WHO/CDS/NTD/VEM/2007.1

Report of the
WHO CONSULTATION ON INTEGRATED VECTOR MANAGEMENT (IVM)

Geneva, 1-4 May 2007

World Health Organization

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Report of the WHO consultation on integrated vector management (IVM)

WHO headquarters, Geneva, Switzerland
1–4 May 2007

This meeting was partially sponsored by USAID and the Government of Japan.

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1 EXECUTIVE SUMMARY

The consultation on integrated vector management (IVM) took place at the headquarters of the World Health Organization (WHO) in Geneva, Switzerland, from 1 to 4 May 2007. Its purpose was to bring together experts in IVM from country, regional and global levels to advance the development and promotion of the IVM approach, as set out in the *Global strategic framework for integrated vector management*,[1] by reviewing current status and developing a practical strategic plan for the next three years.

The **four key recommendations** of the consultation were:

1. In order to fully embed IVM in all control programmes dealing with vector-borne diseases, concerted efforts should be made, through **advocacy** and **social mobilization,** to articulate the need for and benefits of IVM and to mobilize resources for implementation.

2. The current human resource and infrastructure base for IVM is inadequate to meet increasing demands. This must be addressed urgently, through **capacity-building,** and both needs-based training and institutional development, to ensure those trained receive continued mentoring and support, and can function in systems where their skills are most effectively applied.

3. **Action must be evidence-based**, so it is essential to intensify applied research and monitoring and evaluation to assess the impact and performance of vector control, both to refine implementation of IVM and to provide data for advocacy.

4. Develop an **institutional framework** to promote, further develop, implement and scale up IVM, including national legislative frameworks.

The main conclusion of the meeting was that now is the time to tap the preventive power of vector control, given the serious risks of increasing transmission of vector-borne diseases related to climate change, population movement and environmental degradation, and the major opportunities for financial support.

The next steps will be to promote and implement the strategic plan, propose WHO appoint a panel of experts on IVM to guide its development, organize a follow-up meeting with wider representation of other sectors and disease control programmes and develop the IVM concept through the homepage of the VEM web site.

[1] *Global strategic framework for integrated vector management*. Geneva, World Health Organization, 2004 (WHO/CDS/CPE/PVC/2004.10).

2 BACKGROUND

Integrated vector management (IVM) entails the optimum use of a range of interventions of proven efficacy as well as collaboration within the health sector and with various other sectors such as agriculture and the environment. Such an intersectoral and inter-programmatic approach improves the efficacy, cost-effectiveness, ecological soundness and sustainability of disease control.

In 2004, a global strategic framework for integrated vector management was published by WHO to orient policy-makers within WHO and Member States on the development and implementation of IVM. The key elements of an IVM strategy are (i) advocacy, social mobilization and legislation, (ii) collaboration within the health sector and with other sectors, (iii) integrated approach, (iv) evidence-based decision-making and (v) capacity-building.

A number of vector-borne diseases are neglected tropical diseases. The Global Plan to combat neglected tropical diseases 2008–2015[2] addresses the challenges of delivering multi-intervention packages, including the promotion of IVM.

Vector control can reduce or interrupt transmission when coverage is sufficiently high. It thus has an important role to play in initiatives that seek to reduce transmission and make prevention of infection a high priority. Vector control is well suited to integrated approaches, as some vectors are responsible for multiple diseases, and some interventions are effective against several vectors. There are opportunities to build on existing vector control strategies to develop IVM in communities, for example where malaria is a high priority. Expansion of vector control tools beyond the use of insecticidal nets and indoor residual spraying needs to be explored.

A range of IVM activities are being implemented. However, IVM is underutilized or, in many cases, investments in vector control are wasted and do not achieve the aims intended. In order to facilitate the application of IVM principles on a programmatic level, the national capacities and infrastructures of many vector-borne disease-endemic countries should be strengthened before evidenced-based, multi-intervention and multi-disease vector control approaches are applied. Large, new investments are being made for indoor residual spraying and insecticide treated mosquito nets, especially against malaria vectors in Africa. Likewise, there are new investments for a number of the other vector-borne neglected tropical diseases. Unfortunately, there is severe dearth of personnel, and lack of technical and organizational capacity for many of the endemic countries to implement these programmes. The time is critical for IVM to move to a more active and productive programme, through which capacity can be built, and the

[2] *Global plan to combat neglected tropical diseases, 2008–2015*. Geneva, World Health Organization, 2007. Ref: WHO/CDS/NTD/2007.3

planning, implementation, monitoring and evaluation of vector control become more integrated, and more rigorous, to order to better contribute to the goals of disease reduction and global development.

