Malaria control is at a critical juncture. The goal of malaria elimination in many settings might not be achieved, nor even current gains sustained without adapting to the changing threats and opportunities to controlling transmission. Progress in global malaria control over the past decade was largely gained through investments in vector control, especially insecticide treated mosquito nets (ITNs) and indoor residual spraying (IRS). In order to sustain and build further on these gains, there is a need to improve the efficiency of malaria vector control, including through better targeting of interventions, and effectively managing anopheline resistance to insecticides. These challenges can only be met by national staff with the training, support and career structures required to be able to effectively plan, monitor, evaluate and manage control programme efforts. Investment in human resources and the particular systems for public health entomology and vector control, while requiring initial investment, will ultimately save money, ensure the gains of the past decade are not lost, and enable us accelerate progress in the control and elimination of malaria.

In the past, WHO played a leading role in coordinating training in entomology and vector control, and in directly supporting implementation at the country level. Now, the landscape of global health has expanded to include other intergovernmental agencies, NGOs, the private sector and other partners who assume direct engagement with malaria endemic countries. The guidance and leadership of WHO nonetheless, continues to be crucial in these organizations’ partnerships. A number of these partners provide countries with financial resources for commodities and for vector control implementation. With such broad support, there is an urgent need to coordinate these resources in order to prioritize system strengthening through capacity building of ministry staff as well as relevant infrastructures for entomological surveillance and vector control.

This paper reviews capacity needs in malaria entomology and vector control within national health systems, focusing on the public health vector biologist cadre at both the national and subnational levels. This paper does not address entomological capacities at national universities and research institutes. The paper notes the need to expand and adapt entomology and vector control skills to include an epidemiological approach and to take better advantage of the revolution in information management and communication technology, but equally important to providing the right skills, is to ensure there are adequate career opportunities for trained entomologists in the national health system.

In summary, the paper notes the following:
- gaps, and opportunities, for strengthening capacities in routine entomological surveillance system for data collection, analysis and management, especially for monitoring insecticide resistance;
- opportunities for strengthening infrastructure for entomological laboratories and insectaries, including specific arrangements between NMCPs and national training and research institutions;
opportunities to use information communication technology to more effectively collect and respond to epidemiological and entomological field data, and to the planning and implementation of vector control interventions;

opportunities to improve curricula for both short and long-term training;

establishment of career opportunities and structures with specified ranks within the ministry of health; and finally,

opportunities for donor coordination and commitment for strengthening human resources and systems for national programmes that will be sustained long after the individual bilateral/multilateral support ends.

Key recommendations

Countries

• Ministries of health should ensure that each NMCP has the basic capacity of human and infrastructure to support vector control and entomological monitoring – including insecticide resistance;

• Establish/strengthen an intersectoral coordination mechanism, led by the Ministry of Health, responsible for developing a long-range strategic plan for building human resources and systems for public health entomology and vector control. The Plan should include the following:

  o Ministry of Health to conduct training needs assessments and curricula review for pre-service and in-service training (including epidemiology and management) to ensure training is directly relevant to the expected skills of cadre tasked with entomological monitoring and vector control;

  o Ministry of Health to review, revise or establish posts and career development structures for entomology and vector control specialists at national and subnational levels within ministries of health or other appropriate government structures;

  o In cases where the basic capacity is lacking within the NMCP, the intersectoral coordination mechanism should include the establishment of agreements with national universities, training and research institutions to provide ongoing training and technical support, including reference laboratory services, for entomological monitoring and vector control;

  o Ministry of Health to ensure that there are sufficient resources for human and infrastructure capacity-building factored into bi-lateral and multi-lateral projects and programmes, based on the established national strategic plan.

Partners

• Include a clear component of capacity building in all support to countries, with short and long-term training and mentoring as well support for the necessary entomological laboratory and insectary infrastructure.

• Ensure national control programme “ownership” in all the technical and management activities of partner projects;

• Support national control programmes to define and implement strategies for human and technical resources to sustain vector control activities after partner support ends;

• Provide financial and technical support for global and regional efforts to revise curricula and make available training and on-going mentoring opportunities for national staff
To support countries and partners in capacity building for public health entomology and vector control professionals, WHO will develop an advocacy strategy in collaboration with global, regional and national partners; facilitate, through direct technical assistance or through partner support, the national needs assessment for capacity building in public health entomology and vector control as part of a broader assessment of human resources for malaria control and elimination; facilitate, through direct technical assistance or through partner support to ministries of health, national universities and training institutions and partners in revising and adapting appropriate curricula in entomology and vector control that address the specific skills needed by vector control programme staff at national and sub-national levels and; develop prototype strategic plans for capacity building and facilitate the development and dissemination of training materials on public health entomology and vector control.

Further information

Vector Control Technical Expert Group. *Report to MPAC September 2013 on Capacity Building in Entomology and Vector Control*