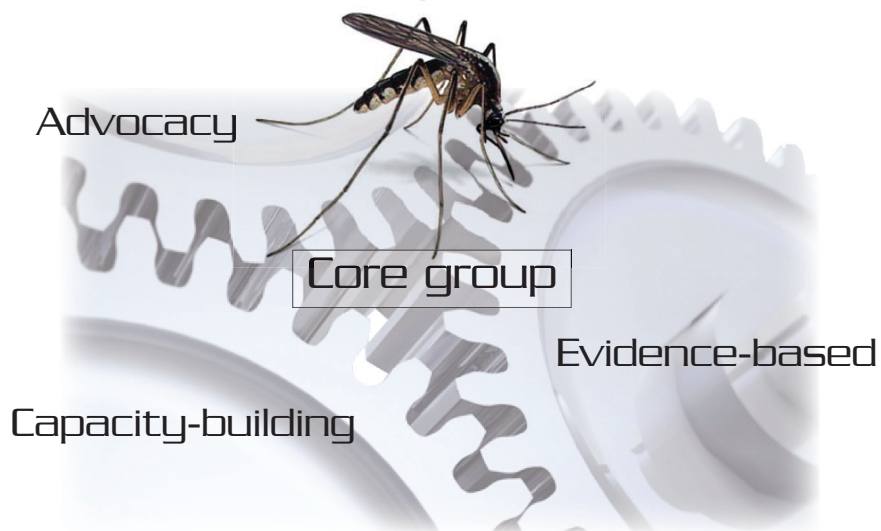




# Integrated Vector Management IVM



Working Group Meeting Reports 2009

# **Integrated Vector Management**

## **Working Group Meeting Reports 2009**

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## **Foreword**

Integrated Vector Management (IVM) is defined as “a rational decision-making process for the optimal use of resources for vector control”, that is, IVM is a management approach where decisions are based on evidence and surveillance data, where there may be multiple vector-control methods and the diseases they address, and where there is broad participation across sectors and within the community. Importantly, IVM includes a large component for capacity-building at all levels to implement and monitor these vector-control interventions.

The World Health Organization promotes the principles of IVM as set out in the “Global strategic framework for integrated vector management” (2004) and, in 2008, produced a position statement on IVM to support its advancement as a component in vector-borne disease control. Member States were invited to accelerate the development of national policies and strategies after carrying out vector-control needs assessments to identify needs, gaps and opportunities for IVM implementation. The World Health Assembly in 2007 adopted a resolution on malaria (WHA60.18) and requested partners to provide support for building capacity to expand IVM implementation.

In 2007, a global consultation identified activities from five key elements of IVM addressed in the framework: advocacy, intersectoral action, integrated approaches, evidence-based decision-making, and capacity-building. This framework is in line with a global plan for 2008–2015 to combat neglected tropical diseases through delivery of multi-intervention packages that include the promotion of IVM. To take the next step and to transform the framework and policies into actual implementation, an IVM Global Action Plan, including partner roles and responsibilities, was developed during a second consultation in December 2008.

The IVM Global Strategic and Action Plan covers three main areas: advocacy and collaboration; capacity-building; and evidence-based decision-making in an integrated approach.

Each of the different areas of the plan was led by a working group as agreed during the IVM Consultation Meeting held in December 2008. This consultation was followed by the IVM Core Group Meeting in February 2009.

An Advocacy Collaboration Working Group meeting was held on 2 April 2009 in Geneva (Switzerland) followed by the Working Group Meeting on Capacity Strengthening from 28 to 30 May 2009 in Washington DC (USA). The Working Group Meeting on Evidence-Based Decision-Making was held on 26–27 August 2009 in London (UK).

Issuing from the above three working groups, a number of actions were proposed to be undertaken within the next three years.

The overall recommendations from the consultation are to strengthen promotion of IVM on the global agenda and to implement the Global Action Plan.

These recommendations relate to:

- the launch of a global advocacy strategy;
- strengthening capacity through development of a comprehensive modular training package;
- establishing a network on IVM;
- strengthening the evidence base and data-sharing for IVM, including the documentation of case examples;
- developing a system for evaluation of IVM.

The final report and recommendations of each working group are compiled in separate sections of this document.

**Dr Kazuyo Ichimori**  
**Scientist, Integrated Vector Management (IVM)**  
**Department of Control of Neglected Tropical Diseases**  
**World Health Organization**  
**Geneva, Switzerland**

## Abbreviations

ACT Malaria	Asian Collaborative Training Network for Malaria
AFRO	WHO Regional Office for Africa
APMEN	Asia Pacific Malaria Elimination Network
COMBI	Communication for Behavioural Impact
COP4	The Fourth Conference of the Parties to the Stockholm Convention
DDT	dichloro-diphenyl-trichloro-ethane
EMRO	WHO Regional Office for the Eastern Mediterranean
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GMP	Global Malaria Programme
HQ	Headquarters
IPCC	Inter-governmental Panel on Climate Change
IPM	Integrated Pest Management
IRS	Indoor Residual Spraying
IVM	Integrated Vector Management
LF	lymphatic filariasis
M&E	monitoring and evaluation
MSc	Master of Science
NGO	nongovernmental organization
NTD	Neglected Tropical Diseases
PAHO	Pan American Health Organization
PCO	Pest Control Operator
PEEM	Panel of Experts in Environmental Management for Vector Control
PHE	Public Health and the Environment
PMI	President's Malaria Initiative
RTAG	Regional Technical Advisory Group
RTI	RTI International
STAG	Strategic Technical Advisory Group
SRI	System of Rice Intensification
TDR	Special Programme for Research and Training in Tropical Diseases
UN	United Nations
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
VBD	vector-borne disease
VCP	Vector Control and Prevention
VEM	Vector Ecology and Management
WHA	World Health Assembly
WHO	World Health Organization
WP	Western Pacific
WPRO	WHO Regional Office for the Western Pacific
WSH	Water, Sanitation and Health

# **Report of the First Meeting on Integrated Vector Management**

## **Advocacy and Collaboration Working Group**

**World Health Organization, Geneva, Switzerland**

**2 April 2009**

## 1. Opening remarks, objectives and method of work

Dr Morteza Zaim, Team Leader VEM/NTD, opened the meeting on behalf of the Director NTD, and welcomed the participants. He thanked Dr Kazuyo Ichimori for promoting integrated vector management (IVM) significantly at the global level. Sylvia Meek was requested to chair the meeting and Abraham Mnzava to be the Rapporteur. After a round of introduction by participants, Dr Ichimori, the focal person for IVM at WHO/HQ, presented the objectives of the meeting as follows:

- to develop and launch an **advocacy strategy** for adoption of IVM at regional and national levels;
- to review the activities of the global plan of action for IVM and identify specific issues to be addressed in the planned **stakeholders' meeting**.

She also took the opportunity to remind the participants about the IVM Programme and its agenda. This included a presentation of the IVM Global Strategic and Action Plan, a summary of HQ and regional activities on IVM for 2009, and plenary discussion on a global advocacy strategy for adoption of IVM as a national policy. She hinted that participants were also expected to discuss the agenda, scope, objectives, potential participants and expected outcomes of the planned stakeholders' meeting in November 2009.

