

ORIGINAL ARTICLE

# Impact of the WHO Technical Support Towards Malaria Elimination in Zambia

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## ABSTRACT

**Background:** Zambia's National Malaria Strategic Plan (NMSP) 2011-2016 aims to eliminate malaria by the year 2020. The WHO Country Office is supporting Zambia in its goal to attain this national target earlier than the global goal contained in Global Technical Strategy (GTS) 2016-2030. WHO's focus is to accelerate coverage of proven interventions and strategies, and promote their effective use. This study documents impact of the WHO technical support in Zambia to accelerate efforts towards elimination of malaria.

**Methods:** This study involved a desk review of relevant documents and literature to obtain in-depth information on WHO technical support on malaria. Key documents included: malaria strategic plans, World Malaria Reports (WMR), WHO Annual Reports; Country Cooperation Strategy, for WHO in Zambia; and Health Bulletins and Health Management Information System (HMIS).

**Results:** WHO contributed effectively to monitoring malaria trends. Malaria deaths reduced from 6000 in 2010 to 3,200 in 2014. In 2015, ownership of long lasting insecticide treated nets (LLINs) increased from 38% in 2006 to 77% in 2015; to be among the highest in Africa. Similarly, utilization of LLINs increased from 19% in 2006 to 55% in 2015 and use of Intermittent Preventive Therapy in pregnancy (IPTp) increased from 61.2% in 2006 to 77% in 2015. In 2014, WHO contributed to the revision of the national malaria diagnosis and treatment guidelines that included: Dihydroartemisinin piperaquine (DHA-PQ) as first line, an alternative to Artemether lumefantrine (AL); injectable Artesunate for treatment of severe malaria and the adoption of the new WHO guidelines on IPTp. In 2016, WHO contributed to epidemiological profile leading to the development of the novel Malaria Elimination Strategy 2017-2020.

**Discussion:** WHO support has led to the determination of epidemiological profile and contributed to the improved focusing of interventions and surveillance activities for greater impact. These have been supported by clear guidelines on proven and evidenced-based prevention, diagnosis and treatment strategies.

**Conclusion:** WHO's technical assistance to priority areas in Zambia remains pivotal for the accelerated health gains countrywide. The importance of this technical support is evidenced in the malaria elimination strategy within an environment of changing epidemiological malaria profile, insecticide and drug resistance.

## INTRODUCTION

In Zambia, malaria is the leading cause for hospital consultations.<sup>1</sup> It is a life-threatening disease caused by the *Plasmodium* parasites. These parasites are transmitted to people through the bite of an infected female *Anopheles* mosquito. *Plasmodium falciparum* causes about 95% of all malaria infections in Zambia<sup>1</sup>. Malaria is preventable and treatable but can be life-threatening if treatment is delayed or when ineffective antimalarial drugs are administered.<sup>2</sup>

Globally, an estimated 3.4 billion people are at risk of malaria infection and in 2013, WHO estimated that there were 207 million cases and 627,000 deaths.<sup>3</sup> The majority of cases (80%) occurred in Africa and most deaths (77%) were reported in children under the age of five. The WHO malaria Global Technical Strategy (GTS) 2016-2030, has a goal of reducing malaria mortality by 90% of the 2015 baseline in 2030 with a vision of "a malaria free world".<sup>4</sup>

WHO has been in existence and providing technical support to Ministry of Health and partners in Zambia since 1965. Its core priorities are; setting norms and standards,

**Key words:** Malaria, strategies, technical support, WHO.

shaping research agenda and articulating evidence-based policy whilst monitoring health trends and providing technical support.<sup>5</sup> The work of WHO in Zambia is articulated in the Country Cooperation Strategy (CCS) that is revised periodically every five years and covers the following priority areas: Disease Prevention and Control, Communicable and non-communicable diseases, Emergencies, Expanded Programme on Immunization, Health Promotion, child and adolescent health and maternal health.<sup>6</sup> WHO provides highlights on these priority areas annually.<sup>6</sup> In keeping with the transformation agenda of 2015 which promotes accountability and effective communication by WHO, there is need to comprehensively document the WHO contribution to health priorities and provide a clear understanding of the work of WHO in Zambia. This study was undertaken to document the impact of WHO technical support on malaria: the malaria elimination strategy, malaria disease (cases and deaths) trends, advocacy and financing in Zambia.

## METHODS

The study involved a desk review. Relevant documents and literature were reviewed on malaria trends (cases and deaths), interventions coverage and assessment of their quality and financing mainly from the following key documents: National Health Management Information System, Malaria Indicator Surveys (MIS), and World Malaria Reports.

