Case study: Regulation of Vector Control Products in Malaysia

Introduction

Malaysia is a tropical, equatorial country located in Southeast Asia. Malaysia shares land border with Thailand, Brunei, and Indonesia and maritime border with Brunei, Indonesia, Philippines, Singapore, Thailand and Vietnam. According to The World Bank, Malaysia is categorized under the upper-middle-income economies in the world for 2019[1] and has a well-developed healthcare system. Malaysia has achieved impressive health gains for its population with a low-cost public health care system that provides universal and comprehensive services, funded fully by the Government through general revenue.[2] Healthcare indicators are higher than regional averages.

Malaria in Malaysia

For the first time in 2018, Malaysia reported zero indigenous malaria related deaths.[3] Malaysia accomplished the E2020 goal of having zero indigenous cases by 2020, two years ahead of schedule. With a robust malaria elimination programme in place, Malaysia has seen a steep decline in numbers – from approximately 4000 cases in 2011 to zero cases 2018 onwards. The Ministry of Health (MoH) is currently preparing for WHO's Certification of Malaria Elimination's audit process and is focused on maintaining the 'zero indigenous cases' status for consecutive three years. For a quick glance at Malaysia's malaria facts, click here.

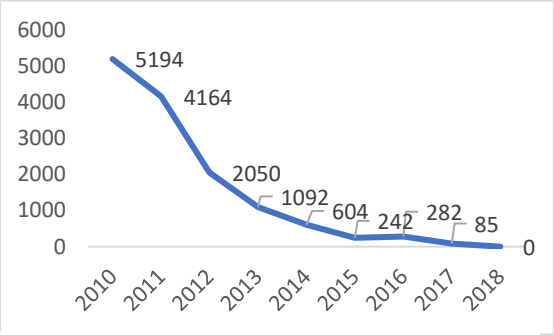

Figure 1: Indigenous malaria cases in Malaysia

Vector Control has been a cornerstone of Malaysia's malaria control efforts. Throughout the 1980s, with the programme focused on malaria control, activities mainly consisted of IRS and environmental management[4]. 1995 onwards, more aggressive vector control activities, specifically nationwide distribution of ITNs, were implemented in many areas, and confirmed cases decreased by almost 84% from 1995 to 2004.[5]

Despite the impressive progress made, with 485 cases of imported malaria in 2018, Malaysia continues to remain at risk. Many areas in Sabah and Sarawak province of Malaysia are hard to reach and this poses challenges for vector control activities. In general, populations at high risk include forest-goers, tourists, hard-to-reach populations, illegal workers, agriculture and plantation workers, forest rangers, and indigenous populations. Malaysia's ecology and climate allows for the breeding of mosquitoes and the ongoing transmission. In addition, *P. knowlesi (zootonic malaria)*, which is the most common

[1] Upper middle-income economies are those with a Gross National Income per capita between $3,996 and $12,375

[2] World Health Organization, Malaysia Health System Review, 2012

[3] World Health Organization, World Malaria Report 2019

[4] Environmental management seeks to change the environment in order to prevent or minimize vector transmission and human contact with the vector by destroying, altering, removing or recycling non-essential containers that provide larval habitats.

[5] University of California San Francisco et. al, Progress towards elimination in Malaysia, Eliminating malaria case study 8, 2015

malaria species in Malaysia now in the state of Sabah and Sarawak, is an emerging concern in the region.[6] Vector control for *P. knowlesi* vectors includes IRS, ITNs and larviciding and the MoH is also conducting a study to evaluate Outdoor Residual Spraying for *P. knowlesi* control. The MoH also encourages the use of personal protection such as insecticide treating clothing, mosquito coils.[7] To maintain the status-quo of zero human indigenous transmission and control the spread of *P. knowlesi* infection, Malaysia has to keep up with the vector control interventions and introduce new tools as and when required.

