

## AFRICAN STRATEGIES FOR HEALTH



# FINANCIAL INCENTIVES TO IMPROVE MALARIA CASE MANAGEMENT: A REVIEW OF THE EVIDENCE

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### Introduction and Overview

Since 2000, there has been significant progress globally in combatting malaria, including a 60 percent decrease in malaria-related deaths and a 37 percent<sup>1</sup> reduction in new malaria cases annually. The greatest reductions have occurred in sub-Saharan Africa, the region bearing the greatest burden of the disease.<sup>2</sup> Access to prompt and effective malaria case management<sup>3</sup> services and the expanded use<sup>4</sup> and

affordability of rapid diagnostic tests (RDTs) and artemisinin based combination therapy (ACT), in combination with other preventive interventions,<sup>5</sup> have contributed significantly to these achievements. Nevertheless, malaria remains a significant burden to health systems, particularly in sub-Saharan Africa which accounted for 88 percent of the 214 million cases of malaria<sup>6</sup> and 90 percent of the 438,000 malaria-related deaths worldwide in 2015.<sup>7</sup>

### ABOUT ASH

African Strategies for Health (ASH) is a five-year project funded by the U.S. Agency for International Development's (USAID) Bureau for Africa and implemented by Management Sciences for Health. ASH works to improve the health status of populations across Africa through identifying and advocating for best practices, enhancing technical capacity, and engaging African regional institutions to address health issues in a sustainable manner. ASH provides information on trends and developments on the continent to USAID and other development partners to enhance decision-making regarding investments in health.

A critical challenge to further reducing the burden of malaria and improving health outcomes is that not all patients are able to access timely and quality malaria case management services. Despite an increasing number of countries with policies to test all patients with suspected malaria before treating with antimalarials,<sup>8</sup> those infected with uncomplicated malaria are not always diagnosed with parasitological confirmation (by microscopy or RDT) nor appropriately treated with the recommended drugs and dosage regimen.<sup>9</sup> Furthermore, those with severe malaria or those who are uninfected may also not receive appropriate referrals and further care. In most malaria endemic countries, less than half of all patients with suspected malaria are actually infected with a malaria parasite,<sup>10</sup> yet estimates indicate that health care providers continue to presumptively<sup>11</sup> treat patients with antimalarials without ever conducting a diagnostic test<sup>12</sup> or despite a negative diagnostic test result. Such practices contribute to wastage and stock-outs

## Study Questions

Do financial incentives:

- Influence **patient utilization** of malaria case management services?
- Influence **provision and compliance** among healthcare providers, in particular the use of microscopy or RDTs or prescribing behaviors?
- Yield perverse effects for providers or patients (i.e. unintended negative consequences)?



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of antimalarial medicines and diagnostic materials, while also increasing the risk of antimalarial resistance and the delayed treatment of patients with other febrile illnesses. Patients can also experience unnecessary out-of-pocket payments, and health facilities can face increased financial burden due to the excessive provision of services.

A key strategy for enhancing the utilization, provision, and quality of malaria services is the use of financial incentives. Demand- and supply-side financial incentives, targeting patients and healthcare providers respectively, are often seen as a solution to improving the utilization and quality of health services in other areas of disease management and control for communicable and non-communicable diseases.<sup>13-14</sup> However, there is limited documented evidence on how financial incentives can be systematically applied to influence malaria case management.

To enhance the understanding of how financial incentives may be structured to improve malaria case management, the United States Agency for International Development's (USAID) Bureau for Africa and its African Strategies for Health (ASH) project, implemented by Management Sciences for Health (MSH), conducted a study to examine the evidence. This brief presents an evaluation of findings, associated recommendations, and considerations for future operations research.

## Methodology

The overall goal of this study was to examine how financial incentives can be structured and aligned to improve the utilization, provision, and quality of malaria case management.

The specific study questions were:

- Do financial incentives influence patient utilization and the uptake of malaria case management services?
- Do financial incentives influence provision and compliance among healthcare providers, in particular the use of microscopy or RDTs or prescribing behaviors?
- Are there any perverse effects (i.e. unintended negative consequences) of these financial incentives for providers or patients?

To answer these questions, ASH conducted a literature review<sup>15</sup> of existing evidence, reviewed FY2015 Presidential Malaria Initiative (PMI) Malaria Operational Plans (MOPS)<sup>16</sup> and convened a subject matter expert meeting. Each of these activities provided insight into the variables affecting care-seeking behavior and malaria case management compliance.

