Malaria Consortium depends 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.

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-level engagement. We therefore have further developed our understanding 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 can 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 solving problems, provide the substance behind our reputation. Lastly, in 2012 the board and staff focused on improving our governance, 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 all health, and focus on local abilities to control and eliminate diseases. Already, Malaria Consortium is adding its thinking and practical contributions to the equations 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 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 tropical 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 all health, and focus on local abilities to control and eliminate diseases. Already, Malaria Consortium is adding its thinking and practical contributions to the equations 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 organizational 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 organization that continues a unique and grounded approach to improving the health of those in most need.

Sunil Mehra, Executive Director
Prevention
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.

Treatment
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.

Diagnosis
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.

Protecting Progress
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.
"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).

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 antenatal 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 in 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.

Malaria Consortium distributed over 200,000 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 2500 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 antenatal 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 in LLIN distribution at clinics offering antenatal services as part of a national health system.

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

Achievements

Prevention

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Achievements

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We distributed over 2.9 million LLINs across Nigeria, Uganda and Mozambique, through net campaigns and national health systems.
Learning to protect themselves

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

<table>
<thead>
<tr>
<th>Method</th>
<th>Baseline %</th>
<th>After 6 month pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep under a net</td>
<td>36%</td>
<td>96%</td>
</tr>
<tr>
<td>Sleep under an insecticide treated net</td>
<td>34%</td>
<td>98%</td>
</tr>
<tr>
<td>Leaves burning</td>
<td>14%</td>
<td>30%</td>
</tr>
<tr>
<td>Long clothes or stay out of forest</td>
<td>34%</td>
<td>28%</td>
</tr>
<tr>
<td>Boil water/environmental hygiene</td>
<td>36%</td>
<td>28%</td>
</tr>
</tbody>
</table>

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, as part 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 NetCalc© 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, biomarker 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 distributed over 2.9 million LLINs across Nigeria, Uganda and Mozambique through net campaigns and national health systems.

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, which seeks to scale up universal access of community involvement in seven
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 group’s access to malaria control programs and 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.

**Influencing**

Malaria Consortium worked in collaboration with the **Malala Outreach Team** 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 antenatal clinic distribution implementation guidelines for LLINs.

In Southeast Asia, Malaria Consortium remains committed to working closely with the National Malaria Control Programmes (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 a multi-country coordination and organisational 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 secondary messengers. Messages around malaria prevention has been broadcast on eight provincial TV stations.

**Net Use**

Data from recipient households 8 months after mass distribution campaign covering training of local community health workers (ICCM-CIDA) and behaviour change communications activities.

In 2011 Albert Kilian, working for Malaria Consortium on NetWorks, created a user-friendly tool for predicting LLIN needs, building on a previously created simple model written for Uganda. The model’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. Protracted 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, community 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 their LLIN distribution activities for which Ghana received a commendation from the Alliance for Malaria Prevention.
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.

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.

Diagnosis

Achievements

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In South Sudan’s border state of Northern Bar el Ghazal, through support from the Global Fund, USAID (ADRA SHINE) 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.
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%](image1)

![MidTerm%](image2)

### Learning

Routine data collection from Malaria Consortium's Pioneer project in Uganda showed that health facilities with continuous access to parasitological diagnosis have a significantly higher proportion of patients treated with ACTs. This is attributed to the ability of these facilities to provide quality diagnostic services.

### 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's 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 Facilitator’s and users’ manual and orienting 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.

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**Knowledge and Attitude**

<table>
<thead>
<tr>
<th></th>
<th>Baseline %</th>
<th>MidTerm %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of RDTs as tests for malaria</td>
<td>5.8%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Knowledge of RDTs for malaria</td>
<td>32.9%</td>
<td>13.0%</td>
</tr>
<tr>
<td>If baby is sick, would visit a CHW first</td>
<td>49.9%</td>
<td>57.8%</td>
</tr>
</tbody>
</table>

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**Child Morbidity**

<table>
<thead>
<tr>
<th></th>
<th>Baseline %</th>
<th>MidTerm %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of children with fever symptoms in last 2 weeks</td>
<td>38.2%</td>
<td>30.4%</td>
</tr>
<tr>
<td>Percent sought treatment same or next day (within 48hr) for fever</td>
<td>23.1%</td>
<td>32.5%</td>
</tr>
<tr>
<td>Percent of children with malaria parasites present</td>
<td>25.4%</td>
<td>29.2%</td>
</tr>
</tbody>
</table>

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**Perceptions**

<table>
<thead>
<tr>
<th></th>
<th>Baseline %</th>
<th>MidTerm %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of children with symptoms of acute respiratory infection (ARI) to visit ARI for diagnosis</td>
<td>4.6%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Perception of children with diarrhoea symptoms in last 2 weeks</td>
<td>21.2%</td>
<td>29.2%</td>
</tr>
</tbody>
</table>
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.