## RESULTS

### WHO contribution to development of elimination strategy

In 2016, WHO contributed to the development of the first Malaria Elimination Strategy (2017-2020), which provides the authoritative blueprint for eliminating malaria in Zambia. Its aims are to reduce malaria-specific mortality and morbidity nation-wide, further ultimately interrupting transmission of malaria in the country and preventing the re-emergence of malaria transmission due to importation. The strategy identifies five transmission (epidemiological) settings ranging from Zero cases per 1000 population to 500 cases per 1000. Each transmission setting has a set of core malaria interventions [(Long Lasting Insecticide Treated Nets (LLINs), Indoor Residual Spraying (IRS), diagnosis and treatment, Larval source management] whose selection is based on evidence of increased impact on malaria, (Table 1).

**Table 1:** Transmission setting for the malaria elimination strategy 2017-2020 in Zambia.

Level	Malaria transmission setting
Level 0	0 malaria cases, no local transmission
Level 1	1-49 malaria cases per 1,000 population; no detectable impact with parasite prevalence measurement
Level 2	50-199 malaria cases per 1,000 population; 0.5% -<5% parasite prevalence
Level 3	200-499 malaria cases per 1,000 population; 5-<15% parasite prevalence
Level 4	>500 malaria cases per 1,000 population; >15% parasite prevalence

Source: NMCC Report, 2016

The country reported low malaria incidence in some provinces such as the Southern province at 26 per 1000 population and Lusaka province at 31 per 1000 (Table 2).

**Table 2:** Malaria Incidence per 1000 population by Province in Zambia, 2015.

Province	Population in 2015	Total OPD Reported cases	Incidence per 1000
Central	1,541,688	407,229	264.1
Copperbelt	2,362,216	815,988	345.4
Eastern	1,813,450	670,838	369.9
Lusaka	2,943,695	92,185	31.3
Luapula	1,102,625	773,710	701.7
Muchinga	895,054	449,445	502.1
Northern	1,304,434	608,925	466.8
North Western	843,156	680,375	806.9
Southern	1,714,787	45,794	26.7
Western	993,472	496,326	499.6
<b>Total</b>	<b>15,514,577</b>	<b>5,040,815</b>	

### WHO contribution to adoption of proven Interventions

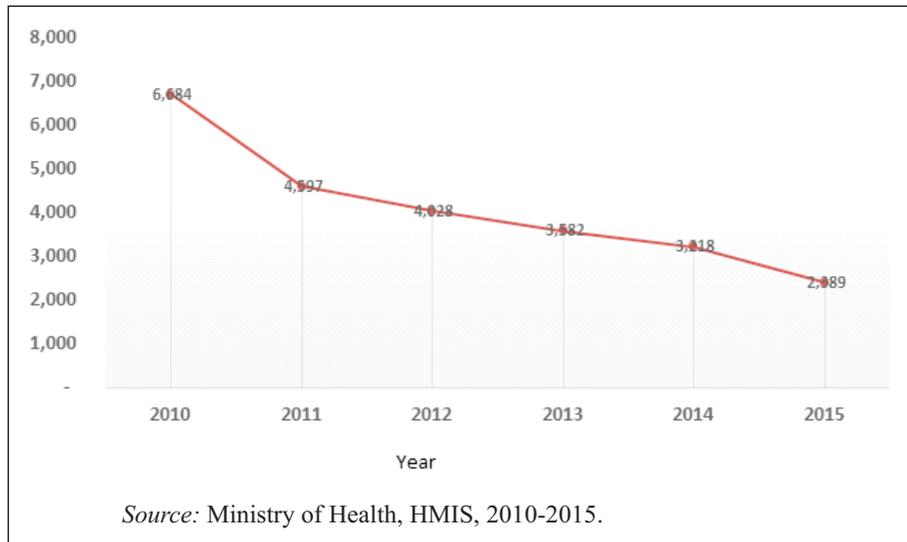
In Zambia, WHO technical support has enabled vector surveillance. This has ensured that there is a clear understanding of the entomology including: vector distribution and behaviour, adaptation of WHO IRS Guidelines, development of standard operation

procedures for IRS, development of IEC/BCC IRS strategy, protocols and development of the first ever-Zambia's Insecticide Resistance (IR) Management Plan. WHO has also contributed to a comprehensive documentation of operational aspects of the Insecticide Resistance management in Zambia.<sup>6</sup>