3 MEETING PARTICIPANTS

The meeting was opened by Dr Lorenzo Savioli, Director of the Department of Control of Neglected Tropical Diseases. Professor Harold Townson was elected as Chair and Dr Pradeep Kumar Das as Vice-Chair (Annex 1). Participants at the meeting included specialists in vector control (VC) from WHO countries, regions and headquarters, IVM/VC experts and partners, field IVM/VC experts from countries and international IVM/VC resource institutes (Annex 2).

4 MEETING OBJECTIVES

The objectives of the meeting were:

To review current status, progress and gaps in planning and implementing IVM:

- Field experiences: to review IVM experiences and initiatives for vector control at regional and country levels.
- Training and capacity building: to assess the training opportunities available and the adequacy of human resources at national and local levels to manage IVM programmes.
- Guidelines and tools: to critically assess the currently available guidelines and tools for planning, implementing and evaluating IVM activities.
- Evidence-based decision-making: to assemble an evidence-base that vector control strategies can significantly reduce human disease.

To agree on priorities for further development of IVM:

- To make recommendations to accelerate the strengthening of vector control for disease prevention.
- To develop a global movement for IVM.

The expected outcomes of the meeting were:

- an update on status of IVM implementation in WHO regions and countries in the five key elements of IVM;
- necessary actions identified and prioritized for the five key IVM elements;
- priority WHO actions in support of IVM implementation by Member States identified.

5 CONTEXT AND CURRENT STATUS OF IVM

5.1 Context of IVM

Within WHO, IVM is managed and promoted by the regional offices and the Vector Ecology and Management team (VEM) of the Department of Control of Neglected Tropical Diseases (NTD) at headquarters, with linkages, in particular, to the Global Malaria Programme (GMP), the Department of Protection of the Human Environment (PHE) and the Special Programme for Research and Training in Tropical Diseases (TDR).

Within VEM, WHO's normative work on NTDs includes production of guidelines, policies and strategies for IVM. GMP promotes vector control for malaria, in particular indoor residual spraying and long-lasting insecticidal nets, and builds capacity to monitor and manage insecticide resistance. PHE is supportive of the IVM process, and can provide technical capacity on tools and intersectoral processes. It is also interested in economic analyses to make a case for IVM. TDR has recently undertaken a strategic review, and three of its new business lines relate directly to IVM (BL5 – innovative vector control interventions, BL10 – visceral leishmaniasis elimination and BL11 – integrated community-based interventions). Eight of the 10 TDR focus diseases are vector-borne, and it addresses vector research in its units for Strategic and Discovery Research, Implementation Research and Research Capacity Building.

The present meeting closely follows the First WHO Global Partners' Meeting on Neglected Tropical Diseases held on 19–20 April 2007, which marked a turning point in commitment to control of NTDs. One of the nine strategic areas for action in the new Global Plan to Combat Neglected Tropical Diseases 2008–2015 is to strengthen IVM, with three major expected results:

1. Capacity increased for vector control based on principles of IVM at national, regional and global levels;
2. Advocacy, social mobilization and legislative frameworks established in support of IVM within health sector and other sectors;
3. Evidence base established and utilized for rational decision-making for NTDs and other vector-borne diseases.

5.2 The IVM approach to vector control

The principles and approaches to IVM are set out in the Global Strategic Framework for Integrated Vector Management, WHO, 2004, which describes it as a process for managing vector populations in such a way as to reduce or interrupt transmission of disease. Characteristic features of IVM include:

- methods based on knowledge of factors influencing local vector biology, disease transmission and morbidity;

- use 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 vectors;
- engagement with local communities and other stakeholders;
- a public health regulatory and legislative framework.