Dengue and other vector control diseases in Malaysia

While Malaysia had immense success in controlling and eliminating human cases of Malaria, dengue outbreaks have reached epidemic proportions. In 2019 itself, the number of dengue cases had crossed 130,000 and 174 deaths were recorded.[8] Other vector borne diseases such as Zika and Chikungunya are also on the rise. High risk populations for dengue include people living in densely populated areas in low economic settings in urban areas. Integrated vector control management which involves destroying mosquito breeding sites, fogging, environmental management and killing adult mosquitoes are adopted by the government for fighting dengue. In 2014, National Dengue Task Force was established by the MoH to fight dengue, which included prevention and control activities such as solid waste management, environmental cleanliness, and improvement of architectural designs.

Regulation of vector control tools

As in many countries of the region, in Malaysia too, while the Vector Borne Disease Sector in the Ministry of Public Health oversees the malaria control programme, vector control products are registered and regulated by the Department of Agriculture, under the Pesticide Act 1974. The Pesticide Board, under the Ministry of Agriculture, is responsible for implementing and enforcing the Act. The Pesticide Board is also responsible for carrying out post-registration activities such quality monitoring of pesticides being sold in the market. The Pesticides Control & Fertilizers Division is the Secretariat of the Pesticide Board. *Figure 2* below shows the organisation structure for the Ministry of Agriculture.

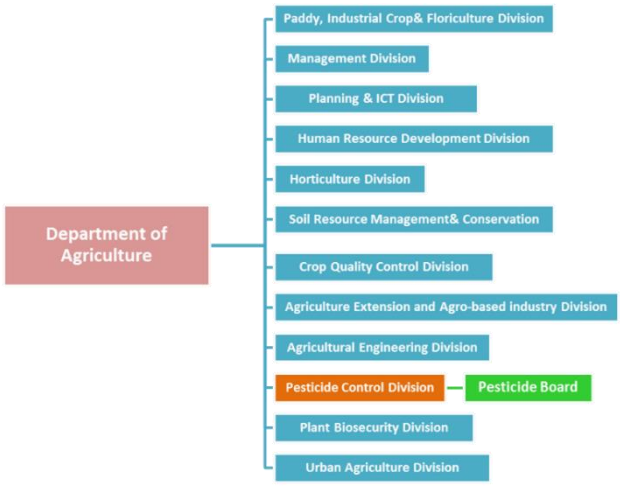

Figure 2: Organisation structure of DoA Malaysia

[6] *P. Knowlesi* is transmitted as humans come into contact with long tailed macaques (host of *P. knowlesi*) as a result of deforestation and change in the pattern of land usage. Current infections are a result of human-macaque contact only

[7] Innovative vector control consortium, Asia Pacific vector control technical landscape analysis, 2019

[8] http://outbreaknewstoday.com/malaysia-reports-record-year-for-dengue-fever-76155/

Since regulation of vector control products doesn't sit under the Ministry of Health, it warrants effective communication and collaboration between both the ministries to understand the demands of the disease programs with respect to vector control tools.

Figure 3 below details the process flow for the registration of vector control products in Malaysia.

