collection and reporting. In **Ethiopia**, Malaria Consortium piloted an innovative strategy for identifying possible malaria epidemics, working with the community through primary school teachers and students. The teachers were trained to monitor and report school absenteeism and cases of fever amongst pupils. By reporting on these basic indicators, the community is able to identify when the local malaria rates are escalating and can generate alerts for follow-up from the local health authorities. The pilot will be rolled out and evaluated for cost and feasibility in the major transmission season from September to December 2012. If the system is promising, then the Ministry of Health will consider scaling up as part of their commitment to improving malaria surveillance nationwide.

In the Greater Mekong sub-region of **Southeast Asia**, mobile and migrant populations frequently cross borders for seasonal work, posing a particular challenge to health systems and for disease control. In 2012-2013, Malaria Consortium will increasingly focus on identifying innovative solutions to this challenge, assisting in the development of BCC strategies that are appropriate to the needs and lifestyles of migrant populations. As well as facilitating regional strategy workshops to improve cross-

border collaboration between key actors in disease control, we will be working with farm owners and taxi drivers, piloting an innovative approach to disease control and access to health care for migrant populations.

As part of Malaria Consortium Asia's efforts to minimise the impact of drug resistance on disease control in Pailin, a province in western **Cambodia**, we shall be supporting the move to a non-artemisinin based treatment (atovaquone proguanil - Malarone), a first line treatment for malaria which has been recommended for use by the NMCP/WHO due to the high levels of artemisinin resistance in the area. In conjunction with this, we shall also be supporting the scale up of village malaria workers in the entire district. We are also working with partners to find ways to improve follow up patients on this drug treatment regimen in drug resistant area of Cambodia.

Migrant workers on the Thai-Cambodia border present a particular challenge for disease control
Photo: Mimi Mollica/Malaria Consortium



Beyond Garki: monitoring change

Beyond Garki is a flagship project implemented by Malaria Consortium, in collaboration with the Ministries of Health of selected countries with funding from UK Aid to monitor malaria to understand the changes in the parasite, the vector, the human host and the environment. This will be done within the context of available interventions with a view to providing practical recommendations for surveillance, prevention and control measures that are best suited to observed epidemiological changes.

Malaria Consortium's monitoring sites are in Cambodia, Ethiopia, Nigeria and Uganda.

Garki is an area in northern Nigeria where, in the 1960s and 1970s, the WHO and the Nigerian government carried out a study on epidemiology and control of malaria in a Sudan savannah. The Garki Project provided important insights into the epidemiology and control of malaria and the effects of interventions on transmission. The present project was named 'Beyond Garki' to build on this effort.

In the past decade increased funding for malaria control led to significant increases in interventions such as distribution of long-lasting insecticidal nets, indoor residual spraying, the use of artemisinin-based combination therapies and rapid diagnostic techniques, with associated intensified awareness campaigns.

While this has undoubtedly contributed to a significant reduction in malaria, the recent decline in overall child mortality and malaria burden also coincides with changes in socio-economic factors.

This raises various questions. How will the reduction in transmission affect the immunity

of populations in endemic areas? Is the decline a permanent or a temporary phenomenon? What changes are taking place and how should malaria control programmes adapt their strategies accordingly?

Through the Beyond Garki project, all important aspects of changes in malaria epidemiology will be monitored within the framework of interventions implemented in the selected sites to help understand the necessary conditions to reduce malaria transmission towards the long-term goal of elimination of the disease. High quality and detailed monitoring and evaluation data will be available from the representative sites, which will be used to evaluate interventions and develop recommendations that can support policy making at local, national, regional and global levels, ensuring that these reflect the shifting dynamics of the disease and its transmission.

In most sites, household, malariometric and entomological surveys will be carried out twice annually, combined with annual antimalarial drug efficacy studies, continuous morbidity monitoring at health facilities, and meteorological monitoring to study climate changes in relation to disease transmission. The project's website will be operational by early 2013 and will be used to post information and project outputs from time to time. It is hoped that Beyond Garki will help advocate for sustainable international support for interventions against malaria until elimination is achieved.