## 2. Presentation of the Global Strategic and Action Plan on IVM

Dr Ichimori presented the Global Strategic and Action Plan, which covers three main areas or components: advocacy and collaboration; capacity strengthening; and an evidence-based and integrated approach. In addition to the three key areas of implementation of the plan, there were products and timelines to be considered. Each of the different areas of the plan was led by a working group, as agreed during the IVM meeting in December 2008, and this was followed by a meeting of the IVM Core Group in February 2009. She noted that this was the first meeting of the Advocacy and Collaboration Working Group, as part of the planned activities.

### 2.1 Issues arising from the Global Strategic and Action Plan

Some participants expressed concern that the expected results were not tallying well with the key activities from a semantic point of view. For example, the plan needs to distinguish between the global expected results (e.g. partnership established or strengthened) and those of the country. It was also noted that there can be no strong political commitment for IVM without advocating for legal frameworks at country level. It should be noted that, whereas some countries are only just starting to create national IVM plans, others have already done so, following the adoption of Regional Committee resolutions. There is therefore a need to develop and document success stories for adoption and implementation as part of the advocacy plan for IVM. It was recommended that:

- advocacy documents and plans be developed and promoted, and collaboration strengthened in support of IVM implementation;
- the Advocacy Working Group now include collaboration and coordination as its mandate;
- Member States should be not only invited to accelerate IVM but also to translate agreed resolutions into national policies and strategies;
- international organizations/donors/agencies be called upon to support necessary capacity-strengthening for IVM implementation.

During the presentation of the Global Plan, Dr Ichimori highlighted the critical area of partnership and networking, and therefore the need for a stakeholders' meeting planned for November 2009. Feedback from the regions and countries pointed to the fact that, despite a very clear definition of IVM (especially in the WHO Position Statement), the understanding of IVM was still hazy. It was reported that although IVM is a management tool for rational and optimal use of vector control resources, tools and interventions, on the ground it is still being seen as a very philosophical and intangible approach.

The group therefore recommended the need to:

- re-package messages concerning what IVM is and what it can achieve for disease vector control, for use by all partners; this will ensure that all partners talk the same language, especially at country level;
- identify and clarify key messages for advocacy on IVM.

### 3. HQ activities in relation to IVM implementation

Dr Ichimori listed some of the HQ activities and meetings during 2009 as follows:

- 3 February: The 1st Core Group
- 13 March: Meeting with FAO
- 2 April: **Advocacy and Collaboration Working Group**
- 16–17 April: *NTD STAG meeting*
- 4–8 May: COP4, IVM side event
- 28–29 May: Technical meeting for IVM handbook, **Capacity-building and Training Working Group**
- 11–13 November: Stakeholders' meeting
- 3–4 December: *NTD Partners' meeting*
- Date unknown: **Evidence-based Decision-making and Integrated Approach Working Group**

The input from regions should provide a global calendar of events related to IVM (see the activities planned by the different regions below). The dates for the Evidence-Based Working Group have not yet been set, but participants were informed that the group will meet before the stakeholders' meeting in November 2009.

The participants were informed of a number of documents being prepared for publication, as follows:

- IVM Consultation Meeting report – in the process of being edited;
- Guidance for IVM policy development – about to be edited; this document was found very useful in Kenya recently;
- COP4 report;
- UNEP and WHO booklet;
- **TDR newsletter**;
- **Web page WHO/NTD/VEM/IVM** – this activity in collaboration with the Advocacy Unit of NTD is at the final stage of being launched and should provide important information for IVM implementation by countries and partners;
- IVM Handbook – a meeting is planned in Washington (27–29 May 2009) in collaboration with RTI to provide an outline of this important document;
- Generic training modules for IVM – these have been collected from regions and will be reviewed by the Capacity-strengthening Core Group. It was also noted that the judicious use of pesticides will be part of those training modules in support of IVM implementation.

### 4. Summary of regional activities

Regarding the African Region, Dr Birkinsh Ameneshewa informed the group that technical support to countries to develop and implement national policies in countries such as Sierra Leone and Uganda will continue this year. The region, which was the first to pave the way for IVM back as 2001, had recorded good progress in Zambia. She noted however that making institutional arrangements for IVM implementation in the region was still a big challenge, especially as (in contrast to the other regions) malaria is and will be the most important disease. Integration with other vector-borne diseases is indeed a problem. To make substantial progress, funding for IVM from NTD is essential and HQ should see how best to resolve this. This was also applicable to all the other regions.

Concerning the Eastern Mediterranean Region, Mr Abraham Mnzava reported that a regional plan on IVM implementation for 2010–2011 was already in place following a meeting of national focal points for vector control that met in November 2008 in Amman (Jordan). In terms of scaling-up interventions within the framework of IVM, eight countries are supported by the GEF to promote cost-effective and sustainable DDT alternatives. A meeting is planned in the Islamic Republic of Iran from 1 to 3 July 2009. Capacity-strengthening is key to IVM implementation. The region will continue to support the regional MSc course in medical entomology and vector control in Sudan and the National Diploma for district/provincial managers in Pakistan, in addition to technical support to countries. A meeting of the Steering Committee of the course will be held on 8–10 June 2009 to review progress of the regional MSc course.

Dr Jeffery Hii reported on the work of IVM in the Western Pacific Region. He highlighted the burden of vector-borne diseases in the region and the need for an IVM plan. The list of activities planned for 2009 includes the Bi-Regional Dengue Strategic Plan, endorsed by the Regional Committees of WPRO and SEARO in Sept 2008; a 10-countries workshop in collaboration with ACT Malaria network; planning elements of the bi-regional dengue plan

(date not yet determined); meeting of Programme Managers for Malaria (June 2009); Second Dengue Programme Managers meeting planned for 2009; 6th Mekong meeting for LF (24–26 April 2009); RTAG dengue meeting planned for 2009; annual malaria meeting of Solomons and Vanuatu on malaria elimination (20–24 April 2009); 4th Malaria Reference Group on Elimination in Asia Pacific Islands (4–7 May 2009) in Vanuatu; and the Second APVEM 2010 case study of IVM in Sri Lanka. He emphasized the activities of the Asia Pacific Malaria Elimination Network, with a goal of shrinking the malaria endemic map in the Asia Pacific Region. The Network has identified vector control priorities in terms of country capacity, insecticide resistance, monitoring and evaluation capacity for evidence-based and implementation of standardized protocols for evaluating vector control strategies to target vectors.

Participants voiced their concern that perhaps malaria elimination in the Western Pacific Region will be a threat to promoting IVM, as it is purely vertical in approach. For this reason, a lot of advocacy would be needed to ensure that this is turned into an opportunity and not a threat for IVM implementation.

Dr Ichimori was requested to compile the activities from the different regions (including those from the South-East Asia Region and the Region of the Americas, since no representatives were able to attend) into a calendar of events and to share these with the group.

## **5. Advocacy strategy**

One of the purposes of the advocacy strategy is to obtain political commitment from senior international policy-makers and to mobilize resources for IVM. The participants reviewed who these people were and came up with the following list:

- a) Ministers of Health through WHA and Regional Committee resolutions, especially from those regions that have not passed resolutions (WPRO/SEARO);
- b) Climate change groups – Inter-governmental Panel on Climate Change (IPCC), emphasizing the link between climate change and vector-borne diseases;
- c) European Union – especially for funding;
- d) Bill & Melinda Gates Foundation;
- e) Clinton Foundation;
- f) Alliance for Climate Protection (founder and current chairman, former US Vice President Al Gore);
- g) USAID;
- h) Rotary International.