## Overview of methodology and data sources



**29** peer-reviewed academic journal articles profiling studies from more than 14 countries were reviewed and served as the basis for the summary of findings and operations research questions.



**20** country PMI FY15 MOPS were reviewed for evidence of financial incentives supporting the expanded access and quality of malaria case management.



**11** experts specializing in malaria case management, health care financing, results-based financing, and health systems strengthening convened to review and discuss the key findings and propose future operations research.

## Findings

The following findings are based upon a review of 29 peer-reviewed academic journal articles<sup>17-45</sup> and studies from more than 14 malaria high-burden countries.<sup>46</sup> Findings are presented in the following categories:

- Factors affecting access to quality malaria case management
- Demand-side financial incentives and malaria case management
- Supply-side financial incentives and malaria case management

Among this evidence, several key themes emerged (presented as sub-categories), highlighting the effects of demand- and supply-side incentives on malaria case management.

### *Factors Affecting Access to Quality Malaria Case Management*

A number of demand- and supply-side factors can affect access to quality malaria case management services. Demand-side determinants refer to those which influence the demand for services at the individual, household, or community levels while supply-side determinants include those that influence the provision of services.<sup>47</sup>

#### Demand-side incentives

##### Demand-side factors affecting malaria case management

- Accessibility and costs of services
- Opportunity costs
- Existing knowledge and awareness
- Perceived severity of disease
- Expected quality of care

##### Types of financial incentives

- Free services and removal of user fees
- Subsidies on ACTs

##### Outcomes

- Demand-side incentives are effective in influencing the utilization of malaria case management services
- Caretakers may seek services elsewhere despite the availability of demand-side incentives
- Effect of demand-side incentives on the quality of service provision and health outcomes is inconsistent

For patients, factors affecting access to case management services include accessibility, cost,<sup>48</sup> a lack of knowledge and awareness, and the perceived opportunity costs and quality of care. Due to these factors, many patients, particularly children, never seek or are brought for care<sup>49</sup> or may seek care from private providers depending on the perceived severity of the disease.<sup>50</sup> Among patients seeking care from informal private sector providers, rates of diagnostic testing and treatments are lower and these commodities are less likely to be available.<sup>51</sup>

Among health care providers, there are myriad factors which can negatively affect the provision and quality of case management. These include, but are not limited to, the content of malaria-specific trainings and the promotion of malaria as the most common and important disease to diagnose and treat,<sup>52</sup> pressure from fellow providers, and the perceived preferences of patients for diagnostic testing and antimalarial medicines.<sup>53</sup> These factors can lead to a greater awareness of malaria among providers but often result in the over-diagnosis of malaria. Other factors that negatively affect access to quality malaria case management services include shortages of resources and equipment (e.g. diagnostic tests), delays in receiving test results, and lack of support for alternative diagnoses for other febrile illnesses (e.g. meningitis or HIV which would require great effort, time, and resources to diagnose).<sup>54</sup> The quality of case management could also be negatively influenced by a lack of supervision, high-patient loads, low motivation among providers, and perverse incentives, particularly with fee-for-service models which can encourage healthcare providers to over-prescribe services beyond an optimal level.

### *Demand-Side Incentives and Malaria Case Management*

For patients, demand-side incentives (e.g. conditional cash transfers, vouchers, user fee exemptions, and subsidies for free care) are intended to reduce the financial barriers that prevent them from accessing health services. Evidence shows that such demand-side financial incentives can be effective in influencing the utilization of malaria case management services, particularly if they are provided free-of-charge<sup>55-56</sup> or if the cost at the point of care is reduced or eliminated through the removal or reduction of user fees.<sup>57-61</sup> Demand-side financial incentives were found to influence the following aspects of malaria case management.

- **Care seeking behavior:** Despite the implementation of free or subsidized services at the point of care, caretakers may seek services elsewhere when their child develops fever. Three studies show that less than 50% of caretakers seek care from the public sector despite the availability of free care or subsidized treatment.<sup>62-64</sup> A 2009 study in Uganda found that healthcare seeking behavior is influenced by the perceived severity of disease and that patients only required “first aid” from private providers for less severe fever cases despite the availability of free government health services.<sup>65</sup>