The **five key elements of IVM** are detailed in the box below:

Five key elements of integrated vector management

1. Advocacy, social mobilization and legislation

- Promotion and embedding of IVM principles in development policies of all relevant agencies, organizations and civil society
- Establishment or strengthening of regulatory and legislative controls for public health
- Empowerment of communities

2. Collaboration within the health sector and with other sectors

- Consideration of all options for collaboration within and between public and private sectors
- Application of the principles of subsidiarity in planning and decision-making
- Strengthening channels of communication among policy-makers, vector-borne disease control programme managers and other IVM partners

3. Integrated approach

- Ensure rational use of available resources through application of a multi-disease control approach
- Integration of non-chemical and chemical vector control methods
- Integrated with other disease control measures

4. Evidence-based decision-making

- Adaptation of strategies and interventions to local vector ecology, epidemiology and resources
- Guided by operational research and subject to routine monitoring and evaluation

5. Capacity-building

- Development of essential physical infrastructure
- Financial resources and adequate human resources at national and local level to manage IVM programmes based on a situation analysis.

The benefits of developing and utilizing IVM derive from the facts that some disease vectors are responsible for multiple diseases and some interventions are effective against several vectors. In addition, IVM can lead to efficiencies by drawing on the resources, and supporting the work, of sectors beyond health, both public and private. Its emphasis on advocacy and social mobilization recognizes that a well-communicated approach to vector control accounting for people's perceptions and circumstances stands the best chance of long-term success. It is, therefore, common sense to develop and apply an integrated management approach. This approach uses locally obtained evidence to make decisions on appropriate packages of interventions for a particular location. The contents of the package will vary according to local disease ecology and feasibility of applying different control methods. User-friendly instruction tools and development of capacity are needed to assist local decision making.

5.3 Regional and national activities

5.3.1 WHO African Region

The WHO African Region was the first to endorse the concept of IVM in 2001, and the region has benefited from substantial support for IVM from the United States Government and the Global Environment Facility, and more recently from the World Bank. A systematic process of introduction, consolidation and expansion has been elaborated, and countries' responses are monitored. Vector control needs assessments have been important for planning IVM. Zambia provides a good example of systematic introduction of IVM, including its introduction into district planning, updating public health legislation and documenting progress. Nigeria has also developed an extensive multisectoral partnership for IVM through a consensus-building process, and is now developing sub-national implementation plans.

5.3.2 WHO Region of the Americas

In the Americas, IVM can impact the control of Chagas disease, malaria, dengue, leishmaniasis and lymphatic filariasis. An intensive programme for interrupting transmission of Chagas disease in Central America by 2010 has raised awareness of the problem. In South America, Chagas control combines indoor residual spraying with house improvement. Guatemala has a programme to reduce reliance on indoor residual spraying for malaria control by community-based larval control. Multiple approaches to control dengue vectors are being utilized in Brazil. Two key challenges to IVM in the region are the lack of human capacity and the limited attention to evaluation.

5.3.3 WHO Region for the Eastern Mediterranean

Implementation of IVM in the WHO Eastern Mediterranean Region is facilitated by initially generating political commitment, leading to a resolution of the Regional Committee endorsing IVM and calling for a masters level training programme and support for planning based on comprehensive vector control needs assessment (VCNA). Ten of 22 countries have undertaken a VCNA, which has provided a solid basis for

further planning. In addition, the region is undertaking demonstration activities on vector control alternatives to DDT with support from UNEP/GEF, and the plan development process in Morocco was described. IVM is seen in the region as a process to address health systems problems, which hinder delivery of available interventions.

5.3.4 WHO South-East Asia Region

Major vector-borne diseases in the South-East Asia Region include malaria, dengue, lymphatic filariasis, Japanese encephalitis and kala azar. IVM principles are embodied in many aspects of vector control in the region. There is a draft regional IVM strategy, and IVM is endorsed for malaria and dengue control and for kala azar elimination in India. Promising results for integrated pest and vector management in Sri Lanka, by empowering communities through involvement of Farmer Field Schools, have led to plans for more extensive interaction among health, agriculture and education sectors in the region, although it is recognized that it not applicable in all settings. Several GEF projects will begin in 2009.

5.3.5 WHO Western Pacific Region

Malaria, dengue and lymphatic filariasis are the major vector-borne diseases in the region. Multiple vector control interventions are applied for dengue control, and there are a few examples of supplementary measures beyond insecticide-treated nets for malaria. The vectors may have different breeding sites and behaviour, but community education programmes can target more than one disease/vector combination. If bed nets can be distributed through measles vaccination programmes in some countries, surely nets can be distributed through a dengue programme relying on community mobilization (as in Viet Nam). There must be many other possible ways in which programmes might share resources – human and others. There is scope for sharing vector control expertise for the different diseases.

