How to fight malaria drug resistance

By Faith Amongin

Malaria remains one of the main global health challenges and one of the primary causes of death, accounting for approximately 70,000 to 100,000 deaths in Uganda each year, according to a study published in 2015 by the American Journal of Tropical Medicine and Hygiene.

There were approximately16 million cases reported in 2013 and over 10,500 deaths annually according to the 2014 – 2020 National Malaria Strategic Reduction Plan report by the Ministry of Health.

The report further states that Uganda has the sixth highest number of annual deaths from malaria in Africa, as well as some of the highest reported malaria transmission rates in the world with a rate of 478 cases per 1,000 population annually.

Globally, the World Health Organisation (WHO) states that one child dies from malaria every two minutes. In 2015 alone, malaria claimed the lives of 429,000 people worldwide, mainly young African children.

Uganda is still stuck at the control phase despite the various interventions by government and other stakeholders to reduce the prevalence like the ongoing distribution of Insecticide mosquito Treated Nets (ITN) and the Indoor Residual Spraying (IRS) in mainly areas where the prevalence is highest. However, one of the major complications in the fight against malaria is the issue of drug resistance; that is the reduction in effectiveness of a medication that is used repeatedly.

Anti-Malaria drugs should be taken as prescribed by the doctor

Drug resistance

Charles Kasozi, a family physician at the Mulago National Referral Hospital, says drug resistance mainly arises when patients opt for self-medication.

"The drug resistance happens when a patient take small doses or is not taking the medication properly, as prescribed. Some people get partial treatment, while others do not get treatment. It is something that happens overtime, not immediately. The malaria parasite in this case transforms itself and becomes resistant to the drug," he explains.

A few decades ago, Chloroquine was the main anti-malarial drug, but over time it became ineffective because the malaria parasite had built resistance to the drug.

In June 2000, the Ministry of Health conducted a national consensus meeting to evaluate the available drug efficacy data thus reviewing the national anti-malarial drug policy after which a combination of Chloroquine + sulfadoxine – pyrimethamine (SP) was chosen to replace Chloroquine as the first line treatment, according to the *journal of Tropical Medicine and International Health*, 2002.

"The first line treatment was Chloroquine which became resistant but it was the best drug. We then moved to camoquine and fansidar which also became resistant, and then we moved to quinine which is now partially resistant," Kasozi says.

"The ministry stopped the use of quinine much as it was still a good drug by the time it was halted, because of some issues. It had a lot of side effects and was affecting mostly children, it would damage their nerves," he adds.

Arteminisinin Combination Therapies (ACTs) are currently the frontline treatments against Plasmodium falciparum malaria.

Although these treatments are working well in many parts of the world, there is concern that malaria parasites are once again developing widespread resistance to this treatment.

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As the threat of antimalarial drug resistance grows, there is increasing pressure to sustain the efficiency of the existing treatments, develop alternative treatments as well as putting in place preventive measures.

Some efforts to reduce the burden disease have intensified recently through the use of effective tools such as the distribution of insecticide treated mosquito nets by government and Indoor Residual Spraying (IRS) of insecticide.

Way forward

Dr. Jimmy Opigo, the Programme Manager, National Malaria Control Programme (NMCP) at the Ministry of Health says one way government has intervened in the issue of drug resistance is by embarking on the use of combination therapy treatment that is, the use of two or more drugs with different modes of action in combination instead of the mono-therapy.

"We now use a combination of medicine instead of one type; ACTs are like ARVs you take three instead of one. This attacks the parasite in all sides and keeps the turns of resistance very low," Opigo says.

Opigo adds that, the fast acting artemisinin-based compounds are combined with a drug from a different class.

Companion drugs include lumefantrine, mefloquine, amodiaquine, sulfadoxine, piperaquine among others while derivatives include dihydroartemisinin, artesuante and artemether.

He says the ministry has also set up some centres to monitor the performance of the ACTs.

"We are monitoring performance of this medicine. Should we see any of them starting to fade, we shall then do a rotation. There are so many classics, for example there is coartem and there is also deococeptive which are mixed. The combination therapies are made of different things so we rotate," Opigo explains.

Opigo further says maintaining drug quality is another strategy the ministry has embarked on to fight drug resistance. This is being done by keeping a good logistic chain like having good storage conditions, as this keeps the quality of the drugs from collapsing.

Opigo, however also blames a lack of commitment from the public in the fight against the epidemic which has also played a role in the slow eradication of the malaria from the Uganda.

"We usually encourage proper diagnosis and treatment because if you're not tested and you take anti-malarial anyhow, you develop a resistance. Or if you do not comply with treatment like taking medication for one or two days then you stop, it does not kill or expose the parasites properly," Opigo says.

"This applies to any other medicine getting drug resistance; it is usually due to abuse of use, that the drug resistance rates remain high," he adds.

Malaria Deaths in Week 3, 2018

District	Health Facility	Death
Kabarole	Fort Portal Regional Referral Hospital	2
Kasese	Hima Star Clinic	1
Ibanda	Ibanda Hospital	1
Kagadi	Kagadi Hospital	1
Agago	Kalongo Ambrosolo Memorial Hospital	1
Kitgum	Kitgum Hospital	1
Wakiso	Kiziba HC III	1
Kyotera	Kyotera Muslim HC II	1
Kaberamaido	Maddona Clinic HC II	1
Mbale	Mbale Regional Referral Hospital	6
Moyo	Moyo Hospital	1
Mubende	Mubende Regional Referral Hospital	1
Rubanda	Nyaruhanga HC II	2
Pakwach	Pakwach HC IV	2
Katakwi	St. Anne Usuk HC III	2
Total		23

Source: National Malaria Control Programme, Ministry of Health.