AFRICA HEALTH ORGANISATION

AHO POLICY BRIEF ON MALARIA PREVENTION

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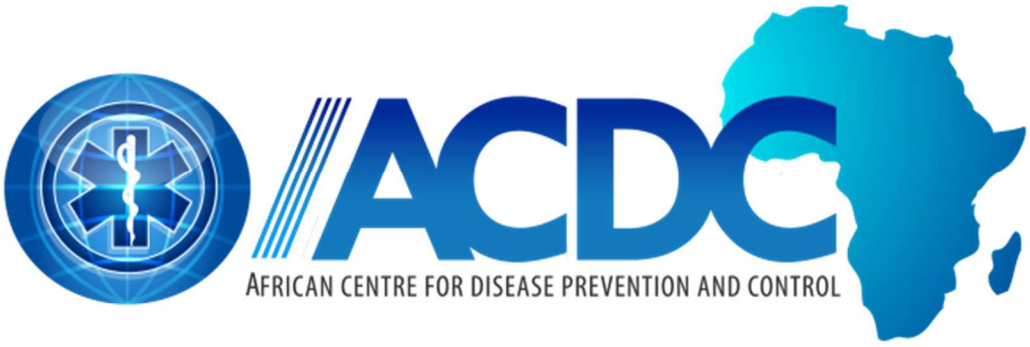
PREVENTING MALARIA DEATHS IN UGANDA

Partners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Introduction

Uganda ranks 8th highest number of P. *falciparum* infections in sub-Saharan Africa, and some of the highest reported malaria transmission rates in the world. There is stable, perennial malaria transmission in 90–95% of the country. In the rest of the country, particularly in the highland areas, there is low and unstable transmission with potential for epidemics. According to 2016 data from Uganda's Health Management Information System (HMIS), malaria accounts for 20% to 34% of outpatient visits and 25% to 37% of hospital admissions.

The most common malaria vectors are Anopheles gambiae s.l. and An. funestus. Anopheles gambiae s.l. is the dominant species in most places, while An. funestus is generally found at sites having permanent water bodies with emergent vegetation. Anopheles funestus are the more predominant malaria mosquito in Northern Uganda (Apac, Lira) during dry months while An. gambiae can be found at both sites during the rainy season. Like An. gambiae, An. funestus mosquitoes are strongly endophagic and are commonly collected indoors, resting on walls during early morning hours, making ITNs and IRS viable vector control strategies. Recently, An. arabiensis have been found in northern, eastern, and south-central Uganda, having been identified from An. gambiae s.l. samples. Anopheles arabiensis tends to bite earlier in the evening, feeds more willingly on domestic animals, and has a greater propensity to feed outdoors than does An. gambiae but remains an effective malaria vector.

Background

What causes malaria?

Malaria is a parasitic infection transmitted from person to person by the bite of infected female Anopheles mosquitoes. These mosquitoes usually bite from around dusk to dawn. Once transferred to the human body, the infection travels to the liver where it multiplies and then enters the red blood cells. Inside the red blood cells, the parasites rapidly multiply until they burst, releasing even more parasites into the bloodstream.

Symptoms of malaria

Malaria begins as a flu-like illness, with symptoms first occurring 9-14 days after infection. Symptoms include fever (typical cycles of fever, shaking chills, and drenching sweats may develop), joint pain, headaches, frequent vomiting, convulsions and coma. If uncomplicated malaria is left untreated, it can become severe, around eight million cases progress to severe malaria annually. Death from malaria may be due to brain damage (cerebral malaria), or damage to vital organs. The reduction of red blood cells can cause anemia.

Diagnosing malaria

Diagnosing malaria is done with rapid dipstick tests or looking for the parasite under a microscope in a blood smear. However, rapid tests are not always available; microscopy is not always straightforward and, as a result, diagnosis based on symptoms is still routine in much of the developing world. Because of this, patients are often misdiagnosed, and the real reasons for their symptoms go untreated. It also means anti-malarial drugs are overused and go to waste when they are desperately needed.

Treating malaria

The most effective treatment for malaria is artemisinin-based combination therapy (ACTs). ACTs have low toxicity, few side effects and act rapidly against the parasite. A three-day course of anti-malarial pills for a baby can cost as little as 25 pence. Long lasting insecticide-treated bed nets are an essential means of controlling malaria. In endemic areas, MSF distributes nets to pregnant women and children under the age of five, who are most vulnerable to severe malaria.

Analysis of the current situation

Malaria is reported by the Ministry of Health (MOH) as one of the leading cause of morbidity and mortality in Uganda, accounting for approximately 8–13 million episodes

per year, 30–50% of outpatient visits at health facilities, 35% of hospital admissions, 9–14% of hospital deaths (nearly half of those in children less than 5 years of age) and a great many deaths occurring outside of health-care settings.

Available data include a Uganda Demographic and Health Survey (UDHS) in 2006, a Uganda Malaria Indicator Survey (UMIS) in 2009, and ongoing health facility-based data routinely collected through the Health Management Information System (HMIS). These data may be limited by incompleteness in data collection, variations in reporting rates between sites and over time, and biases inherent to facility-based data. Nonetheless, they offer a valuable picture of the malaria control situation in Uganda, showing some impressive recent advances in the coverage of control interventions. However, these and other available data argue that the malaria burden in Uganda has not decreased notably in recent years, and it may even be increasing.

