
# Partnering for Malaria Prevention

## A Case For Results-Based Contracting

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## Background and Methodology

This paper is the result of efforts initially undertaken while the authors were affiliated with the Brookings Institution Global Health Financing Initiative, with funding from the Bill and Melinda Gates Foundation. The Global Health Financing Initiative was created in November 2006 to analyze current and potential innovative financing proposals and make practical recommendations to augment and improve the effectiveness of global health financing. As part of a broader program of work, which includes analysis of existing and proposed innovative financing mechanisms, we embarked on an analysis of the global malaria challenge. The goal of studying a particular disease was to develop new innovative financing mechanisms designed to improve the performance of programs targeting that disease, which also could potentially be applied more broadly to other diseases or to health systems generally.

We began by reviewing the vast malaria literature and interviewing experts to identify key issues that may hamper program results. Based on this review, we made a series of observations about the global malaria effort, which led to a hypothesis—that a results-based contracting mechanism for malaria prevention[1] could potentially improve the impact of malaria control efforts in some countries.

To further develop and evaluate this hypothesis, we reviewed the literature on performance-based contracting, focusing on best practices from general government contracting, developed world healthcare contracting, recent developing world experience with contracting for primary care, as well as lessons from other industries. We also completed a series of one-on-one discussions designed to gauge the desirability and feasibility of a results-based contracting program. We spoke to various potential malaria-control vendors, including insecticide/net companies, non-governmental organizations, pest-control companies, and companies that provide malaria prevention services for their employee populations. In addition, we talked to individuals familiar with National Malaria Control Programs in Africa, as well as academics and researchers specializing in malaria. The resulting paper represents our views alone, but we hope that many of the people we consulted will provide additional feedback and ultimately support a pilot to test the hypothesis.

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In this paper, we first discuss key aspects of the current malaria challenge, and how donors and national malaria control programs have looked to private entities to help address these challenges. We then propose a results-based contracting approach that builds on current and previous successes in leveraging private sector organizations that could potentially improve the outcomes of future malaria prevention programs. We discuss potential benefits as well as potential barriers and challenges of this approach. Finally, we propose a pilot design that could be used by one or more countries to test the impact of such an approach.

[1] Malaria *prevention* is a good area for testing a contracting model because the interventions are well-established and discrete. For example, reductions in incidence of disease can be linked directly to interventions such as indoor residual spraying, the utilization of bed nets, and environmental control methods such as the draining of swamps. This direct linkage between intervention and reduction in incidence makes it relatively simple to hold implementing organizations accountable.

## The Malaria Challenge in Sub-Saharan Africa

Globally, an estimated 300 - 500 million cases of malaria are reported annually, with over one million deaths resulting from infection.[i],[ii] Seventy-five percent of worldwide malaria deaths are among children under the age of five in Sub-Saharan Africa.[iii] And Malaria has been estimated to cost African nations more than $12 billion every year in lost GDP.[iv] Better control of malaria would enable significant progress in reducing child mortality worldwide, especially in Africa. In addition, better management of malaria would significantly improve the productivity of African workforces by reducing illness, which could contribute to increased economic growth.[v]

Much of the world managed to eradicate malaria regionally in the middle of the 20th century, and the technology used for those eradication campaigns still exists. Long-standing methods include bed nets, indoor residual spraying of insecticides, larvaciding, environmental management techniques such as the drainage of swamps, and integrated vector management, which combines multiple approaches.[vi] These old technologies are slowly being improved upon. In addition, relatively newer technologies, such as insecticide treated bed nets and even more recently-developed long-lasting insecticide-treated nets, introduced in the last several years, have added to the arsenal of proven malaria-management tools.[vii]

Over the past several years, global malaria funding has surged. In contrast to less than $50 million in donor dollars for malaria in 2000, estimated disbursements for malaria from donors have increased dramatically due to the launch of the Global Fund for Aids, Tuberculosis, and Malaria, the US President's Malaria Initiative, the World Bank Malaria Booster Program, and a number of bilateral and private donor programs for malaria:[viii] [ix] The Global Fund to Fight AIDS, Tuberculosis and Malaria has contributed more than $3.6 billion in malaria funding, including $470 million in new commitments last year; the United States President's Malaria Initiative has pledged to disburse $1.2 billion to 15 malaria-endemic countries between 2005 and 2010; and the World Bank's Booster Program for Malaria Control in Africa has committed nearly $500 million since 2005.[x]

Many advocates and experts argue convincingly that even greater funding will be needed to fully address the global malaria challenge.[xi] The Roll Back Malaria Partnership's 2008 publication entitled *The Global Malaria Action Plan for a Malaria-Free World* reports that to achieve the malaria coverage targets identified for 2010, almost four times the funds currently available will need to be generated.[xii] These dramatic recent increases in funding, and the potential for even greater funding in the future, suggests a need to ensure that these new funds are being fully absorbed and delivering results.

Most of the huge increase in global funding for malaria is being channeled to African countries that don't have a long history of government malaria control programs.[xiii] The eradication efforts that peaked in the 1960s focused on North America and Europe and Asia and Latin America, but largely ignored East, West, and Central Africa. As a result, the required skills for malaria management, especially those in the area of prevention and vector control, have historically been limited or not present within Ministries of Health in sub-Saharan Africa (with the exception of some of the higher income countries such as South Africa).[xiv] [xv] Consequently, it has been a challenge to absorb the new funding and scale up effective programs.