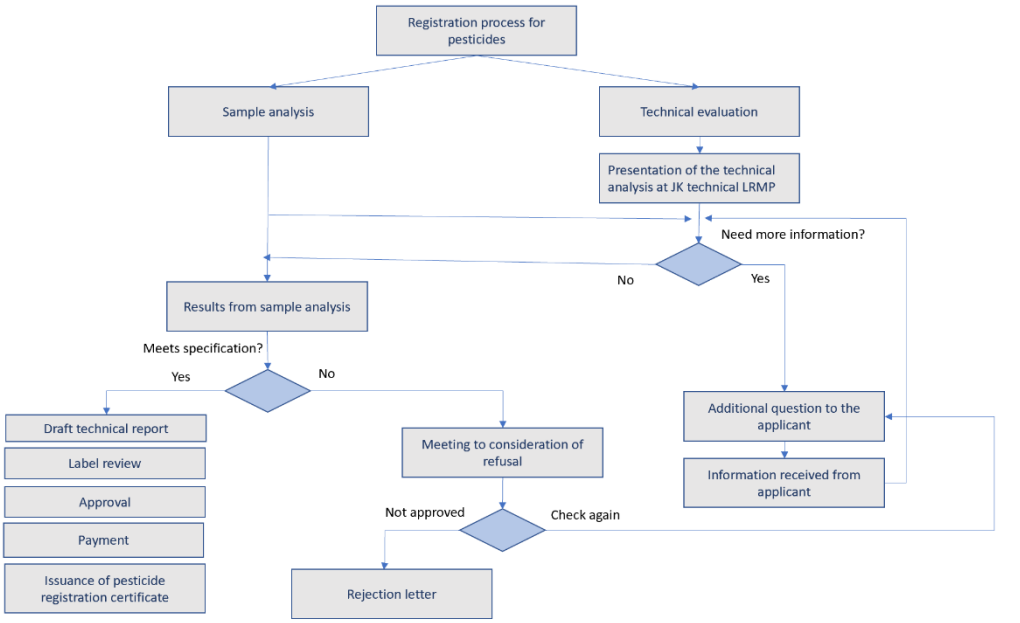

Figure 3: Flowchart for registration process for vector control tools

The regulatory system in Malaysia is robust with stringent guidelines for testing, review, implementation and monitoring of vector control tools. Priority review or expedited review is not however accorded to vector control products and they are evaluated following the same guidelines as that of agricultural pesticides. Any pesticide is required to be evaluated and approved by the Pesticide Board before it can be sold, imported or used in the country.[9]

Data requirements[1]

- Data on physical and chemical properties of Active Ingredient
- Product specifications
- Details on the manufacturing process
- Details on the method of analysis
- Toxicological data (impact on humans and animals)
- Details on the residue
- Data on impact on the environment
- Effects on non-target species
- Efficacy data
- Information on labelling (identity of the pesticide, instructions on use, safety precautions and other relevant information)
- Registration status in other countries

The Active Ingredient of the pesticide needs to be registered first before the product (pesticide formulation). In addition to the dossier containing all the data for the evaluation, a pesticide sample of the proposed pesticide must be submitted.[10] Only locally registered manufacturers or distributors can apply for the registration certificate. In addition to the products, labels and any promotional materials need approval before they can be used.

[9] However, if a product is being manufactured only for export purposes, registration is not required, provided the Active Ingredient is registered with the Pesticide Board.

[10] The sample must be suitably packed and clearly labeled with the following information i.e trade name, applicant name, active ingredient, concentration, type of formulation and the source name.

Key highlights of the registration process for vector control tools

Acceptance of regional trial data

While local bio-efficacy trial data is requested during submission for registration, toxicology data from trials conducted under similar climatic conditions and cultural practices, in other countries, are also accepted- provided the studies follow GLP regulations / ISO 17025 standards. The mandatory testing of efficacy in any given country adds to the cost of the registration and delay the approval of a product for use. In this regard, Malaysia's acceptance of regional data and not mandating in-country trials saves cost for the manufacturer and also reduces the timeline to get urgent vector control products to the market.

Timeline for registration

It usually takes 12-24 months to register a product if the data submitted is complete and fits the requirements. There may be delays in the process if the data submitted is incomplete or ambiguous. In comparison to registration timeline in other Asia pacific countries, where introduction of a vector control product can take as long as 5-7 years, this is considered an efficient and timely process.

Collaboration with the disease programs

The Pesticide Board informs the MoH about the safety and efficacy of a product and if there are issues with a registered product. Experts from the Ministry of Health form a part of the committee responsible for evaluating the dossier submission.

Registration of innovative vector control tools

The regulatory authority in the country encourages manufacturers to submit innovative products for registration. Products such as insecticidal paints etc. is an example to the country's enabling regulatory environment.

Points for discussion

- Malaysia has clear guidelines and a well-defined process for registration of vector control products and the data requirement for vector control products is less compared to agricultural pesticides. However no priority pathway is available for the introduction of products that are already WHO Pre-Qualified.
- The whole process of registration must be repeated in case of a minor change in the product formulation. There is no clause for an amendment process.
- Being regulated by Pesticide Board of Department of Agriculture, vector control products for public health use are evaluated through the same lens as are agricultural pesticides. This may cause delays in introducing new and innovative urgently required vector control tools to protect vulnerable populations.
- Malaysia also does not yet participate in joint registration review/risk assessments with other countries in the region.