Affected Population

Malaria is endemic in approximately 95% of the country, affecting over 90% of the population of 3 million. People who are heavily exposed to the bites of mosquitoes infected with P. falciparum are most at risk of dying from malaria.

The most vulnerable groups are young children, who have not developed immunity to malaria yet, and pregnant women, whose immunity has been decreased by pregnancy or travelers coming from areas with no malaria, and old people are more likely to become very sick and die

Risk Factors

Chemical resistance

Mosquitoes are gaining resistance to DDT and pyrethroids. WHO bioassays indicated that An. funestus in Tororo was resistant to pyrethroids (62% mortality after 1 h exposure to 0.75% permethrin and 28% mortality to 0.05% deltamethrin) in 2009. Suspected DDT resistance was also observed with 82% mortality.

Resistance to pyrethroids – the only insecticide class currently used in ITNs was detected in at least one malaria vector in more than two thirds of the sites tested and was highest in the WHO regions of Africa and the Eastern Mediterranean

Lack of enough long-lasting Insecticidal Nets

ITNs continue to be an effective tool for malaria prevention, even in areas where mosquitoes have developed resistance to pyrethroids.

Despite the concerted efforts to increase ITNs coverage, the volume of nets remained too low to achieve 60% coverage of vulnerable groups. Malaria in Pregnancy is high yet ITNs coverage among recently pregnant women remains low, only 16% of women had received two presumptive treatments with SP during antenatal clinics visits.

Human Activities

The encroachment of the swamps by human activities such as brick making, farming and mining have created several breeding areas for mosquitoes.

Weak Health and surveillance systems

Disparities in healthcare in remote areas leaves many populations without access to vital interventions such as malaria case management leading to delayed health care seeking habits. Several communities do not have good coverage of the health system such as Karamoja and highland areas.

The surveillance system for the private sector and community is still weak. This means outbreaks are sometimes detected late and respond to them on a timely basis resulting in high burden of malaria disease.

Climate and environmental factors

Global warming has made areas initially with low mosquito density such as Kigezi to have increased populations. The Increased rainfall pattern in some seasons predisposes ill prepared districts to upsurges, with less than 4% of Uganda's population lives in areas that are essentially free of malaria.

Uncertainties

Limited resource envelope to comprehensively respond to epidemics. The response is still piece meal because mobilizing funds for interventions such as Indoor Residual

Spraying, Larviciding and Mass Drug administration is a very arduous task at district and National level. The reduction of malaria prevalence predisposes the population to severe forms of malaria due to low immunity. This was the case of the outbreak of Black Water fever in Manafwa. The unstable political environment of neighbouring countries leading to mass influx of refugees and populations along borders that are not having access to malaria interventions

Socioeconomic Consequences

Malaria has a significant negative impact on the economy of Uganda due to loss of workdays because of sickness, decreased productivity, and decreased school attendance. A single episode of malaria costs a family on average 9 US dollars, or 3% of their annual income.

Workers suffering from malaria may be unable to work for an estimated 5-20 days per episode. Given that many people are infected multiple times a year, this has substantial financial consequences to families. A poor family in a malaria endemic area may spend up to 25% of the household income on malaria prevention and treatment. Industries and agriculture also suffer due to loss of person-hours and decreased worker productivity.

Investors are generally wary of investing in countries where malaria rates are high, leading to a loss in investment opportunities. Further, severe malaria impairs children's learning and cognitive ability by as much as 60%, consequently affecting the performance of Uganda's universal primary and secondary education programs.

Policy Recommendation

Intervention coverage of ITNs

There is need to increase coverage and utilisation of ITNs and IRS for malaria prevention in Uganda with attention given to barriers such as education and income. In addition, other malaria prevention strategies such as environmental management, early closing of

windows and improving structural condition of houses are required to strengthen existing malaria prevention approaches.

Health education

Conducting community behavioural change activities for malaria through different communication platforms while involving community leaders, volunteers and politicians.

Use of non- resistant insecticides

In northern Uganda, mosquitoes developed resistance on lambda-cyhalothrin, alpha-cypermethrin. The insecticide carbamate, bendocarb effective.

Routine nationwide parasite, vector and resistance surveillance

The need to assess the malaria situation and investigate the epidemiological conditions prevailing nationwide is vital for malaria prevention and control. Malariometric surveys should be conducted to provide a profile of risk, epidemiology and seasonality in preparation for the design of national elimination and was one of the most significant nation-wide examinations of the epidemiology of malaria risk at the time and establish system for mapping, identifying, and engaging hard-to-reach, minority and socially disadvantaged populations.

Research

Encourage more research in malaria prevention by partnering with universities and research institutes. In addition, strengthen malaria data use for action at facility and district level by all stakeholders for evidence-based decision making.

Capacity building

Increase investment in facilities and health system building blocks to cover vulnerable populations and track implementation of interventions of malaria reduction for eventual elimination to reduce inequalities in disadvantaged areas.

Strategies

Enforce malaria prevention strategies through such as environmental management and improving structural condition of houses are required to strengthen existing malaria prevention approaches and reduce malaria prevalence, morbidity, and mortality.

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