Further compounding this lack of historical government experience and capacity, malaria prevention functions are technically and logistically demanding. A program of indoor residual spraying to interrupt transmission

involves initial environmental assessments, detailed logistical planning, procurement of insecticide and spray equipment, training and management of spray teams, entomological and parasitological monitoring, operational data collection and interpretation, information systems management, and communications with households. An integrated vector management program requires significant amounts of up-front environmental assessment to determine the appropriate mix of prevention methods, followed by activities such as identification of appropriate regions for focalized IRS programs, applications of larvacide, drainage of bodies of water, as well as intensive measurement and evaluation to determine what is working. Even bed net distribution programs, which are viewed as simpler to implement, involve procurement of commodities, complex distribution systems, social marketing and/or community education programs, tracking of net utilization, measurement and evaluation, and potentially voucher distribution and redemption activities.

## Current Engagement of the Private Sector in Malaria Prevention

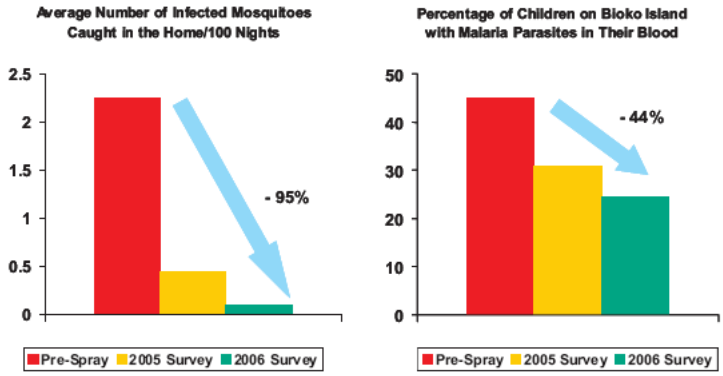
Given the complex nature of malaria programs, many donors and national malaria control programs have realized the value of engaging the private sector.[xvi] For example, the Global Fund to Fight AIDS, Tuberculosis, and Malaria, the largest donor in the fight against malaria, provides funding for malaria programming directly to both public and private entities. The Global Fund's grant portfolio is divided almost equally between the public and private (non-public) sectors, with 51 percent of grants going to governments and 49 percent to the private sector (including non-governmental and community-based organizations, academic institutions, faith-based organizations, and commercial organizations).[xvii]

Aside from the Global Fund, other international donors and governments support malaria prevention programs that engage the private sector in Africa, as well. These span regional bed net distribution programs implemented by local non-governmental organizations, voucher and social marketing programs implemented by international NGOs, indoor residual spraying partnerships with international NGOs, corporate partnerships to expand bed net markets, and broad technical assistance provided by international organizations. Further, a number of the programs with demonstrated effectiveness in Africa have been implemented by private sector employers that were driven by business needs to address malaria among their employees and larger communities. (Refer to Appendix I for a representative list of existing partnerships between the public and private sector for malaria control.) A number of the existing partnerships are already showing positive results and others show promise of future results. Many are quite innovative programmatically and provide much hope for the future of malaria control in Africa.

One example of innovative engagement of the private sector in malaria control efforts is seen in Tanzania. Over the years, the Tanzanian government has introduced numerous programs that engage the private sector to curb the malaria epidemic. The National Malaria Control Program strives to strengthen both the demand- and supply-side bed net market through a nationwide social marketing program supporting commercial sector expansion for nets and a national voucher scheme that provides a substantial discount on bed nets to pregnant women and mothers of children under five. The Tanzanian government and its donor supporters rely on private suppliers to produce and sell bed nets. The government contracts with several NGOs (including MEDA) for social marketing and administering the voucher program. Tanzania also engages the Swiss Tropical Institute and several other international organizations in the planning, execution, and monitoring of its national malaria prevention programming.

Interestingly, some of the most successful malaria control programs have been implemented by private sector employers that were driven by business needs to address malaria among their employees and larger communities. Marathon Oil Corporation is one such employer that utilized partnerships with the public and private sector to contain malaria in its employee population. In 2003, Marathon Oil partnered with other private companies (Noble Energy, GEPetrol, and SONAGAS), international NGOs and academic institutions (Medical Care Development International, One World Development Group, the Medical Research Council of South Africa, and the Harvard School of Public Health), and the Government of Equatorial Guinea to embark on the Bioko Island Malaria Control Project (BIMCP). [xviii] BIMCP is a five-year, $12.8 million[2] transmission reduction project aimed at interrupting and then drastically reducing the transmission of malaria on Bioko Island. BIMCP also seeks to build capacity to contain future outbreaks. The first indoor residual spraying intervention resulted in an 80 percent reduction in the number of infected mosquitoes.[xix] After an additional two rounds of spraying, survey results from 2006 indicate virtual elimination of the two primary disease-carrying mosquitoes. [xx] The figure below depicts the results of a 2006 survey to assess the success of spraying in Bioko Island:

**Figure I: BIMCP Indoor Residual Spraying 2006 Survey Results, Bioko Island**




BIMCP is perceived as a model of hands-on corporate involvement, in collaboration with government, non-profits, and academic organizations, to reduce the burden of malaria in countries in Africa. Other private companies, such as Konkola Copper Mines plc and Anglo Gold Ashanti have built similar programs to aggressively target malaria prevention in their employee communities.