Staff attending training for a household survey for malaria practice using handheld devices to record and report survey findings, Uganda

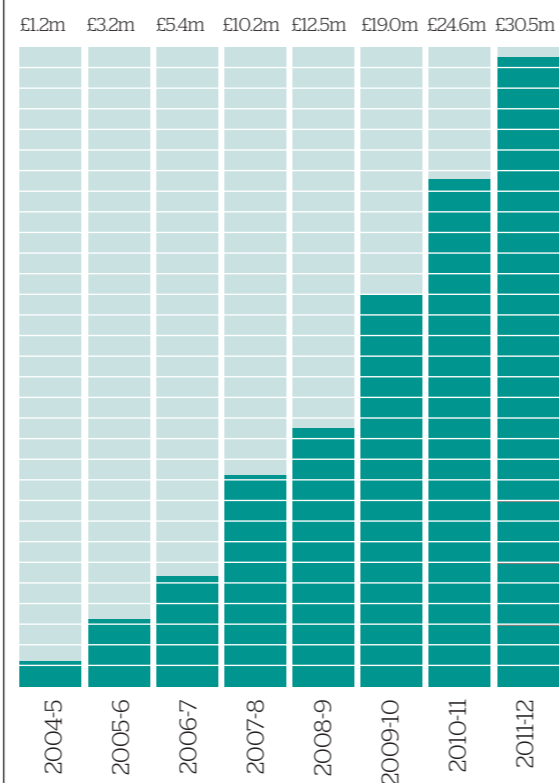
Account Summary

	2012	2011
Statement of Financial Activities for the year ended 31 March 2012		
	£	£
Incoming Resources		
Donations in cash	605,457	140,189
Gifts in Kind	440,518	272,527
Interest received	57,454	61,656
Office Rental Income and Asset Sale proceeds	11,390	21,675
Foreign Exchange Gain	102,278	135,070
Grants, contracts and consultancy income	29,254,581	24,018,810
Total Incoming Resources	30,471,678	24,649,927
Resources Expended		
Cost of generating funds	438,890	321,676
Charitable activities	29,520,415	24,024,721
Governance costs	181,954	172,371
Total Resources Expended	30,141,259	24,518,768
Net Resources Expended	330,419	131,159
Fund balances at start of year	4,742,410	4,611,251
Fund balances at end of year	5,072,829	4,742,410

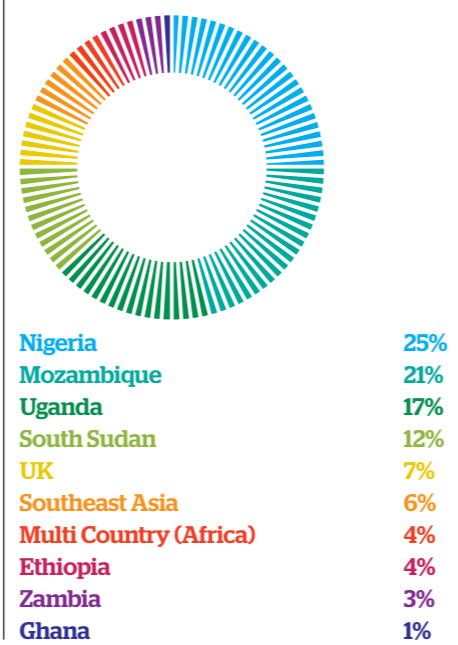
The Statement of Financial Activities includes all recognised gains and losses in the current and preceding year. All operations are continuing.

	2012	2011
Balance Sheet as at 31 March 2012		
	£	£
Fixed Assets		
Tangible Assets	711,683	945,465
Investments	1	1
	711,684	945,466
Current Assets		
Debtors	8,487,108	4,935,512
Bank and cash balances	7,903,974	10,775,414
	16,391,082	15,710,926
Creditors		
Amounts falling due within one year	12,029,937	111,913,982
	12,029,937	11,913,982
Net Assets	5,072,829	4,742,410
Represented by		
Unrestricted funds	4,824,414	3,673,468
Restricted funds	248,415	1,068,942
	5,072,829	4,742,410