5.3.6 USAID support

The United States Agency for International Development (USAID) has provided substantial support for IVM since 2004. This has included technical assistance in Eritrea, larva control field studies, environmental assessments, cost analyses and support for institutional development and dialogue.

6 ANALYSIS OF PROGRESS, GAPS AND OPPORTUNITIES

6.1 Training and capacity building

Examples of training institutions, courses and initiatives were outlined including:

Diploma in Applied Parasitology and Entomology, Malaysia. This six-month course has been offered to students from countries in the region since 1970, and demand for places exceeds supply, so there is now consideration of a distance learning option.

Vector Control Research Centre, Pondicherry, India. Previously, the centre offered a two-year MSc, and now offers a six-week regional training course for South-East Asia. There is a new commitment to have an entomologist for each district and a need to increase the profile of vector control in India.

International Centre for Insect Physiology and Entomology (ICIPE). Kenya is engaged in a range of activities for capacity building on insect science, such as ARPPIS (African Regional Postgraduate Programme in Insect Science), which was launched in 1983 in collaboration with 31 African universities, and has trained over 200 PhDs and 120 MScs, 80% of whom have been retained by African institutions. ICIPE has undertaken two six-week IVM courses with WHO. Ideas for development include developing linkages with existing institutions for IVM training, follow-up of trainees, collaboration with other sectors and resource mobilization.

ESACIPAC – KEMRI. Kenya has undertaken a series of courses in school-based parasite control, health and nutrition. Identified gaps include the need for more clarity on the scope of IVM in order to define training needs, whom to train and how to make use of existing training capacity.

Noguchi Memorial Institute for Medical Research, Ghana. The institute offers a range of training and research opportunities related to vector-borne diseases, including international training for mid-level entomologists and environmental health officers in IVM. Other west African institutions include the International Masters in Medical and Veterinary Entomology in Benin and the ARPPIS Centre at the University of Ghana.

Asian Collaborative Training Network for Malaria Control (ACTMalaria). This innovative intercountry training network was set up by the malaria control programme managers of 11 Asian countries to promote the sharing of training resources. It has developed and run a range of courses based on members' needs and uses problem-based learning approaches. International courses can be adapted by participants to national courses to allow wider use in home countries.

Some general IVM capacity needs that were highlighted included training for both implementers and supervisors, political commitment, networking and continuing education.

6.2 Guidelines and tools

There are a range of relevant guidelines and tools on policy and strategy, planning and implementation, monitoring and evaluation (disease-specific) and capacity building. Gaps include guidelines and tools on advocacy and social mobilization, partnership, intersectoral collaboration and resource mobilization, guidance on how to link, package and deliver disease-specific interventions in the context of IVM (e.g.

vaccination and ITNs) and integrated monitoring and evaluation tools. Existing tools need to be reviewed and new ones developed. Attention must be given to ways of disseminating these tools and ensuring that they are used. Zambia has analysed opportunities for reviewing legislation relevant to IVM and improving on existing legislation. The well-established dengue control activities in Singapore rely on a set of tools that include surveillance, legislation, environmental improvement and geographical information systems for more targeted and effective source reduction. There is a need for more research on meaningful entomological thresholds and adult mosquito monitoring tools.

6.3 Knowledge gaps and research priorities

A strong evidence base is essential to generate the support necessary for IVM implementation at the programmatic level. Evidence for implementation at community level is as important as at national and international level to promote ownership and commitment.

A series of steps are needed to monitor implementation of IVM at country level:

- situation analysis of programme area (what diseases, vectors, resources, human population, the environment (social, political and physical) and constraints;
- framework for selection of IVM tools based upon eco-epidemiological strata;
- identification of intervention options;
- mapping and baseline data collection;
- start of IVM implementation;
- routine record keeping of all IVM activities;
- data collection to establish an activity threshold;
- preparation of decision-making tree and testing it;
- data analysis, report preparation;
- adjustment of IVM procedure appropriately according to evidence;
- action to be taken at local municipal, parish, state, province, country level;
- presentation of report to next level, revision and analysis by next level;
- timely periodic reports at all levels;
- reception of reports and action taken and provide feedback to all levels;
- report to WHO country office.