## The Results-Based Contracting Approach

As national malaria control programs continue to scale up as a result of renewed global focus and additional funding, some are recognizing that the existing implementation capacity in governments is inadequate, and it does not always make sense to attempt to build new skills within Ministries of Health. Instead, they are realizing that it may be appropriate to purchase services from organizations that already have existing skills, which would allow for faster scale-up, greater strategic flexibility over time, and greater likelihood of success. The balance of this paper presents a model for results-based contracting of malaria prevention programs that could be adopted by national malaria control programs who want to scale-up operations and improve outcomes.

[2] The Global Fund recently agreed to provide a multi-year commitment totaling $26 million which will allow this malaria control project to be expanded to the mainland of Equatorial Guinea.

***Results-based contracting in other contexts***

For years governments in both the developed and developing world have been using public funds to contract and partner with non-state entities, such as NGOs, universities, individual practitioners, and for-profit organizations to improve service delivery.[xxi] Government contracting with the private sector has been seen in a number of public sectors services, including energy, education, water and sanitation, and transportation. In recent years, the partnerships with the private sector for health services have gained more favor among donor agencies and national Ministries of Health due to the many attractive features of these relationships that enable governments to strategically supplement their existing capabilities. Specifically, partnering with and contracting out to the private sector permits governments to[xxii]: (i) focus on achieving measurable results; (ii) overcome government technical skill deficits; (iii) promote competition and innovation; (iv) increase flexibility; and (v) build private sector market for services, ensuring a market of service-specific skill and supply.

More recently, there has been increased developed world government and industry focus on various methods of contracting that focus on results, including productivity-based contracting, performance-based contracting, performance-based acquisitions, and outcome-based contracting. Most results-based contracts rely on a core set of key elements. The desired end-result of the contract is well-defined, using specific, tangible performance metrics. Typically, the contracting entity leaves the activities required to achieve the results relatively unspecified, and seeks proposals from various potential contractors through a competitive process. Proposals are evaluated based on the viability of their proposed approach and the evidence that it will achieve the desired results. Once a contract is awarded, results are rigorously monitored through a credible independent monitoring system. Contractors are then paid based on their performance against desired results. Table I, below, outlines the key attributes of a results-based contract.

TABLE I: KEY ATTRIBUTES OF A RESULTS-BASED CONTRACT

| ATTRIBUTE | ATTRIBUTE DESCRIPTION |
|---|---|
| **1. Specific indicators defined to allow tracking of tangible results** | Define clear performance expectations and measures; measures should be both intermediate outcomes and end outcomes. |
| **2. Clearly defined and mapped expectations** | Establish firm due dates and deadlines, with intermediate performance reviews to document progress against intermediate and outcome indicators |
| **3. Contractor given control over approach** | Grant contractor flexibility in implementation in exchange for accountability for results by soliciting bids on the basis of achieving specific results rather than on conducting specific activities. |
| **4. Contract open to competitive bidding** | Engage private sector and allow competitive bidding for contracts. |
| **5. Independent monitoring and evaluation system** | Implement an independent, robust, credible, and sustainable monitoring and evaluation system to ensure that contractor performance is being continually monitored against intermediate and outcome indicators. |
| **6. Payment mechanisms based on outcomes** | Make payments based on the achievement of agreed upon outcomes with bonuses and penalties for over or under achievement. |

In the developing world, Cambodia is a well-documented example of the success of results-based contracting for health services. In 1999, Cambodia contracted out management of government health services to the private sector (NGOs) in five districts that had been randomly made eligible for contracting.[xxiii] The contracts specified

targets for maternal and child health service improvement instead of specific processes. Outcomes were monitored in contracted districts as well as non-contracted districts, and outcomes improved in the contracted districts in comparison to non-contracted districts. [xxiv] Cambodia's results-based contracting experiment led to increased availability of 24-hour service, reduced provider absence, and increased supervisory visits. In addition, there is evidence that health outcomes improved. [xxv] Several other nations, including Afghanistan and Haiti, have implemented results-based contracting for primary health care based on the evidenced success of Cambodia's experience with contracting.

***How Results-Based Contracting Could Be Applied to Malaria Prevention***

A variation on the kind of results-based contracting that has already been utilized extensively in other sectors could be applied to malaria prevention. Rather than deciding on a specific set of programs for malaria prevention (*e.g.,* bed net campaigns, indoor residual spraying) and then building in-house government capacity to deliver those programs, national malaria control programs could specify the desired result--say a 50% reduction in malaria incidence over 5 years. The national malaria control program could then issue a request for proposal from private organizations with malaria control expertise (e.g., pest control companies, social marketers, local and international NGOs) for comprehensive proposals to achieve the results. This would leverage the expertise of many existing organizations, and encourage them to prepare unique proposals that take into account local malaria transmission patterns, social norms, and economics. The proposals might vary widely in terms of proposed activities. The national malaria control program could pick the proposal that provides the most evidence of success, or even potentially allow for different contractors with different sets of proposed activities to take on different regions within the country and then track results to see which approach works the best. Then performance would be measured based on pre-determined outcomes, and the contractor would be paid based on performance.

## Potential Benefits of Results-based Contracting for Malaria

Where evaluated, the outcomes of contracting for health services in the developing world are positive. In a 2004 review of studies undertaken in the developing world, Benjamin Loevinsohn and April Harding analyzed six studies that compared contractor performance with government provision of the same services.[xxvi] All six of these evaluations found that contractors were consistently more effective than governments based on a variety of parameters related to both the quality of care and the coverage of services.[xxvii] Similarly, results-based contracting for malaria prevention could potentially improve the impact of malaria control programs by addressing the government skill deficit, creating robust incentives to focus on reductions in malaria incidence, promoting innovation in malaria prevention techniques, as well as allowing flexibility to tailor malaria prevention programs over time.

