

## **PRESS STATEMENT**

### **A JOINT STATEMENT ON THE SITUATION OF RESIDUAL MALARIA IN TANZANIA BY IHI CHIEF EXECUTIVE DIRECTOR DR. HONORATI MASANJA, IHI DIRECTOR OF SCIENCE DR. FREDROS OKUMU AND IHI SENIOR SCIENTIST DR. SARAH MOORE, DAR ES SALAAM, NOVEMBER 28, 2017**

#### **Malaria control in Tanzania is achieving great strides**

Malaria prevalence surveys have shown a halving of malaria between 2008 and 2012 and this lead to Tanzania meeting its millennium development goals for child mortality. Tanzania has some of the highest rates of the Insecticide Treated Nets (ITNs) usage among those with access to an ITN of all President's Malaria Initiative (PMI) countries and an average 64% of all Tanzanians use Long Lasting Insecticidal Nets (LLINs) nightly in nearly all regions although net use behaviours need to be maintained as transmission falls.

#### **However we cannot be complacent**

The goal for Tanzania is to reduce the average malaria prevalence from 10% in 2012 to 5% in 2016 and further down to less than 1% in 2020. However, we have not succeeded in this goal. Malaria prevalence: was 14% in 2015-16 according to Rapid Diagnostic Testing (RDT) results. Malaria prevalence is highest in children in the Lake region and more or less non-existent in the central region and Zanzibar. Of importance, malaria is highest in the Lake Zone where both net ownership is highest at around 70% and since 2007, between 2 and 5 million people has also been protected by IRS annually.

#### **What is being done in Tanzania**

Clearly, more needs to be done to further reduce malaria burden. In Tanzania, a nationwide mechanism for monitoring mosquito populations has been set up to understand vector behaviours that may drive transmission because vectors don't contact insecticide treated surfaces.

More data suggest that more malaria is mediated by *Anopheles funestus* mosquitoes. This is a particular challenge to the vector control community because this species occurs in low densities and is difficult to breed, so we have not studied it. In the Lake Zone, much malaria is mediated by *Anopheles gambiae* s.s. The good news is these mosquitoes may be more readily controlled by Indoor Residual Spraying (IRS) if we can make sure that high coverage with the right insecticides is maintained.

## **Resistance and new horizon products**

The National Institute for Medical Research (NIMR) is working to monitor the insecticide resistance levels among Tanzanian mosquito populations. We know that Pyrethroids resistance is wide spread and observed in >60% sites surveyed. However, recently NIMR observed resistance to the highly effective insecticide pirimiphos methyl. Pirimiphos-methyl (known as Actellic) is the only organophosphate used in IRS in Tanzania. It has been used since 2014 as an alternative insecticide after mosquitoes became resistant to pyrethroids and carbamates. Resistance to Actellic was detected in three of 20 sites in Tanzania, 2 in the Lake Zone where IRS is ongoing, and in Arumeru District, Arusha Region, an area of high agricultural use of this pesticide.

We can therefore say that we are experiencing Residual Malaria Transmission (RMT), defined by the World Health Organization (WHO) as, "Persistence of transmission after good coverage has been achieved with high-quality vector control interventions to which local vectors are fully susceptible" because transmission is still occurring even after IRS has been conducted using chemicals to which resistance is quite new.

We are fortunate that the National Malaria Control Program (NMCP) and PMI is taking this very seriously and is considering the use on new pesticides for IRS. The neonicotinoid clothianidin is undergoing registration and we hope it will be available for use in the near future.

At IHI, we are proud to have participated in the evaluation of SumiShield, which is now the first clothianidin product to be prequalified under the new WHO Prequalification Program (PQ) scheme and the first new class of insecticides to be endorsed by WHO in 40 years. We know that there are new products in the pipeline and we anticipate the arrival of new LLIN and IRS products to the Tanzanian market place in the near future.

Another potential product that is showing promise in Tanzania is the *Synergist Piperonyl Butoxide* (PBO) nets that are currently being evaluated in one cluster randomized controlled trial in Muleba District, Kagera Region. PBO is a synergist that enhances effects of pyrethroids by inhibiting metabolic detoxification enzymes that mosquitoes use to survive exposure to pesticides. Data suggest that pyrethroid-PBO net products may have additional public health value when compared to pyrethroid-only LLIN products in areas where the main malaria vector has confirmed moderate levels of pyrethroid resistance. This is good news as a number of products are already available on the market at reasonable prices.

## **Behaviour is key to maximizing control**

While significant attention has been given to mosquito vector behaviour, to date, we are less comprehensive in our knowledge of night time human behaviour that may put some groups

at a great risk of catching malaria. It is important to empower risk groups with knowledge on how they may mitigate that risk through the use of suitable tools. Furthermore, human behavior change communication may be a powerful potential intervention to maximize vector control.

We have seen reports on the sustainability of the gains achieved in malaria control in Zanzibar is seriously threatened by the resistance of malaria vectors to pyrethroids and the short-lived efficacy of LLINs of around 3 years. Bednets become damaged and are thrown away but we have seen through studies conducted at IHI that these nets are still insecticidal. We hope to see improvements in nightly LLIN use as well as the introduction of more care and repair strategies to optimise coverage of LLINs while remaining cost effective.

### **The need for vigilance**

As we reduce the burden of malaria, we must remain vigilant. The amount of sub-patent malaria has increased with some studies showing up to 90% of Polymerase Chain Reaction (PCR) positive cases being sub-patent by RDT or microscopy. Therefore, we must also be vigilant in maintaining vector control to reduce vector receptivity in areas where we are succeeding in reducing malaria transmission. This study has revealed that even in relatively well-resourced and logistically manageable places like Zanzibar, malaria elimination is going to be difficult to achieve with the current control measures. #