Participants also discussed at length what those key messages would be. The meeting considered this to be an area needing further consultations with experts.

- Emphasis on the economic importance of vector-borne diseases
- The need for a “catch-phrase” on IVM, indicating:
  - Smart vector control (local/evidence-based, efficient)
  - Good for the environment
  - Collateral benefits
  - Save money (through strengthened coordination/collaboration)
- With the same resources you get more and reduce environment pollution
- There may be a need to sub-contract advocacy/communication professionals to develop the messages

Regarding advocacy to sensitize country programmes to conduct needs assessment for the implementation of IVM, the participants recommended the following actions:

- Vector control needs assessment should be done for those countries that have not already done so and to identify areas that will need advocacy
- A few countries should be selected in which different sectors are allowed to talk to each other, then activities for efficient IVM implementation should be synchronized and documented.

## **6. Stakeholders Meeting on IVM Coordination**

The participants discussed the title, objectives, participants and expected outcomes of the planned stakeholders meeting on IVM coordination as follows:

### **Proposed title**

“Contribution of IVM in the control of vector-borne diseases – the way to go”

### **Date and place**

11–13 November 2009, WHO headquarters, Geneva (Switzerland)

### **Stakeholders**

Representatives from disease endemic countries, UN agencies, international NGOs, academic and research institutions, and donors will be invited to the meeting.

### **Objectives of the meeting**

- Review lessons learnt and successful case studies in the implementation of IVM
- Identify the contribution of IVM to vector-borne disease elimination and to universal access of interventions
- Discuss possible ways in which IVM can mitigate the negative consequences of climate change on vector-borne diseases

## **7. Recommendations of the Working Group on Advocacy and Collaboration**

- The Advocacy and Collaboration Working Group should:
  - ensure strong participation of other relevant programmes in WHO/HQ on IVM activities;
  - compile and document success stories for IVM advocacy;
  - continue its support towards the preparation of the Stakeholders meeting;
  - embark on a strong resource-mobilization campaign;
- The Evidence-based Decision-making and Integrated Working Group should synthesize and produce evidence of success stories

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\* invited but unable to attend

**ANNEX 2: PROGRAMME OF WORK**

09:00–10:30	1. Introduction 2. Presentation: “Global Strategic Plan and Action Plan”
11:00–12:30	3. Presentation: “HQ activities” Presentation: “Regional activities” 4. IVM Calendar 2009
13:30–15:00	5. Group discussion Group 1: Advocacy strategy Group 2: Stakeholders meeting
15:30–17:00	6. Plenary discussion 7. Conclusion and recommendations



# **Report of the First Meeting on Integrated Vector Management**

## **Capacity-building and Training Working Group: Development of an Integrated Vector Management Handbook**

**World Health Organization, in collaboration with USAID and RTI International  
Washington DC, USA**

**28–30 May 2009**

## **1. Introduction**

This report covers the main discussions and recommendations of the Capacity-Building and Training Working Group meeting on Integrated Vector Management (IVM), held from 28–30 May 2009, at the RTI International Office in Washington DC (USA). The meeting was jointly organized by WHO and RTI International's IVM-2 Project supported by USAID. Its overall aim was to accelerate the implementation of the Global Action Plan on IVM, developed during the WHO consultation meeting held in Geneva in December 2008. The Global Plan was reviewed at an IVM Core Group meeting in Geneva in February 2009, and a recommendation was made to convene the Washington DC meeting in order to, among other things, initiate the development of a "Handbook on IVM". The concept and scope of IVM is defined by WHO and its global partners as "A rational decision-making process for optimal use of resources for vector control".

## **2. Meeting objectives**

The following were the specific objectives of the meeting:

1. Identify training and related country capacity-strengthening priorities on IVM;
2. Review existing training and advocacy materials, identify gaps, and initiate follow-up steps to harmonize training curriculum and course modules;
3. Brainstorm on simplified decision-making steps and processes for the control and prevention of vector-borne diseases in the framework of IVM;
4. Outline the scope, content and style of a "Handbook on IVM" and commission its development.

## **3. Expected outcomes**

The following were the expected outcomes:

- The scope, content and style of the Handbook outlined;
- Development of IVM Handbook formally commissioned;
- Priority capacity-strengthening needs for IVM identified;
- Gaps and needs for IVM training identified, and plans for harmonization of curricula/training modules outlined.

## **4. Opening session**

The list of participants and meeting agenda are included as Annexes 1 and 2, respectively. The participants were welcomed to the meeting by Dr Jacob Williams, IVM Project Director at RTI International. He specially recognized the presence of senior officials from USAID, PAHO, and the US Armed Forces Pest Management Board. Dr Barbara Kennedy, Vice President of International Health in RTI International's International Group, participated in the opening session and made her welcome remarks via satellite link from RTI headquarters in North Carolina, USA.

Rear Admiral (ret.) T. Ziemer, Director of the President's Malaria Initiative (PMI), opened the meeting. He started by thanking participants for their time, while acknowledging the good collaboration existing between USAID, PAHO, RTI International, and the Johns Hopkins VOICES Global Program on Malaria. Dr Ziemer endorsed the meeting's objectives and indicated PMI's interest in the outputs. He underscored the need to better understand what was required to build and retain capacity for malaria control. He particularly commended RTI for being instrumental in helping USAID scale-up its malaria control initiatives. The past three years of PMI had met with encouraging results. Among other things, the work of RTI had led to several countries in Africa and Asia recognizing the importance of indoor-residual spraying (IRS) as a tool for malaria vector control. He affirmed that a gradual increase was expected in funding for malaria to help sustain the current scale-up. Participants were therefore urged to stay focused on helping to find the necessary solutions to public health priorities in spite of changes in global politics. Some pertinent questions that USAID would like to see addressed, while supporting malaria control initiatives, include: what is the plan; what is the cost of the plan; what is the leadership and commitment like; how does this translate to actions for helping those on the ground. Admiral Ziemer observed that more work was still needed to adapt policies and tools to different contexts and countries.

Dr Steven Ault, Regional Advisor (parasitic diseases), Pan American Health Organization (PAHO), made opening comments on behalf of the WHO Director of the Department of Control of Neglected Tropical Diseases and the Vector Ecology and Management (VEM) programme in Geneva. He noted that WHO had been involved in the development of IVM for more than three decades, some of the early work having been undertaken by the Panel of Experts in Environmental Management for Vector Control (PEEM). He observed that the IVM Handbook would be the next milestone after the Global Strategic Framework for IVM in 2004; Global Plan for Control of NTDs in 2007; and, Global Action Plan for IVM in 2008. He thanked WHO/VEM and RTI International for organizing and hosting the meeting and noted that the gathered participants had the necessary expertise to develop an IVM Handbook that would make implementation possible at national and local levels.

Dr Barbara Kennedy started by welcoming all the participants on behalf of RTI International. She then outlined the organization's role in USAID's programmes on malaria control, which included advocacy and development of various tools. RTI's role in the control of NTDs such as dengue and filariasis was also noted. Dr Kennedy observed that weak health systems posed challenges in many countries where RTI was involved in implementing projects. Towards this end, RTI International was interested in helping provide technical solutions at local, national and international levels. The organization's work emphasized the importance of intersectoral collaboration and also ecosystem approaches to human health. Dr Kennedy stated that the IVM Handbook would serve a useful purpose and wished the meeting success.