Operational research priorities for IVM include:

- new insecticides, formulations and applications (methods, timing and spatial targeting);
- insecticide resistance management;
- assessment of efficacy of existing less widely adopted tools (water management techniques, physical barriers);

- development of novel tools; physical, behavioural, education, biological control agents, e.g. pathogens, parasitoids, predators;
- assessing IVM impacts across a range of target diseases;
- mathematical models to assess the impact of IVM interventions;
- development of tools for monitoring and evaluation of IVM;
- development of community-based programmes;
- implementation of GIS/GPS database system;
- cost-effectiveness analysis of IVM.

7 DEVELOPMENT OF A STRATEGIC WORKPLAN

The meeting participants divided into three groups to develop a Strategic Plan up to 2010. The frame for this plan is (i) the Global Strategic Framework for Integrated Vector Management, WHO, 2004 and (ii) the Expected Results in the Global Plan to Combat Neglected Tropical Diseases, 2008–2015, which was launched at the NTD Partners` Meeting in April 2007. The Strategic Plan for IVM has a shorter time frame than the Global NTD plan, as its purpose is to set out a concrete set of activities for country, regional and national levels to develop and communicate the principles of IVM.

Actions to achieve progress across the five key elements of the Global Strategic Framework were identified, and activities at country, regional and global levels for each action, and expected times for undertaking these activities were discussed.

8 CONCLUSIONS AND RECOMMENDATIONS

Given the increased risk of vector-borne disease posed by environmental degradation, climate change, population movement, and a depleting arsenal of safe and cost-effective insecticides and limited human and financial resources of the endemic countries, and given the opportunities offered by the availability of efficacious tools and unprecedented funding from GEF, GFATM, PMI, World Bank and others, the meeting strongly reaffirmed the crucial importance of moving forward with IVM development.

Acknowledging the progress made by existing prevention programmes, the meeting stressed that the preventive power of vector control should be fully deployed. If this is not done, the suboptimal use of available resources will continue, and millions of people will remain vulnerable to increasing risk of infection with preventable vector-borne disease.

8.1 Priority areas

8.1.1 Advocacy

IVM is, above all, a management approach to "optimize and rationalize the use of tools and resources" in vector control, whether it be single or multiple interventions. While it may be "common sense" and certainly fiscally responsible to have the capacity to target, monitor and evaluate vector control efforts, too often measures at the community, municipal, district and even national levels are implemented without evidence. Advocacy is key at each of these levels, for families to understand and take control of their domestic environments with regard to vector-borne diseases, for district governments to make resource allocation decisions, and for national governments to cope with environmental degradation, climate change and the ever-increasing burden of vector-borne diseases. The current global concern on environmental degradation and climate change is a strategic opportunity to make the case for IVM, as expertise on vector control is needed.

It is more difficult to articulate a case for supporting a management approach than for supporting direct interventions against specific diseases. The attributable benefit is less easy to measure, but no less real. The advocacy needs to be based on sound evidence and to promote greater ownership of the IVM approach. This approach has huge potential at each level, from the household to the global, and must be articulated from the perspective of the beneficiaries, the implementers and the funding agencies. IVM advocacy needs to work across several sectors and include social mobilization.

8.1.2 Capacity building

The past three or four decades have seen a devastating decline in the capacity of countries to address effectively the challenges of vector-borne disease. There may be many reasons, but two stand out. Firstly, advances in chemotherapy, coupled with decentralized health systems have made treatment-oriented public health strategies the easier choice. Secondly, the shift away from field operations involving vector control hastened the dismantling of education programmes devoted to population-based vector control programmes. As a consequence, entomologists and vector control specialists migrated towards academic research and away from "public health entomology". Now this has all changed. Burgeoning vector-borne diseases such as dengue in the Americas and Asia, recent efforts to make a real impact on malaria, and renewed attention to the neglected tropical diseases, many of which are vector borne, demand capacity at district, national and global levels that is often not there. Nevertheless, there is a foundation for rebuilding capacity through a number of training and research institutions in endemic countries, and through nascent networks of vector control activities supported through foundations and international and bilateral organizations. Training is just the start. Linked with advocacy, there needs to be an institutionalization of IVM with appropriate career structures and responsibilities throughout both public and private sectors.

Professional training in medical entomology needs to adapt, move beyond schools of zoology and include more public health, programme management and community development skills. *Medical* entomologists should become *public health* entomologists and function in a decentralized environment where vector control is implemented in collaboration with the public sector, private sector and broader civil society.