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.

A lab technician in Niger State, Nigeria, examines blood slides for malaria microscopy. Over 180 laboratory scientists in Nigeria have been trained on malaria microscopy and RDTs.

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, focusing 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’.
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 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.

Treatment

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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.

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.

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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 6,000 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 did not.

A key learning that has come out of Malaria Consortium’s work in Nigeria is the simplification of service delivery capacity building. In 2011, Malaria Consortium supported the NMCP to finalise the 2011 National Malaria Control Policy and develop Integrated Management of Malaria treatment manuals which are being used to train health workers throughout Uganda. Support was also provided to the Ministry of Health, Malaria 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, for planning, procurement and accountability for medicines.

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.

Influencing

In Uganda, Malaria Consortium supported the NMCP to finalise the 2011 National Malaria Control Policy and develop Integrated Management of Malaria treatment manuals which are being used to train health workers throughout Uganda. Support was also provided to the Ministry of Health, Malaria 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, for planning, procurement and accountability for medicines.

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.

Working with those most at risk

<table>
<thead>
<tr>
<th>Knowledge of treatment methods by community members in Thailand and Cambodia*</th>
<th>Knowledge of treatment methods by mobile and migrant workers in Thailand and Cambodia*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Know to seek treatment from a village malaria worker or health centre</strong></td>
<td><strong>Know that most malaria treatment should be taken for three days</strong></td>
</tr>
<tr>
<td>Baseline %</td>
<td>25%</td>
</tr>
<tr>
<td>After 6 month pilot</td>
<td>43%</td>
</tr>
<tr>
<td>End 2011</td>
<td>25%</td>
</tr>
<tr>
<td>*Results from a six month pilot project using the innovative positive-deviance approach to behaviour change</td>
<td></td>
</tr>
</tbody>
</table>

Knowledge of treatment methods by village malaria workers

<table>
<thead>
<tr>
<th>Knowledge of treatment methods by village malaria workers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Know to get tested before taking anti-malaria drugs</strong></td>
</tr>
<tr>
<td>Baseline %</td>
</tr>
<tr>
<td>After 6 month pilot</td>
</tr>
<tr>
<td>End 2011</td>
</tr>
</tbody>
</table>

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

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 artesunate suppositories to Uganda for treatment of severe malaria. 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 the job capacity building, and have commenced discussion on how this process can be synchronized 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 artesunate combination therapy decisions and local needs.

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 bought her.

Mariam Massa lives in Khambba village in Koma 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 get better. She was cured completely.

That was when I learned about the rapid diagnostic test. 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.

As well as testing for malaria, the VHT is taught to check the 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.

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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.
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 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.
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 through the SuNMaP programme to help them treat malaria more effectively.

Learning

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.

In Nigeria, 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.

Influencing

Much of Malaria Consortium’s work to influence policy for protecting progress in malaria 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 (RBM) secretariat. We serve as the Secretariat to the Case Management Working Group and as joint focal point for Roll Back Malaria drug resistance work. We have also been involved in the dissemination of WHO’s strategy for management of artemisinin drug resistance and conducted a review of regional surveillance networks for drug efficacy and resistance.

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.
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 a permanent or a temporary phenomenon.

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, and household monitoring of 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.
Malaria Consortium Income

<table>
<thead>
<tr>
<th>Year</th>
<th>Restricted Funds</th>
<th>Resources Expended</th>
<th>Charitable Activities</th>
<th>Net Resources Expended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>€3,074,838</td>
<td>€29,254,581</td>
<td>€24,649,927</td>
<td>€4,824,414</td>
</tr>
<tr>
<td>2011</td>
<td>€3,180,129</td>
<td>€31,461,457</td>
<td>€27,488,641</td>
<td>€3,972,816</td>
</tr>
</tbody>
</table>

Malaria Consortium Expenditure

<table>
<thead>
<tr>
<th>Region</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>25%</td>
<td>21%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td>Uganda</td>
<td>17%</td>
<td>18%</td>
</tr>
<tr>
<td>South Sudan</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>UK</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Multi Country (Africa)</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Zambia</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Ghana</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Account Summary

Statement of Financial Activities for the year ended 31 March 2012

Resource Expenditure

- Charitable activities: €24,649,927
- Restricted funds: €3,074,838
- Total Resources Expended: €27,724,765

Incoming Resources

- Donations: €605,457
- Gifts in kind: €440,538
- Interest received: €375,645
- Office Rental Income and Asset Sale proceeds: €11,290
- Foreign Exchange Gain: €129,278

Grants and contracts, and consultancy income: €25,245,581

Total Incoming Resources: €30,471,678

Net Resources Expended

- €4,824,414

Funds balances at start of year: €4,762,829

Funds balances at end of year: €4,762,829

The Statement of Financial Activities includes all recognized gains and losses in the current and the preceding year. All operating income continues to be designated as restricted expenditure.