Dr Kazuyo Ichimori, WHO/VEM, presented the objectives, provisional agenda and the expected outcomes of the three-day meeting. In her presentation she highlighted milestones in the renewed development of the global IVM agenda, from the 2004 Global Strategic Framework to the 2008 WHO Position Statement.

In his presentation, Dr Jacob Williams stressed the importance of an efficient, cost-effective and sustainable approach to the control of vector-borne diseases. He reflected on the key elements and complexity of IVM and illustrated this with a conceptual approach showing interlinkages among various interventions and different vector-borne diseases. He reiterated that enabling vector control programme managers to implement IVM remained a challenge, hence the need to develop the IVM Handbook.

The opening session remarks summarized above were followed by additional comments and contributions to the ensuing discussion by most of the participants. The session ended with self-introductions by all the participants.

## **5. Technical sessions**

Technical sessions began with the nomination of Dr Michael Macdonald as Chair, Dr Jacob Williams as Co-Chair, and Dr Clifford Mutero and Dr Henk van den Berg as Rapporteurs.

**Day 1:** The day opened with a review of the meeting objectives and expected outputs presented by Dr Kazuyo Ichimori. This was followed by a day-long discussion of ideas for the IVM Handbook, particularly regarding the target audience as well as scope, content and style.

**Day 2:** The day started with a recapitulation of the previous day's discussion, followed by a comprehensive listing of the thematic areas expected to be covered by the Handbook. The draft thematic areas and the aspects they would consider are shown in Annex 3. The thematic areas included: IVM concept definition; target audience of the handbook; purpose of the handbook; policy framework; institutional frameworks; stakeholders and roles; decision-making and evidence required; monitoring and evaluation; competencies/skills for IVM; and funding. Following the determination of the thematic areas, the meeting logically proceeded to the next step, focusing on the structure, content and style of the Handbook.

The latter part of Day 2 was spent discussing the other three objectives of the meeting, especially on issues of capacity-strengthening.

**Day 3:** The last day was worked for only half a day, in order to allow the departure of some of the participants. The day started with a recapitulation of the previous day's discussions including a presentation of a summarized rapporteur's report. The lively discussion was adjourned for about an hour to allow a presentation on the medical entomology work of the US Armed Forces Pest Management Board by Lt. Col. (Dr) Jamie Blow. The rest of the time was spent discussing training materials and making the final recommendations of the meeting.

## **6. Meeting outcomes**

### **6.1 Summary of key points from brain-storming sessions**

#### *6.1.1 Scope, content and style of the Handbook*

The target audience for the Handbook will be vector control programme managers and other officers involved in the planning and management of vector-borne disease control programmes at both central and sub-national levels, including training officers, the private sector and civil society organizations.

Policy makers will be targeted with a separate document, “Guidance on IVM Policy Development”, which is also being developed by WHO.

The main purpose of the Handbook is to assist implementers in gradually transforming their ongoing vector control programmes according to the principles of IVM.

A problem-solving rather than a didactic style should be used for the Handbook in order to allow implementers to adapt their programmes to local circumstances. Sections would start with problem statements or problem scenarios and use, or refer to, case study examples to illustrate the major points (different regions and diseases).

Content should be arranged sequentially to provide guidance on the steps to be taken;

The document should be around 120-150 pages, produced initially as a paper document, but later on to be also available as an electronic or web-based document with linkages to other related documents. Illustrations will be used as applicable.

The document should provide the framework that would serve as a basis for developing generic IVM training curricula.

In addition, the following pertinent issues were discussed:

Meta-analysis of available information on the efficacy and effectiveness of vector control interventions could help strengthen the evidence base needed for decision-making. Also, a review of the limited information that is available on combinations of vector control methods would be useful;

The importance of the “subsidiarity principle” was emphasized: that is, as an organizing principle, decision-making should be handled by the smallest, lowest or least centralized competent authority aiming to involve local partners in planning and decision-making. Also, the potential role of household members in providing data for decision-making, e.g. by their monitoring of houses for the presence of vectors, needs exploration;

The prospect of new emergent vector-borne diseases in the urban context emphasizes the urgency of a response strategy in the form of IVM, especially in cases where *Aedes* and *Culex* mosquitoes may act as vectors. Organizations such as UNDP could have an important future role in such effort;

IVM aims to improve cost-effectiveness, in terms of the investment made versus a measured reduction in the disease burden. However, when aiming to eliminate a disease, cost-effectiveness analysis should consider the disease burden that is prevented over a future period of time following successful elimination. This would justify continued investment where there are only a few remaining disease cases.

#### *6.1.2 Time-line for development of the Handbook*

A plan and timeline was made to develop and complete the Handbook. All participants (including other members of the Core Group who were not able to participate) were requested to provide WHO within two weeks with examples of case-studies covering different regions and diseases.

WHO and RTI will contract experts to assist in producing a first draft document with worked-out case examples. By the first week of September 2009, a draft would be produced and submitted to the Core Group. At this stage, other “external” reviewers will be solicited.

All comments will need to be provided by mid-September 2009, and a revised version produced by the first week of October.

The team will then convene either physically or through teleconference to finalize the draft document, which will subsequently be distributed to all stakeholders three weeks ahead of the First Annual Stakeholder Meeting, to be held 11-13 November 2009 in Geneva.

The comments of the stakeholders will be incorporated in the final version, and the document published thereafter.

### *6.1.3 Capacity-strengthening priorities*

#### *a. Training development*

The participants briefly discussed the available training curricula for courses on IVM, which have recently been developed by the SEARO, AFRO and EMRO Regional Offices of WHO. Because of the large amount of materials, the gaps and shortcomings were not discussed in detail. In general, however, the group agreed that useful materials are already available, but that large differences exist between the regions.

It was agreed that a framework is needed to serve as a basis for the development of a generic training curriculum. The Handbook would provide this framework. Hence, the generic curricula would be developed after the Handbook, and would consist of core curricula and specific modules.

IVM courses should aim at developing broad vector control competencies and management skills among specialized personnel from various sectors (e.g. entomologists, epidemiologists, environmental experts) who are engaged in national vector control programmes. This will ensure more comprehensive approaches to vector-borne disease control.

Guides for tutors should be short, aiming to provide schemes on how to conduct the training.

A three-tier curriculum is needed at basic, middle and advance levels, based on which training modules can be developed. This structure would allow for training of personnel from different technical backgrounds, and at different levels of administration. This would help strengthen capacity for decision-making in a decentralized setting and with the involvement of sectors other than the health sector.