- **Early diagnosis and treatment:** There is inconsistent evidence on whether demand-side incentives promote the early diagnosis and treatment of malaria. A 2004 study in Sudan indicated that the exemption from user fees promoted the early diagnosis of malaria.<sup>66</sup> A 2010 study in Tanzania found that prompt access to ACTs was higher among children going to a government health facility which subsidized ACTs; however, a majority of caretakers, especially those from poor households, continued to pay more for sub-standard drugs in non-government facilities.<sup>67</sup>
- **Quality of services and health outcomes:** The effect of demand-side financial incentives on the quality of service provision and health outcomes varies across studies. A 2010 study in Sierra Leone found that after the introduction of the country's Free Health Care Initiative, 41% percent of children did not receive the recommended treatment for fever, highlighting the need to ensure proper diagnosis.<sup>68</sup> A 2009 study in Ghana found that while the removal of out-of-pocket payments can impact healthcare seeking behavior, it does not necessarily lead to better health outcomes, as measured by the percentage of children with moderate anemia at the end of the malaria transmission season.<sup>69</sup> However, a 2011 study in Mali found that the abolishment of user fees not only increased health seeking behavior but also contributed to a decrease in mortality, as compared to the non-intervention area.<sup>70</sup>
- **Unintended negative consequences:** In the face of increasing investments in demand-side financing and incentives (e.g. targeted free health care schemes and reduced user fees), there is evidence of perverse incentives, including healthcare providers charging unofficial fees to patients in government facilities. This can deter patient utilization and impact access to timely and quality care.<sup>71</sup> Evidence also suggests that insufficient payment for health personnel may lead to providers charging patients inflated fees for subsidized drugs.<sup>72</sup>

### Supply-Side Incentives and Malaria Case Management

For healthcare providers, supply-side financial incentives can encourage an increase in the provision and quality of targeted services, while addressing provider issues of low motivation, insufficient empowerment, and lack of accountability for results. Evidence shows that a range of supply-side financial incentives have been introduced among public and private healthcare providers and in some cases are associated with service uptake, positive health outcomes, and adherence to guidelines; however, their impact on the provision and quality of services varies.

- **Service uptake:** The majority of evidence indicated that financial incentives were given to healthcare providers irrespective of their adherence to case management guidelines and that the impact of these incentives varied. A 2015 study in Myanmar assessing the effect of RDT subsidies among informal private providers found that information, education, and communication (IEC) activities led to four times the uptake of RDTs compared to providers receiving a simple subsidy of

## Supply-side incentives

### Supply-side factors affecting malaria case management

- Influence of training and supervision
- Promotion of malaria as the most common and important disease
- Pressure from patients and fellow providers
- Shortages of medicines and equipment
- Delays in receiving test results
- Limited support/resources for non-malaria diagnosis
- Existing financial mechanisms (e.g. fee-for-service)

### Types of financial incentives

- Per-diem payments for attending trainings
- Facility-directed P4P incentives (for purchase of equipment, supplies, repairs, and basic labor)
- Small financial incentives (i.e. top-ups)
- Subsidies for RDTs
- Consultation fee

### Outcomes

- Few studies explore use of incentives for malaria case management
- Findings are context-specific and non generalizable
- Provision and quality of services can be improved
- Financial incentives are given to providers irrespective of adherence to case management guidelines and their impact on the provision and adherence to guidelines varies



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RDT or an RDT subsidy with a financial incentive.<sup>73</sup> The study did not assess for adherence to treatment guidelines following diagnostic testing.

- **Health outcomes:** A 2007 study in Guinea Bissau found that small financial incentives given to providers (\$50/month for nurses and \$160/month for doctors) combined with supervision and training on case management guidelines were associated with lower in-hospital mortality (5%) compared to the control arm (10%) which did not receive supervision nor financial incentives.<sup>74</sup> The study could not distinguish between the effect of supervising the implementation of guidelines and the effect of the financial incentive in reducing mortality nor did it measure adherence to case management guidelines.
- **Adherence to malaria case management guidelines:** Only one study examined the impact of supply-side financial incentives on health facility compliance to malaria case management guidelines. A 2015 study in Kenya found that, among government healthcare providers, the use of facility-directed performance-based incentives promoted behavior change in adhering to malaria case management guidelines and reducing the unnecessary consumption of antimalarials.<sup>75</sup> Facilities in the intervention arm received P4P (pay-for-performance) payments (maximum of \$1,175 USD per quarter) based on seven performance indicators including recording of patient identification numbers, quality of laboratory diagnosis, and clinician adherence to the laboratory diagnosis.<sup>76</sup> After four quarters, health facilities receiving financial incentives demonstrated an improvement in the management of suspected malaria cases. Among the nine health facilities in the intervention arm, there was a marked reduction in the provision of incorrect treatment to malaria-negative patients (i.e. reduction in the percent of malaria-negative patients who received artemether-lumefantrine (AL) from 22.4 % at baseline to 7.3%). Also, the percent of patients given AL without a malaria test dropped from 41% down to 26%.