8.1.3 Evidence for planning and evaluation

IVM is founded on the principles of thorough planning, careful monitoring of performance and evaluation of impact. The approach highlights improving the quality of primary data collection, record keeping, information management and decision-making, especially at the most decentralized level.

IVM is the optimization of vector control. Applied and operational research on the impact of multiple approaches, cost effectiveness, delivery strategies and community engagement are core activities for assessing and improving IVM.

Success will be measured through a new set of process indicators reflecting milestones laid out in a strategic plan for the next two years, five years and beyond. The indicators need to reflect the overall approach of IVM and thus measure community mobilization and intersectoral engagement as well as vector control implementation.

8.1.4 Institutional framework for IVM

IVM is based on the premise that vector control must move beyond the sole responsibility and ownership of ministries of health, and include other public sector institutions, especially environment, local government, agriculture and public works, as well as the private sector and civil society. As such, IVM necessitates a revision of the institutional frameworks within the government public sector and at the regional and global levels. There is evidence that this process has started in the WHO African and Eastern Mediterranean regions, but much more needs to be done.

8.2 Recommendations

8.2.1 Advocacy

In order to fully embed IVM across all control programmes dealing with vector-borne diseases, concerted advocacy and social mobilization efforts should exploit all opportunities to articulate the need for and benefits of IVM and to mobilize resources for implementation.

a) WHO should ensure that a common and clear description of IVM is articulated and widely used, so that misconceptions are dispelled, and more people and organizations become engaged.

b) WHO headquarters should take greater steps to demonstrate its support for IVM across departments.
c) WHO should seek the involvement of other organizations at global and regional levels; likewise, ministries of health should seek the broader involvement of other ministries, the private sector and civil society at a national level.
d) Partners should support strategies for community empowerment, as exemplified by the engagement of farmers in integrated pest and vector management (IPVM).
e) Partners should support clear documentation, analysis and review of IVM implementation, and should widely circulate success stories and case studies.

8.2.2 Capacity-building

The current human resource and infrastructure base for integrated vector management is inadequate to meet increasing demands. This must be addressed urgently, through both needs-based training and institutional development, to ensure that those trained receive continued mentoring and support, and can function in systems where their skills are most effectively applied.

a) Countries and supporting partners should undertake a human resource needs and institutional assessment, identifying the skills and institutional frameworks needed, what is available, and what institutions and networks are available that could provide training and mentoring for IVM.
b) International agencies and national institutions should work together to build a new generation of vector control specialists and medical entomologists. A global system of regional certification for vector management for professionals with entomological expertise should be developed.
c) Funding agencies supporting vector-borne disease control should understand that investment in commodities without capacity-building could negate their efforts; investments in systems and personnel are equally important.
d) Closer collaboration between local academic and scientific institutions, ministries of health and other ministries (such as environment and agriculture) should be fostered to provide entomology expertise to malaria control programmes and to increase the profile of vector control across all sectors as a key component for health and community development.
e) Partners should closely engage the private sector for training and mentoring public health entomologists and vector control specialists at all levels.

8.2.3 Evidence-based action

Intensify applied research, monitoring and evaluation efforts to assess the impact and performance of vector control in the context of IVM, both to refine implementation and to provide data for advocacy.

a) WHO, TDR and partners should encourage applied and operational research, and enable countries to build it into all control programmes.
b) National research institutions and other international partners should undertake economic analyses of IVM in relation to environmental and climate change issues.
c) In addition to applied research, ministries of health should prioritize efficient primary data collection, record keeping, analysis and decision-making at all levels, especially the most peripheral.
d) WHO and partners should develop indicators reflecting all elements of IVM, including sound management of pesticides, entomological indicators for all vector-borne disease control programmes and insecticide resistance, and should encourage countries to incorporate these in their own programme planning and management.

8.2.4 Institutional framework

Develop an institutional framework to promote, further develop, implement and scale-up IVM, including national legislative frameworks.

a) A structure representing IVM is needed, with which other agencies, WHO departments and disease prevention initiatives can engage.
b) WHO should appoint an intersectoral IVM panel of experts (including FAO and UNEP) to provide strategic and technical guidance.
c) WHO regional offices should set up regional technical advisory groups to guide support to Member States.
d) Institutions and organizations involved with medical entomology training should reorient their approaches to develop a professional cadre of public health entomologists and vector control specialists in the context of IVM.
e) WHO at all levels should work with countries to review, adapt and update national legislation and regulations relevant to IVM.