***Results-based contracts address government skill deficit and allow for scale-up.*** As discussed at the beginning of this paper, a number of malaria prevention functions, such as indoor residual spraying, integrated vector management, and even effective bed-net distribution programs are extremely demanding both technically and logistically. Implementation of these programs requires a set of skills not typically present in governments in the developed world, let alone in developing countries. Meanwhile, government vector control groups tend to be small and buried within Ministries of Health. These groups may have some relevant expertise, but according to many of the experts we interviewed, rarely have the full complement of skills necessary to implement malaria

prevention programs. This is further complicated by the fact that Ministries of Health are typically led by physicians or other clinically-oriented people, who have little technical understanding of vector control.

As national malaria control programs continue to scale up as a result of renewed global focus and additional funding, it may not make sense to attempt to build new skills within Ministries of Health, but rather to purchase services from organizations that already have the requisite skills, which would allow for faster scale-up as well as greater likelihood of success.

There are several types of private organizations that already have some or all of the necessary skill sets as well as a track record of success in implementing malarial control programs. Private sector entities engaged in malaria control include local and international NGOs, religious/faith-based organizations, academic institutions, and some commercial companies—including chemical insecticide and net companies and large natural resource companies who undertake malaria control for their employee populations. Each of these organizations brings a unique set of skills to malaria prevention programming, as highlighted in Appendix II.

***Results-based contracting creates robust incentives to focus on results.*** One of the most salient arguments in favor of contracting for malaria prevention efforts is the ability to create more robust incentives for delivering results. One criticism of many current malaria prevention programs is that if there is any measurement at all (which is not a given), it is frequently focused on counting outputs such as number of nets distributed or number of houses sprayed, rather than measuring outcomes such as reductions in malaria incidence. Appropriately structured performance incentives can focus contractors on the ultimate goal of delivering results through the use of performance bonuses, withholds, and risk-corridors. Many private organizations are already structured such that they can cascade these types of incentives down to managers and employees. For example, Population Services International, an international NGO that implements social marketing programs for malaria prevention programming in a number of countries, rewards individual employees based on calculations of DALYs (disability adjusted life years) gained. [xxviii] In addition, many business enterprises are skilled at setting performance targets and tying employee payments to achievement of those targets.

***Results-based contracts promote innovation.*** There is widespread agreement that more operational research is needed to determine exactly how best to implement various malaria prevention techniques and how best to tailor them to specific locales. [xxix] Economics literature is rife with theory and examples of how competition promotes innovation. Results-based contracting, which defines expectations without specifying any particular approach, seeks competitive proposals from various private sector entities, and ultimately pays based on performance. This creates incentives for organizations to do the type of operational research that ultimately improves efficiency and effectiveness. If a number of countries were to move toward this approach, the market for effective Africa-based and international malaria-management enterprises would grow. These organizations would develop the necessary mix of scientific expertise and management skills to implement effective programs that are uniquely tailored to the needs of a particular region. In addition, some malaria control organizations might scale up to serve multiple locations, thus spreading proven practices from one region to other similar regions. This could add to the global arsenal of approaches to combat malaria.

However, when it comes to developing country contracts and grants in malaria prevention, competitive bidding is more the exception than the rule. Grants are often awarded to incumbents, and sometimes only specified

providers are considered.[xxx] In fact, the very notion of a "partnership" can sometimes lead certain incumbents to become entrenched in grants or contracts, excluding outside ideas and innovation. A number of the organizations we interviewed, such as international pest control companies, have the capabilities required to do malaria prevention, but they have not been asked to participate in partnerships. In addition, some private organizations, especially international NGOs, are operating successful programs in certain countries, and would have the capacity to expand to other countries or regions, but they have not been invited. Because of the lack of open bidding processes, partnerships may not always be made with the organization with the greatest competitive advantage.

This absence of competitive bidding and lack of focus on outcomes may limit the opportunities and incentives to develop the most innovative and efficient models of service delivery. It is clear that despite the existing technologies for preventing malaria, there is a need for more knowledge about which approaches work in which circumstances. Over the past century, the world has seen many malaria management successes using existing technologies. But the current region of focus, Sub-Saharan Africa, is unique in terms of malaria transmission patterns, as well as other social and economic factors that affect the success of any intervention.[xxxi] It is clear that there is not likely to be any one approach or any one intervention that will work everywhere. In fact, there is evidence that many effective malaria management programs combine several malaria prevention techniques[xxxii], and that they may rely on a mix of market and non-market based mechanisms for distribution.[xxxiii] For example, Mead Over's evaluation of a comprehensive malaria control program on the Solomon Islands, a chain of islands north of Australia, found that malaria incidence decreased by 67% from 1992 to 1999 in response to a program that combined a number of malaria tactics.[xxxiv] The study found that indoor residual spraying, bed nets, and education were all independently related to reduce incidence of fever/malaria, suggesting that there are additional effects from using multiple methods.[xxxv] Findings from the Solomon Islands and other similar studies uncover a need for more ongoing, operational research to determine which techniques work best under which circumstances and how techniques can be combined for optimal results.

Moreover, despite the many existing technologies for malaria control, there does not appear to be policy consensus at the global level about how best to implement those technologies. This is especially true for Sub-Saharan Africa, which is for the first time attempting a large-scale effort to control malaria. The debates include disagreements about which techniques (*e.g.,* insecticide treated bed nets vs. indoor residual spraying vs. integrated vector management) should be utilized for prevention, and whether efforts to deliver malaria-control should be market-based (*e.g.,* voucher programs for bed nets) or focused on free distribution through campaigns, and even what the primary goal of malaria prevention should be (*i.e.*, reductions in mortality among children vs. reductions in incidence across entire populations).