**WHO-contribution to trends analysis**

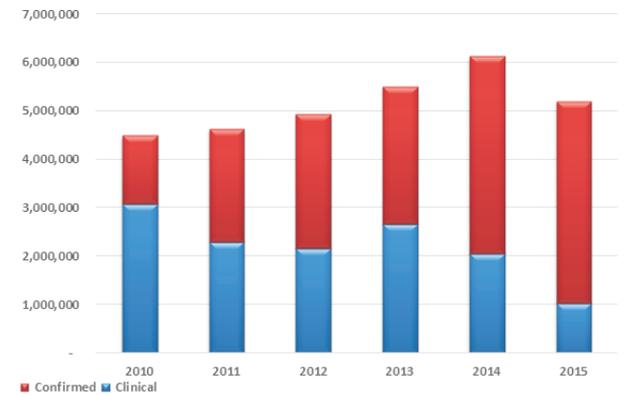
WHO has contributed to monitoring of disease trends through provision of technical support on national surveys and special studies. Trends analysis shows increasing ownership of life saving tools such as LLINs whose household coverage has increased from 38% in 2006 to 77% in 2015, placing Zambia among the highest in the African region.<sup>7</sup> Similarly, IRS has increased from 15 districts in 2005 to 103 in 2015. The case fatality rate (CFR) declined from 3.5% in 2009 to 1.4% in 2013.<sup>8</sup> WHO has also contributed to periodic reviews of malaria deaths derived from the routine health management information system (HMIS) data since 2000 (Figure 1).

**Figure 1:** Trends in malaria related deaths: 2010 to 2014



The analysis of numbers of clinical and confirmed cases, collected by HMIS in Zambia between 2010 and 2015, shows a progressive increase in the number of cases of confirmed malaria annually from just about a million and half in 2010 to about 4 million confirmed cases in 2015. Similarly, the number of malaria cases treated with the recommended antimalarial Artemether-Lumefantrine (AL) has shown a similar increase as shown in Figure 2.<sup>9</sup>

**Figure 2:** Clinical and confirmed malaria cases in Zambia.



Source: Ministry of Health, HMIS, 2010-2015.

**WHO-assured quality of the interventions**

In 2012, WHO supported therapeutic efficacy testing (TET) studies and documentation of the efficacy of

Artemether Lumefantrine first line antimalarial which was reported at 95%.<sup>10</sup>

Four years later, the country, with WHO technical support carried out TET monitoring in three sentinel sites in Eastern, Southern and Luapula province using a three-arm study of antimalarial medicines involving; Artemether Lumefantrine (AL), Artesunate Amodiaquine and Dihydroartemisinin piperazine (DHAPQ) used in the treatment of uncomplicated

malaria. Unlike the previous technical assistance on TET, which was confined to protocol development and training of field staff involved in TET, WHO technical support in 2016 covered on-spot field quality checks using a standard WHO Checklist and WHO excel Data entry Tools with inbuilt checks for unintended errors.<sup>11</sup> To ensure availability of quality assured malaria diagnosis WHO facilitated the development of the National QA/QC laboratory Manual in 2016.

### **WHO contribution to Special studies**

In 2014 and 2015, WHO in collaboration with the University of Zambia School of Medicine (UNZASOM), University of Namibia, the Ministry of Lands, Natural Resources and Environmental Protection (MLNREP) and the Disaster Management and Mitigation Unit (DMMU) commissioned a study to assess association between climatic factors (relative humidity, rainfall and temperature) and malaria in different agro-ecological zones. Preliminary findings showed an association between the climatic factors and malaria.

### **WHO contribution to advocacy to promote uptake of interventions**

WHO promotes advocacy to increase community awareness on malaria. These efforts resulted in the proportion of women (aged 15-49) who recognized fever as a symptom of malaria increasing from 65% in 2006 to 75% in 2010. Further, results show that the proportion of pregnant women, aged 15-49 years, who reported the use of mosquito nets as a prevention measure against mosquito increasing from 78% in 2006 to 82% in 2010. This contributed to the creation of awareness that included activities during various events including the commemoration of World Malaria Days.

In the past 3 to 4 years, this support has concentrated on the promotion of core interventions on prevention, prompt diagnosis and effective treatment. The goal has been to increase prompt uptake of these intervention in hard-to-reach remote rural areas in support of the goal of universal health coverage. Through this approach of delivering interventions during WMD commemorations, the traditional leadership structures have been reached and provided with effective messages and oriented on proven interventions. As business unusual, the larviciding demonstration activity was done in a remote hard to reach areas that were visited by political and traditional leaders.