Structure, Governance and Management

Trustees and organisational structure

The Malaria Consortium is a charity established under a Memorandum of Association which established the objects and purposes of the charitable company and is governed under the Companies Acts of the country in which it is established. 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 annual accounts for the year are formally approved. All the members of the Trustees retire and vacancies are filled annually as long as they have not served for a continuous period exceeding six years. After six years Trustees must resign. During the year all Trustees completed a review of the management and governance arrangements which led to a Board sub-committee being set up. The existing Governance and Strategy Advisory Committee was dissolved and a new Governance and Risk Committee was 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 are being effectively managed. The newly formed Governance Committee makes recommendations 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.

The Trustees are recruited from their skills and abilities relevant to the governance, or their interest in 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 agreement with the Trustee members who change to be appointed for an unexpired term of all existing trustees on the Board and preferably with unanimous support for the appointment. Trustees are sought in a variety of ways including networking of the field of potential candidates, including any recommendation from those working for or with the Malaria Consortium or from existing trustees. Potential trustees are identified from the Trustees of the Board of Trustees actively seek the board as a whole. All new trustees receive an induction to the organisation by the Chief Executive and are assisted to attend a Board meeting prior to election. All new trustees are given an orientation pack on Trustees Responsibilities assigned 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 of this nature. Trustees are asked 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) run the organisation. The GMGs supported by Senior Management Teams at regional and country level responsible for technical, management and finance, as well as projects and programmes.

Malaria Consortium head office is in London, United Kingdom. The regional offices are in Tanzania and Kenya, and other activities in Asia based in Bangkok. The Malaria Consortium has a worldwide network of collaborators and supervisory programmes and projects at country and local level. The region in the UK. During the reporting period the country offices in Africa were operating in 14 countries with the Trustees and reports. Additional operations in sub-national offices were operated in Mombasa, Nairobi and in Uganda, Beira and Beira in Southern Mozambique, Mahidol University, Thailand; Shandong University, China; BRAC and the London School of Hygiene and Tropical Medicine; Johns Hopkins University (NMCP) and Ministries of Health (MOH); local and regional UN offices; regional relief, Roll Back Malaria (RBM), Global Malaria Programme of the World Health Organization (WHO), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), Centers of Disease Control and Prevention (CDC), USAID, WHO (Tropical Diseases Research, UNICEF and United Nations Programme (UNDP).

In the country offices, we partner with the National Malaria Control Programmes (NMCP) and Ministries of Health (MOH) to establish and regional UN offices, regional and international NGOs, regional and international NGOs, national and regional Foundations, and private sector to which the charity is exposed, as identified by the Trustees, are reviewed and updated regularly. The major risks, 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.

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Malaria Consortium head office is in London, United Kingdom. The regional offices are in Tanzania and Kenya, and other activities in Asia based in Bangkok. The Malaria Consortium has a worldwide network of collaborators and supervisory programmes and projects at country and local level. The region in the UK. During the reporting period the country offices in Africa were operating in 14 countries with the Trustees and reports. Additional operations in sub-national offices were operated in Mombasa, Nairobi and in Uganda, Beira and Beira in Southern Mozambique, Mahidol University, Thailand; Shandong University, China; BRAC and the London School of Hygiene and Tropical Medicine; Johns Hopkins University (NMCP) and Ministries of Health (MOH); local and regional UN offices; regional relief, Roll Back Malaria (RBM), Global Malaria Programme of the World Health Organization (WHO), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), Centers of Disease Control and Prevention (CDC), USAID, WHO (Tropical Diseases Research, UNICEF and United Nations Programme (UNDP).

In the country offices, we partner with the National Malaria Control Programmes (NMCP) and Ministries of Health (MOH) to establish and regional UN offices, regional and international NGOs, regional and international NGOs, national and regional Foundations, and private sector to which the charity is exposed, as identified by the Trustees, are reviewed and updated regularly. The major risks, 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.
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