Given the number of potential technologies that can be used to prevent malaria, the various potential approaches for implementing those technologies, and the unique demographic and disease-transmission characteristics of different regions, malaria control programs could potentially achieve greater results by seeking creative and innovative competitive proposals and then rewarding the innovators based on their outcomes.

***Results-based contracting vehicles provide flexibility over time*.** Another argument for contracting-out malaria prevention activities is that ever-changing malaria disease patterns require different staffing levels and new skill sets over time. [xxxvi] It is clear that national malaria control programs must be nimble and dynamic operations,

constantly evaluating the effects of their policies and altering programming to ensure sustainability. For example, if a national malaria control program is successful at reducing malaria prevalence through a combined program of indoor residual spraying and bed net distribution, it must then begin to switch its focus to increased surveillance to prevent epidemics and resurgence, and it must focus on efforts to educate its increasingly non-immune residents about how to protect themselves when traveling to regions with higher prevalence of malaria. In addition, intermittent "catch-up" bed net distribution campaigns may need to be followed up by "keep-up" programs focused on education and development of markets for nets. Moreover, some workers (e.g., indoor sprayers) are seasonal or one-time in nature. When activities are likely to change over the years or from season to season, it may not make sense to build permanent capabilities within Ministries of Health. It can be quite difficult for governments to make necessary shifts in operational focus when services are provided by long-term employees with fixed skill sets and an understandable interest in maintaining their employment. Therefore, Ministry of Health leaders can promote flexibility by utilizing contractors to implement services that are likely to change over time, while allowing internal staff to focus on ongoing activities such as setting strategic direction, procurement, managing contractors, and evaluating performance.

## Potential Barriers and Challenges to Results-Based Contracting

In our discussions with malaria experts, program managers, and potential contractors, we heard a great deal of enthusiasm about the potential of results-based contracting as a viable model for malaria control in some countries. However, we also explored the potential barriers and challenges to implementing such a model, as well as how those barriers might be overcome. Key challenges include: design of appropriate and feasible results indicators, design of workable results-based payment methodologies, development of transparent and effective measurement and evaluation mechanisms, geographic scope of contract, and likely resistance to contracting by government officials. In addition, some experts expressed skepticism about the number of private sector organizations that would actually bid on such contracts.

### *Designing Appropriate Results Metrics*

Throughout the course of our interviews, many people who find merits in the results-based contracting approach have pointed to the importance, but also difficulty, of designing strong and workable metrics to measure and reward results.

Malaria control programs have often used input metrics rather than output or outcome metrics to measure program success. Inputs metrics are those that measure the resources that are expended in conducting defined malaria control programming (e.g., number of houses sprayed). Input metrics are not ideal measures for tracking the success of malaria programs as there is no guarantee that inputs are utilized effectively or efficiently. For example, providing a family with bed nets does not guarantee that the family uses those bed nets. Similarly, spraying 100 homes with insecticide does not guarantee that they were sprayed sufficiently well or with the appropriate concentration of insecticide.

Outputs metrics measure the immediate result of an activity (e.g., mosquito density at spray sites). Outcome metrics measure the health outcomes that are directly attributable to defined malaria control activities. [xxxvii] [xxxviii] Ideally, tracking the success of a malaria control programs would be based on outcome metrics that measure the bottom line impact of a program on health. These metrics, however, are not always accurate. Malaria incidence and mortality data is difficult to collect since malaria is frequently self-diagnosed based on symptoms

of fever and then treated by purchasing drugs through the informal sector. Often times, there is no formal documentation of the illness, let alone a laboratory confirmation that it was, in fact, caused by the malaria parasite. Moreover, contractors may insist on output metrics if they feel they do not have enough control over all relevant variables to be fairly measured on true outcomes.

Given the nature of outcome metrics, tracking the success of a malaria control program should be based on *both* output and outcome metrics. Ideally, in order to make a contract truly results-based, output metrics would be combined with at least one health metric to measure contract performance.

The table below outlines the attributes of output and outcome metrics:

**TABLE I: POTENTIAL METRICS FOR RESULTS-BASED CONTRACTS IN VECTOR CONTROL**

| | **Output Metrics** | | **Outcome Metrics** | |
|---|---|---|---|---|
| **Description** | Output metrics measure the immediate products and results of contractor's various activities. | | Outcome metrics measure the health outcomes that are directly attributable to the contractor's activities. | |
| **Illustrative metrics** | Malaria mosquito population densities at target sites | % of target population homes with residual insecticide effects | Malaria incidence in target population | Malaria mortality in target population |
| **Monitoring Methodology** | ✓ Test mosquitoes at sentinel sites over time to track malaria-carrying mosquito population densities | ✓ Randomly select homes at sentinel sites to test for residual insecticide effects at frequent intervals after spraying | ✓ Fevers reported through National Malaria Indicator Survey<br>✓ Track incidence at sentinel sites via random sample blood testing for parasitemia | ✓ Disease-specific mortality tracking in target populations |
| **Benefits** | ↑ Impact on output metrics is directly attributable to specific malaria control activities and less contestable than measuring activity success via health metrics | | ↑ Linking contractor activities to health outcomes (and thus assigning accountability for those outcomes) makes contracting truly results-based and allows NMCPs to contract for bottom-line health results | |
| **Drawbacks** | ↓ Measuring simply output metrics does not monitor contracting effect on health outcomes, leaving uncertainty around the bottom-line health benefit of the contract | | ↓ Difficult to collect accurate incidence and mortality data due to weak disease-specific reporting structures<br>↓ Contractors may feel that they do not have enough control over all relevant variables to be held accountable for health outcomes | |