WHO in Zambia has supported the Ministry of Health to develop a Communication Strategy that has facilitated the implementation of a mix of malaria IEC-communication strategies, including; engagement of traditional leaders, use of community structures, such as Neighbourhood Health Committees and commemorative events such as SADC Malaria Week, WMDs during which time high-advocacy activities have been conducted. Increasingly, over the past decade the print and mass media have been utilized to create awareness on malaria interventions among communities.

### **WHO contribution to cross-border collaboration**

The goal of WHO-Zambia has been to contribute to cross-border cooperation with the aim of having an impact of reducing malaria cases and death in the border areas among neighbouring countries in the region. Thus, WHO played a pivotal role in the formulation of joint plans in collaboration with MOH, partners and NGOs such as the Isdell Flowers.

WHO facilitated policy that has raised the profile of the current cross-border Malaria Elimination Strategy 2011-2020 in an effort to harmonize national or regional cross-border strategies. WHO in 2015 and 2016 facilitated financial and programmatic gap analyses and development of plans informed by these analyses.

### **WHO contribution to resource mobilization**

The WHO contributed to dialogue advocating increased financial support (both domestic and external). This has seen the GRZ allocate a separate funding, since 2011, for delivering malaria services; a decision which is vital as the country accelerates towards elimination.<sup>12</sup> Funding for malaria interventions has been leveraged through different mechanisms including, the Global Fund (GF) for malaria and TB and United States President's Malaria Initiative, to support the development of evidenced-based Malaria Operation Plans and procurement of LLINs and IRS.<sup>13</sup>

### **WHO contribution towards addressing challenges in malaria control**

The WCO has supported Zambia monitor insecticide resistance consistently over the past 10 years. This information has been used to develop an insecticide resistance management plan, which is one of the few in the region.

### **DISCUSSION**

This study highlights WHO's contribution towards the development of evidenced-based malaria strategy, by ensuring that there is a clearer understating of the malaria transmission, through in-depth and periodic reviews on malaria epidemiology and delivery of quality assured interventions such as health promotion, prevention and prompt and effective diagnosis and treatment with efficacious antimalarial medicines.

WHO's technical support to track malaria trends has also been critical. It has provided authoritative information on the monitoring of disease (malaria cases and deaths), coverage of key prevention interventions such as LLINs and Indoor Residual Spraying, diagnostic testing and treatment, monitoring of efficacy of the interventions, promotion of uptake, advocacy and monitoring resource gaps including financing of the interventions and documenting in WHO reports.<sup>14</sup> These analyses show a decline of malaria incidence in some districts and deaths nationwide (by half for deaths), in the past decade. Technical support from WHO has helped raise community health awareness, facilitating uptake of interventions. This support has also helped leverage increased domestic and external financing that have contributed to this huge positive impact. The existence of a separate budget for malaria control and elimination activities in the health sector is particularly vital and WHO continue to advocate for its availability as a line item in the health budget.

Technical support on cross border malaria activities is crucial. WHO strategic technical support has prioritized the strengthening of regional cross-border collaboration and there is progress in policy, advocacy, strategic planning and partnerships. This support has enabled countries to effectively reduce malaria in border areas which are characterized by high population mobility among neighbouring countries. Previous cross border collaboration such as the Lubombo Spatial Development Initiative (LSD), collaboration among Swaziland (eastern side), Southern Mozambique, and north-eastern KwaZulu Natal in South Africa, launched in 1999 helped to reduce malaria incidence from 25% to 2% in South Africa and Swaziland.<sup>16</sup> Similarly, the MOZIZA - Mozambique, Zimbabwe and South Africa cross border initiative, created shortly after 2014, illustrates the importance of sharing expertise, logistics and infrastructure. The lessons of such initiatives have been shown in other cross-border initiatives such as the Trans-Kunene collaboration between Namibia and Angola, created in 2011, where coordination meetings are being held to enhance malaria cooperation.<sup>15</sup>

WHO's technical support on malaria should remain strategic and focused to assure impact. This will accelerate a sustained effort towards realizing the vision of a malaria free Zambia.

## CONCLUSION

The WHO technical support is pivotal in effecting impact on the malaria burden, in terms of incidence and mortality in Zambia. To sustain these gains WHO's efforts should continue to advocate for monitoring, surveillance and resources (domestic and external) funds.

## ACKNOWLEDGEMENTS

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