#### *b. Institutional strengthening*

A database needs to be established on information regarding the institutions involved in IVM and the resources available for IVM. This database will help support capacity-strengthening. Priorities relating to this include the following:

- A preliminary inventory of institutions and their capacities was conducted in 2008. This inventory needs to be updated and expanded to include additional institutions in all regions.
- Opportunities for WHO Collaborating Centres to support capacity-strengthening need to be explored.
- The coordination between regional or sub-regional centres of excellence could be enhanced in order to share resources and experiences. These institutions, as well as individual countries with noted capacities in vector control (e.g. Mexico, Brazil, Cuba, Colombia, Argentina and Venezuela in the context of Latin America), could be encouraged and supported to assist surrounding countries with their capacity-strengthening.
- The opportunities for training and education provided by schools of public health and other sub-regional research institutions need to be explored. Examples are the International Centre of Insect Physiology and Ecology (ICIPE) in Kenya and Noguchi Memorial Institute for Medical Research (NMIMR) in Ghana, and their associated speciality networks such as the African Regional Postgraduate Programme in Insect Science (ARPPIS) and the Dissertation Research Internship Programme (DRIP).
- A dedicated web site ([www.IVMproject.net](http://www.IVMproject.net)), which has been initiated by RTI, will soon be launched for the purpose of sharing documents, experiences and web-linkages related to IVM.
- The wealth of information available through the web site of the US Armed Forces Pest Management Board ([www.afpmb.org](http://www.afpmb.org)) and its relevance for IVM was noted by the Working Group.

## **6.2 Proposed structure and content of the IVM Handbook**

### **Preface (1 page)**

- Indicate that target audience consists of vector-borne disease control managers and similar country officials involved in the planning and implementation of vector-borne disease control
- Indicate that the handbook is a joint effort of global stakeholders

### **Chapter 1: Introduction**

Historical synopsis of IVM development [recognizing constraints to effective vector control, countries with little or no VC infrastructure (post civil disruptions)]

*Concept definition*

- *Problem-solving input to health systems strengthening (impact of decentralization on vector control)*
- *Multi-disease control approaches*
- *Improving fund utilization/internal efficiency*
- Clarify reasons for and purpose of handbook
- Summary introduction of IVM processes

## **Chapter 2: Policy and stakeholder arrangements**

*Policy framework*

- Defining appropriate policies
- Process for developing strategy documents and use for policy review (need to reference relevant WHO and other global policies, resolutions, MIAs)
- Scenarios of political decentralization and relevant framework for IVM
- Principle of “subsidiarity” (in simple words)

*Institutional frameworks*

- Intersectoral collaboration
- National Steering Committees
- National focal point for IVM

*Stakeholders and roles*

- Identifying stakeholders (e.g. government/public, bilateral, multilateral, communities, private sector, research and training institutes)
- Stakeholder role definition and context for participation/collaboration
- Empowering communities (modes for mobilizing participation, advocacy and communication)

## **Chapter 3: Decision-making and implementation**

- Major decisions to be made (what/type, why, how and for what?)
  1. *Situation analysis (different levels)*
  2. *Decision-making tools/aids*
- Review/inventory of existing tools/methods
- Selecting/reorienting intervention/mitigating strategies (intervention selection); when to start, when to scale up/down, stop, combine.
  1. *Generating/reviewing evidence to inform decisions on cost-effectiveness; role of operational research in generating local body of evidence*
  2. *Issues relating to pesticide management and environmental safety*
  3. *Linkages with local research institutions*
  4. *Assessing lives saved or morbidity*
  5. *Resource allocation*
- Identifying opportunities for multi-disease approaches
- Delivery/implementation of interventions in the field

## **Chapter 4: Monitoring and evaluation**

*Monitoring*

- Process indicators to measure IVM performance (progress made in implementing key elements)
- Indicators on intervention outcomes and impact
- Identification of barriers/constraints

*Evaluation*

- Importance of tracking outcome and impact on target diseases [analysis of status (success and failures) and feedback; comparison from other parts of country, role of universities/research institutes *\*\*Use case studies on early warning on failures of control systems\*\**]

○

*Role of Surveillance*

- Importance of surveillance to responsiveness of vector control [other public health issues that may impact on target disease(s)]
- List of surveillance tools (insert links to documents)

### **Chapter 5: Competencies, skills and capacity**

- Spread and location/level competencies in the system (centralized/decentralized?); importance in terms of staffing
- Emphasize management, analytical and problem-solving skills
- Communication skills, writing competencies – including proposal development, monitoring and evaluation
- Training opportunities, including continuous learning (e.g. in-service) vs formal settings
- Concept of sourcing regional expertise
- Considerations on career development and staff attrition [*\*\*use case studies on innovative ways to create workplace opportunities for advancement, e.g. Honduras\*\**]

### **Chapter 6: Advocacy and communication**

- Targeting different levels (policy makers, community, potential stakeholders including media)
- Networking (use of “list serves” web-based information dissemination, study visits)
- Communication strategies: to effectively package and communicate results
- Referencing existing tools (COMBI methods, etc.)

### **Chapter 7: Management and mobilization of resources**

- Opportunities from linkages with IVM partners (local and external)
- Innovative fund generation in specific settings – linking disease burden reduction to good business (e.g. in tourist/business enclaves, *\*\*use examples such as Anglogold Ashanti, Ghana; Konkola copper mine Zambia; Lubombo LSDI etc.; regional economic commissions e.g. SADC, COMESA, ASEAN\*\**)
- Improving fund utilization/internal efficiency
- Communication strategies: to effectively package and communicate results

## **References**

## **Bibliography**

### **6.3 Conclusions**

The Handbook on IVM will be a critical first step in providing guidance to implementers for transforming ongoing vector control programmes into IVM; a plan with a timeframe for the development of the Handbook has been outlined. The Handbook will serve as a basis for developing a core IVM curriculum with modules. The evolving partnership between WHO, USAID, RTI, Malaria Consortium and the other participating research and academic institutions was recognized as being instrumental in the advancement of the IVM approach.

## **7. Final recommendations**

1. The WHO and its partners are urged to proceed with the development of the Handbook.
2. The Handbook should be periodically updated, to be a “living document” and should be translated into the major UN languages.
3. Once completed, the Handbook should be disseminated widely to facilitate implementation of IVM by a range of organizations, including other UN agencies and their partner organizations. Opportunities for web-based distribution need to be explored.
4. The Handbook should be presented to disease endemic countries as one of the primary documents to guide the development of proposals for external funding.
5. A core training curriculum on IVM with training modules needs to be developed on the basis of the framework set out in the Handbook. This will assist the regions and partner organizations in harmonizing their training materials.

6. WHO is requested to facilitate networking, communication and collaboration on IVM between the partner institutions, and to open up conversation with specialists in relevant disciplines, such as ecosystem management, business management and IPM.
7. Ongoing efforts to establish a web-based information portal on IVM, with linkages to individual partner web sites, need to be accelerated.

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**ANNEX 2: PROGRAMME OF WORK**

	28 May	29 May	30 May
09:00–10:30	1. Opening of the meeting: - Introduction, Objectives of the meeting - Opening remarks.	4. Brainstorm; simplified decision-making steps and processes for control and prevention of VBDs in the framework of IVM	6. Summarize discussions, and presentation of outline of Handbook
11:00–13:00	2. Identify training and related country capacity-strengthening priorities on IVM	4. Brainstorm; simplified decision-making steps and processes for control and prevention of VBDs in the framework of IVM	7. Next steps and schedule for development of handbook  8. Recommendations
14.00–15:30	3. Review existing training and advocacy materials on IVM and identify the gaps	5. Outline scope, content and style of a “Handbook on IVM”	9. Capacity-building Working Group meeting : (a) Global agenda (b) Database and information portal
16:00–17:30	3. Review training course materials (continued)	5. Outline scope, content and style of a “Handbook on IVM”	9. Capacity-building Working Group meeting: (c) Formulate steps to harmonize training curriculum and modules (d) Donor profiling, etc.