Annex 1. Agenda

Tuesday – 1 May 2007

DAY 1. Meeting objectives and updates on current status of IVM

08:30–09:00 Registration

09:00–09:20 Opening of the meeting and presentation of objectives
Lorenzo Savioli
Appointment of Chair, Vice-Chair and Rapporteur

09:20–09:40 Global plan to combat neglected tropical diseases and Global IVM framework
Michael Nathan

09:40–10:00 Vector ecology and management initiative: packaged vector control
Kazuyo Ichimori

10:00–10:30 Discussion

Session 1 WHO initiatives – vector control

11:00–11:20 Global Malaria Programme
Said Karch

11:20–11:40 Protection of the human environment
Robert Bos/Diarmid Campbell-Lendrum

11:40–12:00 Special Programme for Research and Training in Tropical Diseases
Axel Kroeger/Yeya Toure

12:00–12:30 Discussion

12:30–14:00 Lunch

Session 2 Field report: successes and challenges

14:00–14:20 Country experiences in the African Region
Lucien Manga

14:20–14:40 Country experiences in the Region of the Americas
C. Frederickson

14:40–15:00 Country experiences in the Eastern Mediterranean Region
Abraham Mnzava

15:00–15:20 Country experiences in the South-East Asia Region
Chusak Prasittisuk

15:40–16:00 Country experiences in the Western Pacific Region
Chang Moh Seng

16:00–16:20 USAID – IVM initiatives
Eugene Brantly

16:20–17:00 Discussion and summary of Day 1

18:00–20:00 Reception – WHO restaurant

Wednesday, 2 May 2007

DAY 2. Critical analysis of progress, gaps and opportunities leading to consensus on broad strategies

Session 3 Gaps and opportunities

09:00–10:30 Round table 1: training and capacity-building
Facilitators/Moderators: *Michael Macdonald and Cliff Mutero*
Panelists: *Lee Han Lim, P.K. Das, John Githure, Evan Mathenge, Daniel Boakye, Raman Velayudan*

10:30–10:40 Summary

11:00–12:30 Round table 2: guidelines and tools
Facilitators/Moderators: *Abraham Mnzava and Alex Hildebrand*
Panelists: *Khoo Seow Poh, Graham White, Btisam Ameur, Chris Schofield, Birkinesh Ameneshewa, Emmanuel Chanda*

12:30–12:40 Summary

12:40–14:00 Lunch

14:00–15:30 Round table 3: evidence-based decision-making
Facilitators/Moderators: *Steve Lindsay and C. Frederickson*
Panelists: *Jean-Marc Hougard, Ferdinand Laihad, Chioma, Amajoh, Morteza Zaim, Emmanuel Rakotondraibe*

15:30–15:40 Summary

Session 4 Moving towards consensus on strategies

16:00–16:30 Summary of key areas of consensus to date
Sylvia Meek and Kazuyo Ichimori

16:30–17:00 Discussion

Session 5 Group discussion to outline strategies

17:00–17:15 Discussion and summary Day 2

17:15–17:30 Group discussion guidance:
Group 1. Capacity increased for vector control based on principles of IVM at national, regional and global levels.

Group 2. Advocacy, social mobilization and legislation framework established in support of IVM within the health sector and other sectors.

Group 3. Evidence base established and utilized for rational decision-making for neglected tropical diseases and other vector-borne diseases.
Michael Macdonald, Kazuyo Ichimori

Thursday, 3 May 2007

DAY 3. Reaching consensus on strategy and developing a strategic workplan

09:00–9:30	Plenary discussion – "Consensus" *Sylvia Meek*
09:30–10:30	Group discussion – "Strategic workplan"
11:00–12:30	Group discussion – "Strategic workplan"
12:30–14:00	Lunch
14:00–15:30	Group discussion – "Strategic workplan"
16:00–16:45	Plenary: Group presentation – "Strategic workplan"
16:45–17:15	Plenary discussion on group presentations
17:15–17:30	Summary

Friday, 4 May 2007

DAY 4. Finalizing consensus and summarizing the strategic plan

09:00–10:30	Plenary discussion – "Strategic workplan"
11:00–12:30	Recommendations and consensus statement
12:30–13:00	Closure of meeting

Annex 2. List of participants

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