Prescription of AL to patients with confirmed malaria was not significantly different.<sup>77</sup>

Other studies mentioned the use of consultation fees<sup>78</sup> among home-based care volunteers and instances of patients taking on credit at health facilities or providing gifts in exchange for treatment;<sup>79</sup> however, evidence related to their direct impact on the provision and adherence to case management guidelines was not available. Evidence on the impact of other supply-side financial incentives on supplier efficiency, patient continuum of care, and cost control were not explored in-depth. Moreover, none of the studies indicated any specific perverse effects of these financial incentives.

## Discussion

Evidence of the effects of financial incentives on malaria case management varies and in some cases remains inconsistent. While the introduction of demand-side incentives (e.g. subsidies and the abolishment of user fees among patients) have increased the utilization of malaria case management services, certain studies suggest otherwise. There was limited documented evidence on how demand-side incentives impact the quality of services provided.

Among these findings, it was unclear what the impact of factors such as geographic and financial barriers, supervision and training, and existing payment mechanisms were on patient care seeking and provider behavior. Given the short time-frame of these studies, evidence on the sustainability of these interventions remains a key question of concern as does their applicability in both the public and private sectors. The private sector often represents the first point of care for febrile patients; however, introducing regulation for appropriate case management (i.e. incentives) may be difficult in countries with weak governance and oversight.<sup>80</sup>

### Discussion points from subject matter expert meeting

Experts specializing in malaria case management, health care financing, results-based financing, and health systems strengthening convened to review and discuss the key findings of the research as well identify an operations research agenda. Experts assisted in developing a conceptual framework for introducing financial incentives for malaria case management which helped to consolidate and synthesize the overall findings of this brief. Several key discussion points emerged from this meeting:

- Healthcare seeking behavior is complex and the perception of the availability of commodities plays an important role in patient decision-making. Factors affecting care-seeking at private and public facilities include lack of services, distance, convenience, and opportunity costs.
- Governments often do not compensate health facilities for the introduction of free care. Although services may be deemed 'free,' facilities may charge fees for diagnostic testing and medicines. Due to high patient loads, facilities may experience stock-outs of medicines and equipment which could lead to sub-standard services.
- Performance-based financing (PBF) programs which focus solely on one health condition (e.g. malaria) could lead to a neglect of other conditions and health priorities. PBF programs should focus on a package of priority health services and include quality indicators.



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The use of supply-side financial incentives has been associated with an increased uptake of RDT usage and lower in-hospital mortality; however, it was not evident that these incentives had the same impact in lower-level health facilities. Only one study actually linked financial incentives to case management guideline adherence, demonstrating a reduction in the percent of malaria-negative patients that received antimalarial therapy. Evidence on the possible perverse effects of these financial incentives (e.g. increased unavailability of free commodities,<sup>81</sup> neglect of non-incentivized services,<sup>82</sup> over-consumption of antimalarials,<sup>83</sup> and the introduction of unofficial fees<sup>84</sup>) were not explored in-depth in the reviewed articles nor were there consistent measures of service quality across studies.

It is important to consider the use of non-financial incentives which could have considerable impact on malaria case management services and may be more cost-effective than financial incentives. Evidence suggests that the quality of malaria case management services can be improved through trainings, mentorship, and IEC activities. For instance, in Uganda, the performance of health workers using RDTs was similar among the 10 (16%) participants who were peer-trained by their trained colleagues, suggesting that the transfer of acquired skills on malaria case management via a cascade training model may be effective.<sup>85</sup> According to the P4P study in Kenya, the training alone may have reduced the proportion of patients assigned a clinical diagnosis of malaria in low transmission facilities and monthly facility visits may have reinforced previous training.<sup>86</sup> In Myanmar, IEC was found to be cost-effective in increasing the uptake of subsidized RDTs compared to a subsidy with a financial incentive alone.<sup>87</sup> The use of mobile phone text-message reminders have also been linked to improvements in health worker adherence to malaria case management guidelines.<sup>88</sup> Such non-financial incentives may also address several of the common demand- and supply-side determinants linked to access to quality malaria case management services; however, further research is required.