Output and outcome metrics may be used to measure contractor performance both intermediately and in long-term. Intermediate results are measured by output metrics (e.g., number of homes with residual insecticide effects) and long-term results are measured by outcome metrics (e.g., reduction in total disease-specific mortality or reduced infection rate). Output metrics are a necessary tool for tracking progress towards the long-term goals of a contract and ideally serve as leading indicators of success (or failure) of a contracted program.

The leading nature of output metrics and the ability of outcome metrics to measure impact on health outcomes allows Ministries of Health to construct pay-for-performance methodologies around the achievement of improved health outcomes. In addition, using output and outcome metrics allows both Ministries of Health and their contractors to identify gaps in execution, to revise expectations as needed, and to adjust strategy to reflect progress.

***Creating a Workable Results-based Payment Methodology***

Contract payment can be structured in many ways. While most input-based contracts utilize a flat-fee payment methodology, with results-based contracting it is essential to look beyond these simplistic payment methods to create a payment and incentive mechanism that rewards results and penalizes shortfalls in the delivery of results.

Paying on performance means that fund disbursement is conditional on achieving a predetermined measurable outputs or outcomes. There are many potential results-based payment mechanisms. The simplest form directly relates the contractor's compensation to specifically defined metrics. If the results are not achieved, the contractor does not get paid. In this model, the contractor assumes all of the financial risk for the success or failure of the project.

Variations to this pure results-based method of payment method can add layers of complexity to the model, depending upon how much risk the contracting agency wants to assume and how much is transferred to the contractor. Partial achievement of the expected results could lead to partial payment for the contractor. Other variations may use algorithms that penalize the contractor for poor performance, in addition to rewarding the contractor for successful performance. [xxxix] For example, the contracting agency may withhold 20% of the contract price and offer a 20% bonus upon the achievement of performance results. The agency may offer an additional bonus if the contractor achieves results beyond those specified in the contract. For example, the Haitian government uses a results-based payment mechanism for its primary care contracts. NGO contractors receive 90% of the contract fee upfront. They receive the final 10% only if they achieve the specified results within a set timeframe, and can receive an additional 5% payment if they significantly exceed targets.[xl]

***Building Transparency through Independent Monitoring and Evaluation System***

A key to successful results-based contracting is the development of a robust monitoring and evaluation methodology and implementation mechanism. This is a complex process that requires contracting agencies to consider many factors, including performance standards, baseline surveying, measurement techniques, evaluation mechanisms, reporting methodology and frequency, and an overall performance management approach. .

Some experts we spoke to were skeptical that a transparent results-based contracting mechanism that involves payment for performance can be developed in countries that grapple with corruption and transparency issues.

Contracting agencies may want to consider hiring an independent, external organization for assistance in establishing monitoring and evaluation systems. Some third party evaluators may have more developed data collection and evaluation skills than is typical in government (*e.g.*, universities, survey researchers, entomologists), they may be viewed as more independent, and they may be able to offer strategic and/or scientific advice to the government, in addition to tracking performance metrics. The contracting agency could leverage an external organization's expertise and assistance to build its own internal capacity to monitor and evaluate future contracts. Or the contracting agency may wish to permanently contract out the monitoring and evaluation portions of contract management to an external group.

***Determining Appropriate Geographic Scope and Number of Contractors***

In defining the geographic scope of the contract, a national malaria control program would need to think about whether it wants one contractor to cover an entire country or if it wants to divide the country into several regions with different contractors in each region. A regional approach may be advisable for several reasons: (i) if there are significant geographic differences across the country in terms of malaria transmission patterns, urban vs. rural populations, etc.; (ii) if a national malaria control program would like to try several different approaches to malaria prevention and compare results; (iii) if the national malaria control program does not want to become too reliant on one particular contractor, and wants to create an element of competition among the various contractors; and (iv) if it is a very large country or the country has a very decentralized Ministry of Health, making it more difficult for one contractor to cover an entire country.

Alternatively, in some cases it may make sense to work across national borders to develop regional malaria prevention strategies with one results-based contract for an entire region. For example, Mozambique, South Africa, and Swaziland have decided to pursue a regional malaria-control strategy with the Lubombo Spatial Development Project. In addition, the four countries of the Senegal River Basin are working on a regional malaria strategy. In these cases, it may make sense for collaborating countries to work jointly with the same external malaria control organizations. Developing regional contracts will be more complex than national or sub-national contracts and may need to be facilitated by donor organizations or existing regional bodies (e.g., the Senegal River Basin Authority facilitates the implementation of the Senegal River Basin malaria programming).

***Addressing General Resistance to Contracting Among Ministries of Health***

Most stakeholders agree that Ministries of Health, rather than donors, should have primary responsibility for any contractual relationships with malaria control organizations because it is important for ministries to take programmatic ownership to ensure long-term success. However, during the course of our interviews, we heard repeatedly that the biggest barrier to implementation of a results-based contracting approach will be resistance from within Ministries of Health. Even if the minister is a proponent, lower-level employees could become a barrier. This reluctance to engage in contracting-out appears to have two major root causes: first, a desire to maintain control of service-provision; and second, resentment among civil servants that new funding (which could be used to boost civil service salaries) may be used to pay high-priced international consultants and/or private sector employees.