### ANNEX 3: IVM HANDBOOK: DRAFT THEMATIC AREAS

- **Concept definition, etc.**
  - Contextualize in terms of problem-solving input to health systems strengthening
  - Multi-disease control approaches
  - Improving fund utilization/internal efficiency
- **Define target audience of handbook**
  - Vector-borne disease control managers and similar country officials involved in the planning and implementation of vector-borne disease control
- **Clarify reasons and purpose of handbook**
  - Why do the handbook?
  - Summary introduction of IVM processes
- **Policy framework**
  - Defining appropriate policies
- **Institutional frameworks**
  - Intersectoral collaboration
  - National Steering Committees
  - National focal point for IVM
- **Stakeholders and roles**
  - Identifying stakeholders (e.g. government/public, bilateral, multilateral, communities, private sector, research and training institutes)
  - Stakeholder role definition and context for participation/collaboration
  - Empowering communities (modes for mobilizing participation, advocacy and communication)
- **Advocacy and communication for IVM**
  - Different levels and targets
- **Decision-making and evidence required**
  - Situation analysis
    1. Major decisions to be made (what/type, why, how and for what?)
    2. Decision-making tools/aids
  - Review/inventory of existing tools/methods
  - Selecting/reorienting intervention/mitigating strategies (intervention selection); when to start, when to scale up/down, stop, combine.
    1. Generating/reviewing evidence to inform decisions on cost-effectiveness; role of operational research in generating local body of evidence
    2. Linkages with local research institutions
    3. Assessing lives saved or morbidity
    4. Resource allocation
  - Identifying opportunities for multi-disease approaches
  - Delivery/implementation of interventions in the field
- **Monitoring and evaluation**
  - Monitoring*
    - Process indicators to measure IVM performance (progress made in implementing key elements)
    - Indicators on intervention outcomes and impact
    - Identification of barriers/constraints
  - Evaluation*
    - Importance of tracking outcome and impact on target diseases [analysis of status (success and failures) and feedback; comparison from other parts of country, role of universities/research institutes *\*\*Use case studies on early warning on failures of control systems\*\**]
- **Role of surveillance**
  - Importance of surveillance to responsiveness of vector control [other public health issues that may impact on target disease(s)]
  - List of surveillance tools (insert links to documents)

#### Cross-cutting approaches

- Use case studies to demonstrate concept as much as possible
- Examples from different regions and different diseases

- **Competencies/skills for IVM**
  - Spread and location/level competencies in the system (centralized/decentralized?); importance in terms of staffing
  - Emphasize management, analytical and problem-solving skills
  - Communication skills, writing competencies – including proposal development, monitoring and evaluation
  - Training opportunities, including continuous learning (e.g. in-service) vs formal settings
  - Concept of sourcing regional expertise
  
- **Sourcing funding for vector control**
  - Opportunities from linkages with IVM partners (local and external)
  - Innovative fund generation in specific settings – linking disease burden reduction to good business (e.g. in tourist/business enclaves, *\*\*use examples such as Anglogold Ashanti, Ghana; Konkola copper mine Zambia; Lubombo LSDI etc.; regional economic commissions e.g. SADC, COMESA, ASEAN*)
  - Improving fund utilization/internal efficiency
  - Communication strategies: to effectively package and communicate results
  - Internet (soft) references to be included.

**Report of the First Meeting on Integrated Vector Management**  
**Evidence-Based Decision-Making and Integrated Approach**  
**Working Group**

**World Health Organization, in collaboration with Malaria Consortium, London, United Kingdom**

**Malaria Consortium Office, London, United Kingdom**

**26–27 August 2009**

## **1. Background**

The IVM Global Strategic and Action Plan covers the three main areas/components: advocacy and collaboration; capacity strengthening; and evidence-based and integrated approach. Each of the different areas of plan was led by a working group as agreed during the IVM Consultation Meeting held in December 2008. This was followed by the IVM Core Group meeting in February 2009. An Advocacy and Collaboration Working Group Meeting was held on 2 April 2009, followed by the Working Group on Capacity-building and Training from 28 to 30 May 2009.

In collaboration with the Malaria Consortium, London, United Kingdom, the Department of Control of Neglected Tropical Diseases (HQ/NTD) organized the first IVM Evidence-based Decision-making and Integrated Approach Working Group meeting in London from 26 to 27 August 2009.

## **2. Opening, introduction and general discussion**

The participants were welcomed by Dr Sylvia Meek, who in her opening address underscored the value of evidence-based decision-making in moving the IVM approach forward. Indeed, from the advocacy point of view, a strong evidence base is needed for selling IVM. The first task of the Working Group was to identify the evidence available and the gaps in that evidence.

After a round of introductions, Dr Kazuyo Ichimori, summarized the achievements and activities in developing the IVM approach to date, as facilitated by the WHO. A strategic framework was developed in 2004. This was followed by a position statement, a WHA resolution, regional resolutions, and currently with some countries already having a national policy on IVM. She reminded the participants that the challenge now was to move into action, and global strategic and action plans have already been developed. Dr Ichimori highlighted the three thematic areas of the action plan, each having its own working group: (i) capacity-building and training, (ii) advocacy and collaboration, and (iii) evidence-based decision-making and integrated approach. There is also a small Core Group to coordinate the activities of the three Working Groups. She outlined the reports from the Advocacy and Collaboration Working Group and the Capacity-building Working Group. These two Working Groups have made recommendations with relevance to the Evidence-based Working Group. Specifically, it was recommended that this Group produce success stories on IVM, and was also recommended that it facilitate networking, communication and collaboration in relation to IVM. Dr Ichimori summarized WHO/HQ activities on IVM with dates of past meetings and forthcoming meetings. Notably, the Stakeholder Meeting was to be held on 11-13 November 2009.

Dr Kazuyo Ichimori introduced the objectives of the meeting:

1. to identify research priorities on IVM that will guide the development of a research strategy and plan for IVM.
2. to review the existence of potential research institutions and discuss steps needed to establish a global research network on IVM.

As an introduction to the subject matter, Dr Henk van den Berg made a presentation to share some ideas about evidence-based decision-making. The study of disease vectors has been fragmented, suggesting that there is a need for a systematic and coordinated approach to strengthening the evidence base. He identified two broad types of evidence in relation to implementation: evidence of costs and effectiveness of interventions, and evidence on underlying parameters that determine the effectiveness. Studying cost-effectiveness of interventions is very demanding because the effect on disease has to be measured. Underlying parameters that cause the effect or lack thereof may remain unknown. Moreover, these parameters may vary between locations, limiting the application value in other locations. He made the case for studying the parameters that determine effectiveness; this could be an affordable way to significantly improve decision-making within operational programmes. Intensive cost-effectiveness studies, where affordable, would serve as means of verification. Furthermore, he stressed the value of research-implementation partnerships to make research better tailored to practical needs and to share use of human and logistic resources. A final point was made that a strong evidence base is no guarantee for good decision-making, because decision-makers need access to results and need skills to interpret and utilize results for making decisions.