## Recommendations

Financial incentives designed to improve malaria case management services must consider the key demand- and supply-side factors which can affect the utilization and quality of services among patients and healthcare providers, respectively. While targeted financial incentives can be effective in improving malaria case management service provision and health outcomes, more research is needed into how they are impacted by various financial mechanisms within the health system (e.g. fee-for service models, free health care, subsidies, etc.) and their long-term sustainability. With the success of PBF/P4P programs in improving outcomes of other priority health areas (e.g. MNCH, HIV/AIDS), operations research should focus on the inclusion of malaria case management quality indicators into existing PBF/P4P programs in high-burden malaria areas." Given the key role of private healthcare providers in the provision of malaria case management services, it is important to consider how to effectively improve the quality of malaria case management services in countries where there is minimal regulation in the private sector.

There are several additional research questions which could help to further explore these recommendations and the effectiveness of various financial incentives on malaria case management.

- How does adherence to malaria case management diagnostic and treatment guidelines compare among private and public healthcare providers? What is the impact of introducing P4P incentives among these providers?
- How do institutional and individual P4P incentives vary in their impact of diagnostic and treatment guidelines?
- How do demand- and supply-side financial incentives focused on improving malaria outcomes impact the provision of quality-assured non-malaria services (i.e. do they lead to the neglect of non-malaria services)?
- How do existing payment mechanisms (e.g. fee for service, capitation, performance-based payments, and salary) influence the use of financial incentives for improving malaria case management guidelines adherence among health care providers? ■

## ENDNOTES

1. World Health Organization. "World Malaria Report 2015." Incidence rates were derived by dividing estimated malaria cases by the population at risk of malaria within each country (calculated as population at high risk + population at low risk/2). The total population of each country was taken from the 2015 revision of the World population prospects (10) and the proportion at risk of malaria derived from NMCP reports.
2. Between 2000 and 2015, the vast majority of reductions in deaths among children aged under-five occurred in the WHO African Region. Source: World Health Organization. "World Malaria Report 2015."
3. Defined as "the diagnosis, treatment, clinical care, counselling and follow-up of symptomatic malaria infections." Source: World Health Organization. "WHO Malaria Terminology." [http://apps.who.int/iris/bitstream/10665/208815/1/WHO\\_HTM\\_GMP\\_2016.6\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/208815/1/WHO_HTM_GMP_2016.6_eng.pdf?ua=1)
4. The WHO African Region has had the largest increase in levels of malaria diagnostic testing, from 36% of suspected malaria cases tested in 2005 to 41% in 2010, and 65% in 2014. Source: World Health Organization. "World Malaria Report 2015."
5. E.g. - insecticide treated bed nets (ITNs), intermittent preventive therapy for pregnant women (IPTp), seasonal malaria chemoprevention (SMC), among other interventions.
6. World Health Organization. "World Malaria Report 2015."
7. World Health Organization. "World Malaria Report 2015."
8. 95 countries and territories have adopted a policy to test all patients with suspected malaria before treating with antimalarial medicines. Source: <http://www.who.int/malaria/areas/diagnosis/overview/en/>
9. World Health Organization. "Guidelines for the Treatment of Malaria: Third Edition." 2015. [http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127\\_eng.pdf?ua=1&ua=1](http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127_eng.pdf?ua=1&ua=1)
10. World Health Organization. "World Malaria Report 2015."
11. Presumptive treatment defined as "[the] administration of an antimalarial drug or drugs to people with suspected malaria without testing or before the results of blood examinations are available." Source: World Health Organization. "WHO Malaria Terminology." [http://apps.who.int/iris/bitstream/10665/208815/1/WHO\\_HTM\\_GMP\\_2016.6\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/208815/1/WHO_HTM_GMP_2016.6_eng.pdf?ua=1)
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15. Using PubMed database, literature review focused on English and French language peer-reviewed literature published after 1983 which included evidence of use of financial schemes for improving the utilization or quality of malaria case management. Articles were selected based on evidence of the use of financial incentives influencing the provision and quality of case management services, compliance with case management standards, and information on unintended negative consequences of such incentives.
16. All FY15 MOPs included those for Angola, Benin, the Democratic Republic of the Congo, Ethiopia, Ghana, the Greater Mekong Subregion, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zambia, and Zimbabwe. Available at: <https://www.pmi.gov/resource-library/mops/fy-2015>
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*This publication was made possible by the generous support of the American people through the U.S. Agency for International Development (USAID) under contract number AID-OAA-C-11-00161. The contents are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.*