Ministry of Health resistance is a real concern for this model and other models that rely on contracting out of key services to private entities. Clearly, in order to test this model, it would be necessary to identify at least one

Ministry of Health with interested champions. More openness could emerge if contracting out models experience documented success and if these successes were widely communicated. But success stories are unlikely to fully counter strong resistance. It may also be beneficial to explore various performance-based donor aid models, where donors could create incentives for results through contracts with governments. For example, to ensure alignment of incentives between national malaria control program officials and contractors, relevant government officials, as part of a program of results-based salary support, could be offered performance bonuses if contractors meet targets. Under this model, measurement and evaluation would need to be performed by a third party to avoid any appearance of impropriety between contractors and government officials.

***Lowering Barriers for Donor Funds to Participate in Results-based Contracting***

Financing for national malaria control programs is often structured based on the policies imposed by numerous donor organizations, and donor characteristics and policies can either facilitate or potentially create barriers to successful results-based contracting programs. By developing policies supportive of contracting, donors can support governments as they move into a stewardship role.

Our analysis suggests that donors can facilitate results-based contracting in four major ways: (i) Allowing Ministries of Health to retain oversight of contracts; (ii) channeling long-term predictable financing; (iii) employing flexible funding methods; (iv) supporting private sector involvement in national malaria prevention strategies. (Appendix III details the donor requirements outlined above and lists the key questions that donors must consider when organizing aid mechanisms for results-based contracting.)

*Government Support and Alignment:* Donors can (except potentially in the case of fragile states) allow Ministries of Health to maintain control over contracts by providing funding to governments rather than directly to contractors. This would encourage Ministries of Health to take ownership of national malaria control programs and facilitate greater alignment with any government-provided malaria services, such as treatment and case management. In addition, donors can allow programmatic flexibility, such that Ministries of Health can set out priorities and assess bids against these priorities and other needs. Restrictive donor programs – those that require the use of funds for certain interventions – may prevent governments from setting strategies and seeking services that align with their national priorities. They may also preclude innovation.

*Long-term Predictable Funding Aligned with Contracting Time Tables:* The availability of long-term predictable donor financing is critical for governments to fulfill contractual agreements. Donor programs must remain in place at least for the duration of a contract. Ideally, donor money should be available into the foreseeable future, so that contracting programs can have longevity, even if the strategy or the contractor changes over time. In addition, donors can work with Ministries of Health to design funding phases that are consistent with ideal contractual periods. Sometimes longer contractual periods are advisable given the extent of contractor and Ministry of Health start-up costs or the time expected to see results. In several of the malaria contracting cases we examined, contractual periods were perhaps shorter than optimal, due to donor funding cycles (*e.g.*, Tanzania bed net program). This led to the need to engage in costly new procurement processes.

*Flexible Funding Streams:* Donors can provide funding that is flexible enough to allow pay-for-performance, such as performance bonuses, withholds, and risk corridors. In some cases, this means that some funding must be

reserved for performance payments. Donors can go even further to support results-based contracting by making their own results-based contracts with governments. The performance metrics in these donor-to-government contracts can then be cascaded down to contracts between governments and private delivery organizations. Donor-to-government performance contracts can also be used to create results-based bonuses for ministry of health leadership and staff.

*Motivation to Engage Private Sector and Support Implementation:* Perhaps most importantly, donors can be enthusiastic about or at least open to the prospect of private sector (including corporates) provision of certain components of malaria prevention, rather than viewing private organizations as temporary stand-ins while governments build internal capacity. In addition, for results-based contracting to be successful, donors must be open to competitive bidding processes with contracts awarded to the most qualified bidders, whether they are local or international, nonprofit or for profit, incumbents or new entrants. In some circumstances, donors could act as advocates for this kind of model, when facing reluctant Ministry of Health staff. Donors could also provide support to strengthen Ministry of Health capacity to procure and manage contractors, and institute robust monitoring and evaluation mechanisms.

## A Proposed Pilot of Results-based Contracting for Malaria Control

The initial analysis suggests that a results-based contracting approach could potentially promote malaria prevention strategies in Africa to improve outcomes and generate innovation. However, the only way to know if this model is indeed effective would be to construct an experimental pilot and then evaluate the results. We propose that such an experiment be launched in at least one pilot country, which could develop a broad request for proposals for malaria control in several defined regions, with other regions in the country serving as controls.

Ideally, in response to the release of a global request for proposal, there would be various bidders and proposals. For example, perhaps an international pest control company would decide to launch an integrated vector management venture in Africa. Several NGOs might decide to expand their net distribution and/or indoor residual spraying operations in response to the request for proposal. An insecticide or net manufacturer could make a decision to “forward-integrate” its operations into distribution of nets or insecticides. Several locally based African pest-control companies might emerge as prime bidders or subcontractors. A mining company with operations in Africa and experience in managing malaria control programs for its employee population could decide to “spin off” its malaria management division, creating a new start-up, mission-driven company focused on selling its malaria management services to national malaria control programs. Venture philanthropy and/or commercial venture capitalists might step forward to provide funding to these ventures. We hope to identify one or more African countries with an interest in testing this model, and a donor(s) with an interest in supporting and evaluating the program. The package of support could include flexible funding provided directly to the Ministry of Health to pay contractors according to their performance, funding for Ministry of Health capacity-building in the skills necessary to be successful with contracting (*e.g.,* strategic planning, procurement, contract-management, measurement and evaluation), and a donor-to-government funding mechanism that provides results-based salary support via performance incentives to Ministry of Health leadership and staff if the contractors they procure and manage successfully achieve reductions in malaria incidence and/or mortality.

