

Malaria Elimination – The Way Forward

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ABSTRACT

Malaria is one of the oldest protozoan parasitic infections to human. Several methods and strategies have been applied to contain this disease from time to time. In the early part of 20th century, control measures were focused on vector sanitation, environment management and general improvement of living conditions. All these measures were aimed at larval source management (LSM). Everything changed soon after the application of DDT and many countries achieved malaria eradication. Following this, there was a resurgence of malaria in 1976 especially in the Southeast Asia region. The main reasons were resistance of drugs to parasites and insecticides to vector mosquitoes. Several measures are initiated aiming to eliminate malaria by 2030. Roll Back Malaria by WHO, President Malaria Initiative by the USA, Malaria Elimination Research Alliance in India and many others made significant impacts on malaria burden. The main intervention strategy was universal coverage of long-lasting insecticide treated nets (LLINs) with different classes of synthetic pyrethroids (SPs). This made huge impact on malaria burden especially in Africa which is responsible for 90% of total malaria worldwide. In the last four years, reduced susceptibility of SPs halted the progress of the malaria elimination goal. However, adding piperonyl butoxide (PBO) to LLINs enhanced the susceptibility of SPs. But adding PBO doubled the cost that is limiting the universal coverage of LLINs. Recent reports on long and high distance night migration of mosquitoes and finding of *Plasmodium falciparum* parasites to new areas make the malaria elimination process more difficult. Invasion of *Anopheles stephensi* in some African countries and in Sri Lanka in the post-elimination period is one such example. Shrub cuttings around houses, mosquito killing fungus, ivermectin as insecticide and vaccines inhibiting transmission are some new strategies that may be useful in malaria elimination process. Two innovations GIS-tagged tablet-based digital surveillance and improved micro PCR-based point-of-care diagnosis would dent on malaria transmission. Repurposing of larvivorous fish under bioenvironmental control strategy and community engagement are easing out malaria elimination process in India. This may be applied globally and regions thriving for malaria elimination.

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