Malaria Consortium Income



Malaria Consortium Expenditure



Structure, Governance and Management

Trustees and organisational structure

The Malaria Consortium was established under a Memorandum of Association which established the objects and powers of the charitable company, and is governed under its Articles of Association. The charity is governed by a Board of Trustees, of whom there shall never be less than three, and the maximum number shall be eighteen. The Trustees meet quarterly for the Board of Trustees meeting, and for the Annual General Meeting (AGM), at which the audited accounts for the year are formally approved. At the AGM one third of the Trustees retire, and are eligible for re-election as long as they have not served for a continuous period exceeding six years. After six years Trustees must retire. During the year, the Board of Trustees commissioned a review of the management and governance arrangements which led to a new Board sub-committee structure. The existing Governance and Strategy and Performance Committees were dissolved and new committees appointed. The new Finance, Audit and Risk Committee meets quarterly and its purpose is to provide assurance to the Board of Trustees that effective internal controls and risk management systems are in place and maintained and finances are being effectively managed. The newly formed Governance Committee meets quarterly and reviews and makes recommendations regarding Board effectiveness and provides direction regarding on-going Board development and leads the process of Board renewal. Both committees report and make recommendations to the Board of Trustees.

New trustees are recruited for their skills in areas relevant to the governance, aims or the changing nature of strategy and activities of the Malaria Consortium. The trustees may at any time select a suitable person as a trustee, either to fill a casual vacancy or by way of addition to their number, who should be appointed in consultation with all existing trustees on the Board and preferably with unanimous support for the appointment. Trustees are sought in a variety of ways involving exploration of the field of potential candidates, including by recommendation from those working for or with the Malaria Consortium, or from existing trustees. Potential trustees are scrutinised by the Officers of the Board of Trustees and by the Board as a whole. All new trustees receive an induction to the organisation by the Chief Executive and are invited to attend a Board Meeting prior to election. All potential trustees are given an information pack on Trustee Responsibilities issued by the Charity Commission.

The Board of Trustees makes the major strategic decisions for the organisation. Every year trustees are invited to make field visits to be fully informed about Malaria Consortium's activities thus enabling them to make effective strategic decisions. The Board of Trustees delegates day-to-day operational decision-making to the Chief Executive, who with the Global Management Group (GMG) runs the organisation. The GMG is supported by Senior Management Teams at regional and country level responsible for technical, management and finance, as well as projects and programmes.

Malaria Consortium's head office is in London, United Kingdom. The regional offices for Africa, based in Kampala, Uganda and for Asia, based in Bangkok, Thailand coordinate and supervise programmes and projects at country level in the two regions. Global activities and work in other parts of the world are directed through the head office in the UK. During this reporting period country offices in Africa were operating in Kampala, Uganda, Juba, South Sudan; Addis Ababa, Ethiopia; Maputo, Mozambique; Mansa, Zambia; Abuja, Nigeria. Additional provincial or sub-national offices were operational in Mbale, Hoima and Soroti in Uganda, Bentiu and Aweil in Southern Sudan, Inhambane and Nampula provinces in Mozambique, Hawassa in Ethiopia and in Kano, Lagos, Anambra, Katsina, Niger and Ogun states in Nigeria. The Uganda Malaria Research Centre continues its activities in Kampala. In Asia offices were operational in Bangkok, Thailand and Phnom Penh and Pailin in Cambodia.

During this year Malaria Consortium's partners who have supported our work at the global and regional level include Department for International Development/ United Kingdom Aid (DFID/UKAID), United States Agency for International Development and US President's Malaria Initiative (USAID/PMI), Canadian International Development Agency (CIDA), Bill & Melinda Gates Foundation, Comic Relief, Roll Back Malaria (RBM), Global Malaria Programme of the World Health Organisation (WHO), the Global Fund to Fight AIDS/HIV, Tuberculosis and Malaria (GFATM), Centers of Disease Control and Prevention, USA (CDC), WHO's Tropical Diseases Research, UNICEF and United Nations Development Program (UNDP).

At country level, our partners include National Malaria Control Programmes (NMCP) and Ministries of Health (MOH); local and regional UN offices; regional organisations in West, East, and Southern Africa, bilateral donors; international foundations; civil society organisations; development projects, private sector and most importantly communities suffering from malaria and other communicable diseases.