If results-based contracting proves successful in a number of countries, we would hope to see a vibrant new sector of malaria management enterprises with scaled-up capacity to delivery malaria-prevention services in Africa. These organizations would compete with each other to develop the best methodologies for prevention of malaria by conducting their own ongoing operations research to determine whether their methods are in fact having an effect. Meanwhile, Ministries of Health would have embraced the role of setting strategy, managing contractors, measuring their performance, and paying them based on their performance. Most importantly, annual reporting mechanisms would show significant progress in the reduction of malaria incidence and mortality in the contracting countries.

# APPENDIX I: Existing Public/Private Partnerships for Malaria Control in Africa

**TABLE I: EXAMPLES OF EXISTING PARTNERSHIPS FOR MALARIA CONTROL IN AFRICA**

| Project | Location | Partners | Malaria Control Strategy |
|---|---|---|---|
| Lubombo Spatial Development Project | Mozambique, South Africa, Swaziland | SAMRC, BHP Billiton | Indoor residual spraying |
| Tanzania NatNets | Tanzania | MEDA, LSHTM | Bed net voucher and social marketing |
| MACEPA | Zambia | STI, Gates | Broad strategic partnership |
| Bioko Island Malaria Control Programme | Bioko Island | Marathon Oil | Indoor residual spraying |
| Konkola Copper Mines Malaria Control Programme | Zambia | Konkola Copper Mines | Indoor residual spraying |
| USAID IRS Effort | 15 countries in Africa | Research Triangle Institute | Indoor residual spraying |
| PERMANETS | Kenya | Vestergaard Frandsen | Bed net distribution |
| AFFORD | Uganda | Johns Hopkins Bloomberg School of Public Health's Center for Communication Programs | Bed net distribution |
| Nets for Life | 16 nations in Africa | Episcopal Relief and Development | Bed net distribution |
| Africa Health Initiative | Multiple African nations | ExxonMobil, Acumen Fund, A to X Textile, Sumitomo | Bed net distribution |
| Ghana Gold Mine Effort | Ghana | AngloGold Ashanti | Indoor residual spraying and larvaciding |
| Retreating ITN Campaign | Mozambique | PSI, World Vision, Aga Khan Foundation | bed net insecticide retreatment |

# APPENDIX II: Existing Private Sector Actors in Malaria Prevention

| TABLE I: NON-PUBLIC SECTOR ORGANIZATIONS IN MALARIA PREVENTION | |
|---|---|
| **TYPE OF ORGANIZATION** | **SKILLS** |
| **INTERNATIONAL NGOS** | • Ability to leverage existing relationships with governments and donors<br>• Power to negotiate sub-contracts due to existing relationships with service providers<br>• Knowledge of and access to distribution systems and health systems infrastructures<br>• Vast experience in executing public health interventions in other countries creates economies of knowledge, scale, and scope for program implementation<br>• Managerial, logistical, and technical capacity allow for large-scale program implementation |
| **LOCAL NGOS AND CORPORATIONS** | • Knowledge of local malaria conditions (*e.g.,* resistance of mosquitoes, breeding grounds, etc.)<br>• Ability to identify, attract, and utilize local skills more easily than international organizations<br>• Local name recognition |
| **CHEMICAL, INSECTICIDE AND NET COMPANIES INTERNATIONAL PEST CONTROL COMPANIES** | • Specialization in utilizing most innovative and effective chemicals and commodities for vector control<br>• Scientific expertise fuels innovation in vector control technology<br>• Vector control experience in other markets creates economies of knowledge, scale, and scope |
| **COMPANIES UNDERTAKING MALARIA CONTROL FOR THEIR EMPLOYEE POPULATIONS** | • Pre-existing economic motivation for sustained vector control and reduction of malaria burden<br>• Familiarity with local conditions and populations<br>• Local name recognition |
| **INTERNATIONAL RESEARCH ORGANIZATIONS** | • Scientific and analytical capacity for strategic development of malaria-control initiatives, as well as monitoring and evaluation<br>• Viewed as independent and unbiased |

# APPENDIX III: The Donor Role in Facilitating Results-based Contracting

| Table I: Requirements and Key Questions for Donors | |
|---|---|
| **Requirements** | **Key Questions for Donors** |
| Government Support & Alignment | • Does the donor provide financing directly to the national government or ministry of health?<br>• To what extent does the donor give the government authority to program funding in a flexible manner in line with national priorities? |
| Long-Term Predictable Funding | • Is the financing provided in a predictable manner, over a long period of time?<br>• Will the donor program remain in place for the duration of a contract, or could shifting donor priorities make the funding subject to change? |
| Flexible Funding Streams that Allow Performance Incentives | • Is the donor willing to finance results-based contracts, by allowing for bonuses, funding that is partially reserved for successful completion, or other forms of performance payments?<br>• Does the donor create its own results-based agreement with governments, which will help align MOH staff goals with contractor goals? |
| Motivation to Engage Private Sector and Support Implementation | • Is the donor open to private sector provision of certain services, and competitive bidding?<br>• Is the donor willing to advocate for results-based contracting in appropriate circumstances?<br>• Will the donor support strengthening of capacity to manage contractors and ensure appropriate monitoring and evaluation? |

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