In the discussion that followed, the eco-epidemiological approach to vector control was emphasized; e.g. for malaria, seven zones are identified, with implications for intervention methods to be selected. Stratification of the important variables would assist in decision-making. Cost-effectiveness studies are often purely clinical trials looking at disease outcomes only, but an added entomological study into the underlying parameters would be

essential to understand and interpret the results. The problem is that entomological monitoring has not been given due emphasis in research or implementation. For comparison, the example was given from Integrated Pest Management (IPM) in agriculture, in which farmers as decision-makers do monitoring of pests, natural enemies, and functional relations such as predation, plant growth, and damage, as the basis for their decision-making. On the combination of methods used in IVM, it was noted that evidence on the contribution of individual methods is generally missing. This could potentially lead to countries adopting a mix of measures, while some of these measures might be a waste of resources if they do not actually contribute to disease control. Decision-makers want answers on questions about the impact of each intervention.

Examples from IPM on community mobilization for the control of rats and white stemborer outbreaks were given. This has relevance for IVM, where vectors disperse over large areas, even though the direct economic incentives from agriculture may be missing.

Dr Natacha Protopopoff is collecting reports and publications on IVM, which could develop into an extensive information source. It was suggested to add old literature not commonly available to countries, and to have links to the US Armed Forces web site.

### **3. Technical sessions**

#### ***3.1 Research priorities and research strategy***

A brainstorming session was held on gaps in the evidence base that require research. Subsequently, the topics were arranged according to nine categories in order of increasing complexity, with most of the topics belonging in more than one (some to four) categories.

1. Basic biology (mostly of vectors)
2. One intervention versus multiple diseases
3. Combinations versus single interventions
4. New technologies
5. Household and community issues
6. Environmental issues
7. Intersectoral issues
8. Stratification and decision support
9. Systems issues

Summarizing, there are obvious gaps in the evidence base, even for major interventions such as IRS (e.g. what coverage is needed, what is the killing and repelling effect, when to scale down). In addition, the effectiveness of major interventions like ITN on other diseases like dengue is not known. Also, there are many gaps in our understanding of the basic biology of vector species (e.g. biting time, biting place, why resistance is developing). Rice-fish culture and the System of Rice Intensification (SRI) were mentioned as innovative systems with the potential to reduce vector breeding, but they need study. What is the effect of natural enemy complexes on vector larval densities, and how is that effect influenced by insecticides? Could Chagas control programmes be modified to address some secondary diseases as well? Where are disease hotspots? How can intersectoral collaboration be made effective? How are changes in environment and land use affecting vector-borne disease? What are the trade-offs and adverse health effects of interventions? What would happen if there was no IVM?

Although in some areas there has been much work (e.g. the use of fish for vector control), an experimental setup or use of controls has often been lacking. Therefore, the Working Group suggested that minimum methodological standards must be set to help ensure rigour of results. Any new interventions need to consider, or recommend the study of, side-effects on human health and the environment.

The research priorities were grouped into themes as indicated below. The details of the brainstorming session are presented in Annex 3.

#### *Basic biology (mostly of vectors)*

- Incrimination, biology and behaviour as prerequisite in the choice of interventions
- Determine resistance development and spread, and test strategies to limit this

#### *One intervention versus multiple diseases*

- Encourage studies on the effect of interventions on multiple diseases. Encourage funders to give priority to measure impact on other prevalent diseases. Examples could be given on the feasibility of such added study.

#### *Combinations versus single interventions*

- Generic recommendation to study the incremental benefits of multiple interventions, rather than single interventions. Specific examples are given in Annex 3. Methods need to be developed through the network.
- Study how multiple methods can contribute to management of insecticide resistance (e.g. onchocerciasis control; potential success story).

#### *New technologies*

- Encourage the development and evaluation of new products and tools that can be used in an IVM strategy

#### *Household and community issues*

- More study on behaviour: what people do that increases risk or what they could do, individually or collectively, to reduce risk

#### *Environmental issues*

- Research on the effect of climate change and resulting environmental and behavioural change on vector populations and vector-borne disease, and study how IVM decision-making combined with predictive modelling can help adapt vector control to those changes
- Study the effects on management practices of agriculture (e.g. pesticides, irrigation) on vector populations and how IVM can reduce disease risk
- Provide evidence base for the effects of changes in land use (e.g. construction of housing estates) and evidence on methods to reduce those risks
- Study house quality and sanitation in peri-domestic environment

#### *Intersectoral issues*

- Research into the impact of activities in other sectors on vector populations and on identifying and testing win-win opportunities for cross-sectoral collaboration (e.g. intermittent irrigation or SRI in rice in agriculture; sponging of cattle)
- Investigate the role of the private sector (e.g. PCOs) on vector control, and estimate the potential contribution through a coordinated IVM approach
- Collect and provide evidence that IVM is an inter-sector responsibility
- Study and draw lessons from other inter-sectoral initiatives (e.g. avian flu)

#### *Stratification and decision support*

- Increased emphasis on mapping and combining maps on vector-borne diseases as a basis for decision-making, and linking in recommendations
- Development of mathematical models to help decision-making
- Research into how decisions are made and how information is used, and how this could be improved; develop criteria, indicators and evidence needs on decision-making; developing a communication strategy on how to use research results for decision-making

#### *Systems issues*

- Evaluate benefits of quality improvement measures of interventions (e.g. IRS)
- Comparison of integrated versus vertical approaches
- Study of the multiple effects of decentralized decision-making tools
- Critical review of coverage levels needed to achieve impact (e.g. for IRS), and designed methods to develop a better evidence base

### **3.2 Research institutes**

Following the identification of priority research issues in the context of the global approach of IVM, there is a need to establish a global research network on IVM. The main purpose is to have coordination of effort to divide tasks, avoid duplication and improve consistency. The move forward is to construct a database with names of focal points of each institution. In addition, a template will be developed asking focal points to indicate research expertise and interest, as well as key publications relate to IVM, and at the same time request for success stories. To obtain more success stories, it was suggested to conduct or commission a systematic review of the literature.

The group prepared a list of research institutions in the following three categories:

- Ecological research with interest in health
- Agricultural research with interest in health
- Tropical medicine

Also, a number of relevant existing networks were identified, and potential funding agencies and donors were listed.

### **3.3 Evidence-based decision-making strategy**

To implement a global research agenda, coordination through a network is needed. An example of a proposal for a European network on vector surveillance was discussed; it has annual steering committee meetings, a web site, monthly newsletter and page for publications updates. This could have relevance to IVM, not only regarding the research component but also regarding capacity-building and advocacy. Within the agreed strategic plan for IVM, each Working Group has its own strategy pertaining to each component. The ultimate aim is a partnership, but we have to start with a modest network with the three components, and then build onto it as it develops. The strategy paves the way for donor support and implementation at country level.

In discussing whether support for implementation is needed, it was agreed that the responsibility of WHO is to create an enabling environment and request support for the network, while the funds for implementation enter through the country level and are the country's responsibility. Nevertheless, some follow-up support may be needed after research is completed in order to ensure appropriate utilization and implementation of the results.

The IVM partnership web site will maintain separate pages on research and evidence-based decision-making, with a resource of pdf documents, and a map showing who is working on IVM in the world. There will be links to other IVM groups and initiatives.

Furthermore, the example of the Global IPM Facility was given, as a physical body hosted by the Food and Agriculture Organization of the United Nations (FAO), Rome, in support of the advancement of the IPM movement globally. The Facility has been closed recently after having fulfilled its function during more than a decade. It was proposed that an evaluative study would be useful with the purpose of determining the need for a similar facility on IVM.

