

Integrated Vector Management--IVM

According to WHO (2007) <http://www.who.int/en/> Integrated Vector Management or IVM is a decision-making process for the management of human and animal disease vector (mosquito, sand fly, ticks, black flies) populations, so as to reduce or interrupt transmission of vector-borne diseases. Its characteristic features include:

- Selection of methods based on knowledge of local vector biology, disease transmission and morbidity;
- utilization of a range of interventions, often in combination and synergistically;
- collaboration within the health sector and with other public and private sectors that impact on vector breeding;
- engagement with local communities and other stakeholders;
- a public health regulatory and legislative framework;
- rational use of insecticides; and
- good management practices.

An IVM approach takes into account the available health infrastructure and resources and integrates all available and effective measures, whether chemical, biological, or environmental. IVM also encourages an integrated approach to disease control.

Modern IVM for malaria includes use of Indoor Residual Spraying—IRS (spraying the interior walls of usually adobe houses) with synthetic pyrethroids and DDT and use of insecticide treated nets—ITN like sleeping bednets that are placed over the bed, and other materials that mosquitoes rest on.

Indoor Residual Spraying—IRS against Malaria

Using this technique, Ministry of Health officials go house to house and spray the interior walls (of generally adobe-mud/straw houses) with a residual (long-lasting) insecticide that both repels and kills mosquitoes that land on it. This disrupts mosquitoes favored behavior of entering houses, alighting and resting on interior walls until nightfall and then flying, landing on, and biting people sleeping in the house. Indoor residual spraying remains a valuable intervention in malaria control when the following conditions are met:

- high percentage of the structures in an operational area have adequate sprayable surfaces, and can be expected to be well sprayed;
- majority of the vector population is endophilic, i.e. rests indoors;
- vector is susceptible to the insecticide in use.

The main purpose of indoor residual spraying is to reduce transmission by reducing the survival of malaria vectors entering houses or sleeping units.

Insecticide Treated Nets—ITNs against Malaria

Insecticide Treated Materials—ITMs includes insecticide-treated nets and other materials. Insecticide-treated nets (ITNs) are a form of effective vector control, when coverage rates are high and a large proportion of human-biting by local vectors takes place after people have gone to sleep. It can also be used for personal protection. Their use has repeatedly been shown to reduce severe disease and mortality due to malaria in endemic regions. In community-wide trials in several African settings, ITNs have been shown to reduce all-cause mortality by about 20%.

Other Mosquito Control Methods

In general, other vector control methods are more demanding in terms of local technical expertise, and they are much less universally applicable than ITNs and IRS. However, in particular local situations they may greatly enhance the effectiveness of interventions directed against adults or, especially in areas of low transmission, replace them.

Larviciding is indicated only for vectors which tend to breed in permanent or semi-permanent water bodies than can be identified and treated and where the density of the human population to be protected is sufficiently high to justify the treatment with relatively short cycles of all breeding places.

Environmental management approaches to vector control aim at modifying the environment to deprive the target vector population of its requirements for survival. This reduces human-vector contact and renders the conditions less conducive to disease transmission.

Personal protection measures include the use of window screens, ITNs, repellents and wearing light-colored clothes, long pants and long-sleeved shirts. Well-constructed houses with window screens are effective for preventing biting by mosquitoes that bite indoors.

Fogging or area spraying aims at killing flying mosquitoes by contact with the insecticide in the air. It must be properly timed to coincide with the time of peak adult activity. It has very limited indications for malaria control.