Close collaborations are maintained with academic institutions in UK including the Nuffield Centre for International Health and Development at Leeds University and the London School of Hygiene and Tropical Medicine, Johns Hopkins University in the USA; Makerere University, Uganda; Kwame Nkrumah University of Science and Technology, Ghana; the University of Nigeria; Eduardo Mondlane University, Mozambique; Mahidol University, Thailand; Shandong University, China; BRAC University; Bangladesh and Pasteur Institute, Cambodia. Malaria Consortium is involved with the Roll Back Malaria Partnership globally and at country level. In the UK, we work with the All Party Parliamentary Group for Malaria and Neglected Tropical Diseases, Malaria No More UK and others. We have a considerable amount of local advocacy partners in endemic areas, working to advocate for change and an end to malaria. In Nigeria we work with Christian Health Association of Nigeria and the Federation of Muslim Women's Association of Nigeria. In Ethiopia, our partners include Coalition against Malaria in Ethiopia and the Carter Centre. In Mozambique, we work in conjunction with NAIMA +.

Malaria Consortium works with the commercial sector internationally especially in assessing public health products, mainly insecticide-treated mosquito nets, and during the year for Syngenta, BASF, Dawa among others and to improve access to and delivery of these products. Our commercial sector partners, including Vestergaard Frandsen and Sumitomo Chemical, provide support towards Malaria Consortium's advocacy efforts and activities. We also received support from the Financial Times.

Malaria Consortium's raises its income, which is predominantly restricted, through successful project applications. The organisation currently receives a very small amount of funding through fundraising efforts of public and private supporters to whom we are very grateful.

Risk Management

The responsibility for overseeing the management of risk has been delegated by the Trustees to the Finance, Audit and Risk Committee (previously the Governance Committee) that reports regularly to the Board. The Risk Assessment and Risk Management processes are regularly reviewed and updated. The major risks, to which the charity is exposed, as identified by the Trustees, are reviewed and processes have been established to manage those risks. The Finance, Audit and Risk Committee have prepared a Risk Assessment Register (RAR) that shows the impact and probability of the major risks; this is updated and reviewed regularly by the Committee and senior management.

Our Board of Trustees are:

The Trustees, who are also Directors under company law, who served during the year and up to the date of this report were as follows:

Chair	Dr Julian Lob-Levyt
Treasurer	Richard Page
	Professor Whitney Addington
	Dr Geoffrey A Butcher
	Dr Edward Brian Doberstyn
	Dr Garth Glentworth
	Dr Penelope Key, OBE
	William Chalmers
	Roger Wilson
	Tim Armstrong, FCA
	Ian Boulton
	Roger Cousins, OBE, FCMi
	Professor Melissa Leach
	Robert Seabrook

Trustees Statement

The figures on these pages are extracted from the full trustee's report and financial statements that have been audited by Kingston Smith LLP, who gave an unqualified opinion. The full accounts were approved on 6 September 2012. Copies of the full accounts have been submitted to the Charity Commission and Register of Companies. This summarised financial information may not contain sufficient information to gain complete understanding of the financial affairs of the charity. The full trustees' report, audit report and financial statements may be obtained from the company's offices.

The auditor has issued unqualified reports on the full annual financial statements and on the consistency of the Trustees' report with those financial statements. Their report on the full annual financial statements contained no statement under sections 498(2), 498(2)(b) or 498(3) of the Companies Act 2006.

Richard Page

Richard Page,
Treasurer

Independent's Auditor's Statement to the Trustees of Malaria Consortium

We have examined the summarised financial statements for the year ended 31 March 2012.

Respective responsibilities of Trustees and Auditors

The trustees are responsible for preparing the summarized financial statements in accordance with the with applicable United Kingdom law. Our responsibility is to report to you our opinion on the consistency of the summarised financial statements with the full financial statements and Trustees' Annual Report and its compliance with the relevant requirements of section 427 of the Companies Act 2006 and the regulations made thereafter.

Basis of opinion

We conducted our work in accordance with Bulletin 2008/03 issued by the Auditing Practices Board. Our report on the company's full annual financial statements describes the basis of our opinion on those financial statements and the Trustees' Report.

Opinion

In our opinion the summarised financial statements are consistent with the full financial statements and the Trustees' Annual Report of Malaria Consortium for the year ended 31 March 2012 and complies with the applicable requirements of section 427 of the Companies Act 2006, and the regulations made thereafter.

Kingston Smith LLP
Chartered Accounts and Registered Auditors
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**malaria
consortium**

disease control, better health

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