### **3.4 Recommendations and conclusion**

It was recognized that IVM is a platform to strengthen health systems for delivery of vector control interventions. It was therefore appreciated that systems research for IVM was crucial. To achieve this, the Working Group on Evidence noted the need to collect evidence in a number of priority research areas as follows:

1. Basic biology (mostly of vectors)
2. One intervention versus multiple diseases
3. Combinations versus single interventions
4. New technologies
5. Household and community issues
6. Environmental issues
7. Intersectoral issues
8. Stratification and decision support
9. Systems issues

To implement the identified research priority areas, the Working Group on Evidence recommended:

1. The research priorities identified in this Meeting should be reviewed by the IVM stakeholders and incorporated into a plan for support and implementation of the research
2. Develop an IVM research network that will eventually lead to a broader IVM network
3. Develop further the database on research institutions relevant to IVM
4. Develop further the literature compendium on IVM
5. Noting the need for networking, review the case example of the Global IPM Facility in order to determine the feasibility and need for a similar facility on IVM (this could contribute to supporting implementation and attracting funding)
6. Strengthen technical capacity in countries, as needed, in order to undertake the recommended research
7. Review success stories for robustness of evidence and propose how to review them

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## **Annex 2: Programme of Work**

### Wednesday, 26 August 2009

10:00–10:30	Opening and Introduction
10:30–11:00	Global IVM and reports from other Working Groups
11:00–13:00	Research priorities and research strategy
14:00–15:30	Research Institutes
16:00–17:30	Global research network

### Thursday, 27 August 2009

09:00–10:30	Evidence-based decision-making strategy
11:00–13:00	Recommendations and conclusion

### Annex 3

Results of brainstorming session on priority research topics, with topics arranged according to nine categories in order of increasing complexity, with most of the topics belonging in more than one (some to four) categories.

#### Basic biology of vectors

- Relation between biting time and net effectiveness
- Biting place (indoor or outdoor)
- Which are the actual vectors (not just mosquitoes)?
- Barrier spraying? How to rationalize use of insecticides?
- Why is resistance growing so fast?
- Resistance spread rate and determinants
- Role of agricultural insecticides in resistance development
- Use of same or different insecticides in different methods
- Factors affecting sustainability (e.g. money, political will, insecticide resistance)
- Insecticide rotation (also across countries)
- Integration of breeding site control into agriculture (e.g. how to grow rice without *A. gambiae* using intermittent irrigation or fish; adding mosquito monitoring)
- Situations where all sites are man-made (example of Tajikistan)
- Up the hill – is residual transmission at top due to moving people or moving mosquitoes
- Mosquito fauna and land use changes - direct and indirect effects

#### One intervention vs Multiple diseases

- Do nets work against dengue and other diseases?
- Integrated control of mosquito breeding sites in urban area
- Define goals of vector control by disease
- Does MDA with ivermectin affect malaria transmission?
- Benefits of additional investments of vertical programmes (e.g. Chagas control) to control secondary diseases e.g. leishmaniasis
- Sponging cattle for tsetse and mosquitoes
- Zoonotic diseases
- ITNs for relapsing fever
- Do wall plug-ins protect against dengue

#### Combinations versus single interventions

- Do nets work against dengue?
- How much impact does vector control have
- Barrier spraying? How to rationalize use of insecticides?
- Why is resistance growing so fast?
- Resistance spread rate and its determinants

- Role of agricultural insecticides in resistance development
- Use of same or different insecticides in different methods
- How to use ITNs and /or IRS over time (e.g. spray annual, LLINs all the time)
- How long to continue interventions
- Integrating MDA and vector control
- Incremental effects of individual versus multiple interventions
- Integration of breeding site control into agriculture
- Situations where all sites are man-made (example of Tajikistan)

#### New technologies

- Technologies – what are the needs
- MDA with ivermectin affect malaria transmission?

#### Household and community issues

- Do nets work against dengue?
- Housing trends effect (added houses, changed quality)
- Maintaining interest in net usage
- IVM to be owned by community, whereas IRS is less easy for community to own
- Community involvement in dengue control – how to convince and enforce
- How to avoid misdirected community action – e.g. grass cutting for vector control
- Farmer Field School – role in mosquito control
- Behaviour research – on mosquito control including non-vectors
- Effects of raising awareness vs education
- Changing land use in response to climate
- System of Rice Intensification (SRI) good or bad for vector control?

#### Environmental issues

- Effects of abrupt and gradual environmental change and land use
- Climate and other environmental change research
- Up the hill – is residual transmission at top due to moving people or moving mosquitoes
- Effects of population growth
- Environmental management impacts
- Adverse health effects of interventions
- Knowing what the trade-offs are, risk benefit in different environments

- Which are the actual vectors (not just mosquitoes)?
- Integrated control of mosquito breeding sites in urban areas
- Housing trends effect (added houses, changed quality)
- How to avoid misdirected community action – – e.g. grass cutting for vector control
- Need for more detailed distribution data of disease to find the hotspots
- How to do focal control towards elimination

#### Intersectoral issues

- How to make intersectoral collaboration effective
- Integration of breeding site control into agriculture (e.g. how to grow rice without *A. gambiae* using intermittent irrigation or fish; adding mosquito monitoring).
- Situations where all sites are man-made (example of Tajikistan)
- Population movement, transportation of vectors on aircraft and ships
- Climate and other environmental change research
- Farmer Field School – role in mosquito control
- Changing land use in response to climate
- System of Rice Intensification (SRI) good for vector control?
- Needing extra data from routine vector monitoring
- IVM in conflict zone
- Role of private PCOs in vector control, and how to coordinate
- Border control
- Gulf cooperation – others to support Yemen

#### Stratification and decision support

- Need for more detailed distribution data of disease to find the hotspots
- How to do focal control towards elimination
- Relation between biting time and net effectiveness
- Biting place (indoor or outdoor)
- IRS: full or part coverage; repellent vs killing effect
- Empirical data on coverage in relation to impact
- Decision-making methods for rational vector control
- Use of ITNs and /or IRS over time (e.g. spray annually, LLINs all the time; how long to continue)
- How to manage and staff different strategies
- Integrating MDA and vector control

- Knowing what the trade-offs are; risk benefit in different environments
- Incremental effects of individual versus multiple interventions

#### Systems issues

- IRS: full or part coverage; repellent vs killing effect
- Empirical data on coverage in relation to impact
- Decision-making methods for rational vector control
- Factors affecting sustainability (money, political will, insecticide resistance)
- Insecticide rotation (also across countries)
- Evidence base on when to scale down – as disease incidence goes down
- How to manage and staff different strategies
- Health systems research for vector control
- Vertical systems stimulate vector control – but how to integrate quality, efficiency, costs, motivation?
- Defining efficiency of IVM in the long-term – what incentives for people to participate?
- Integrating LLIN with immunization and ANC – how to coordinate approaches
- Needing extra data from routine vector monitoring
- IVM in conflict zones
- Role of private PCOs in vector control, and how to coordinate
- Cross-border cooperation for vector control
- Need for more detailed distribution data of disease to find the hotspots
- How to use focal control towards elimination
- Environmental management effects
- Integrated control of mosquito breeding sites in urban areas
- Use of same or different insecticides in different methods

