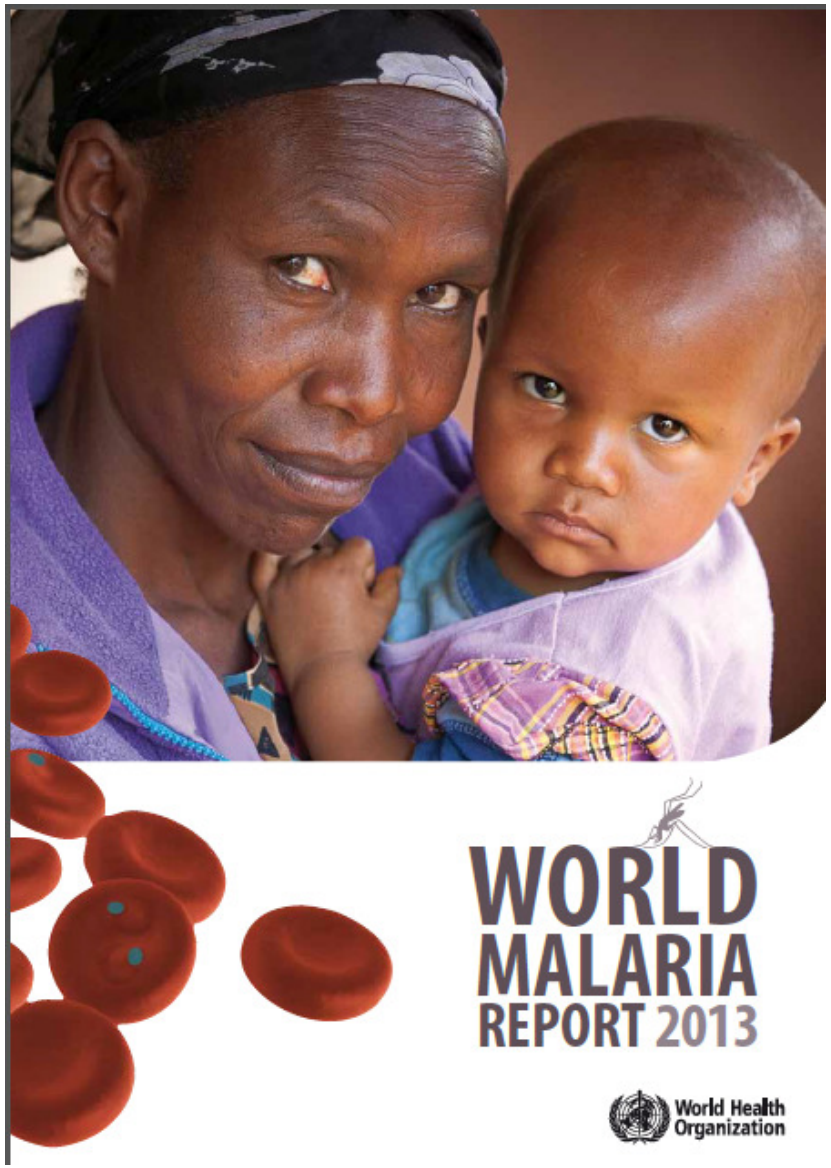
Malaria Vector Control

Priorities and Opportunities

2014

Malaria progress



Worldwide, between 2000 and 2012, estimated malaria mortality rates fell by

- 45% in all age groups and
- 51% in children under 5 years

Nevertheless, between 2011 and 2012, the pace of decrease in estimated malaria mortality rates slowed

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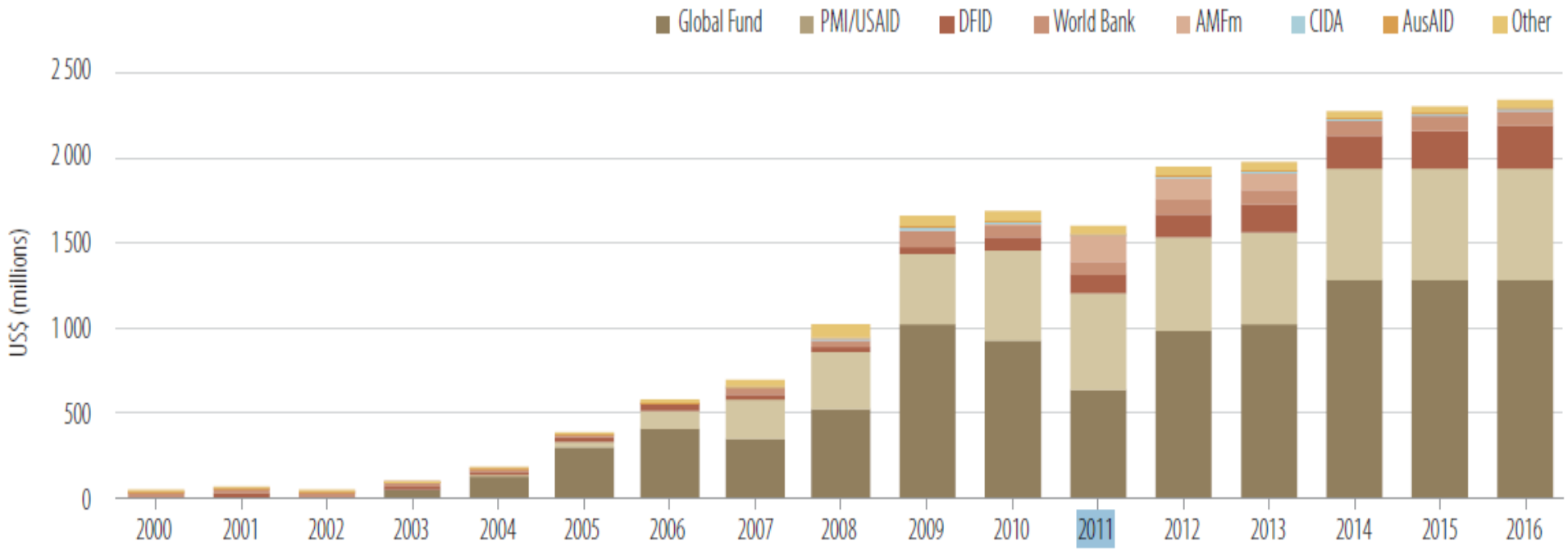
International Funding:

Figure 3.1 Past and projected international funding for malaria control, 2000-2016



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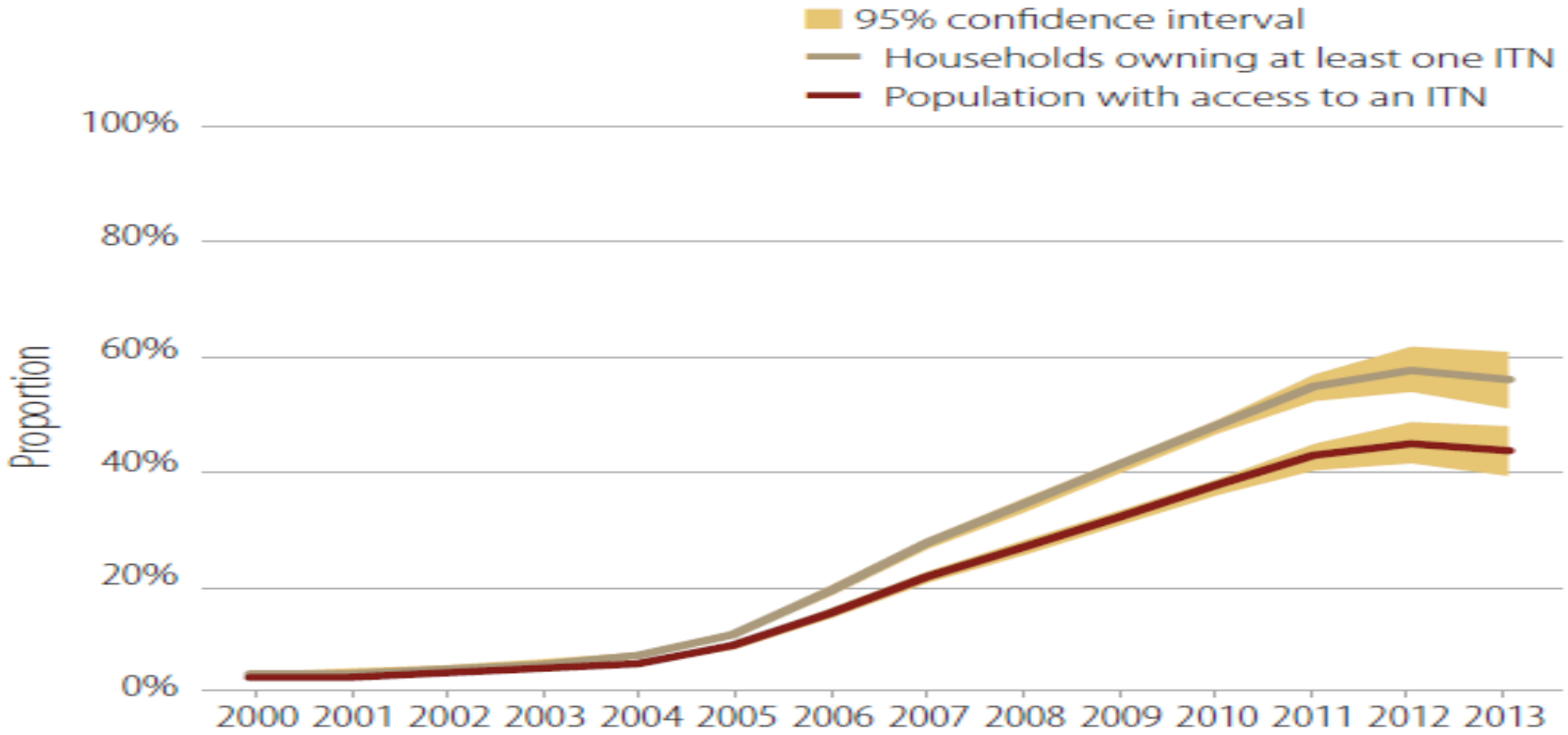
Households owning at least one ITN

Figure 4.2 Estimated trend in proportion of households with at least one ITN and population with access to an ITN in sub-Saharan Africa, 2000–2013.

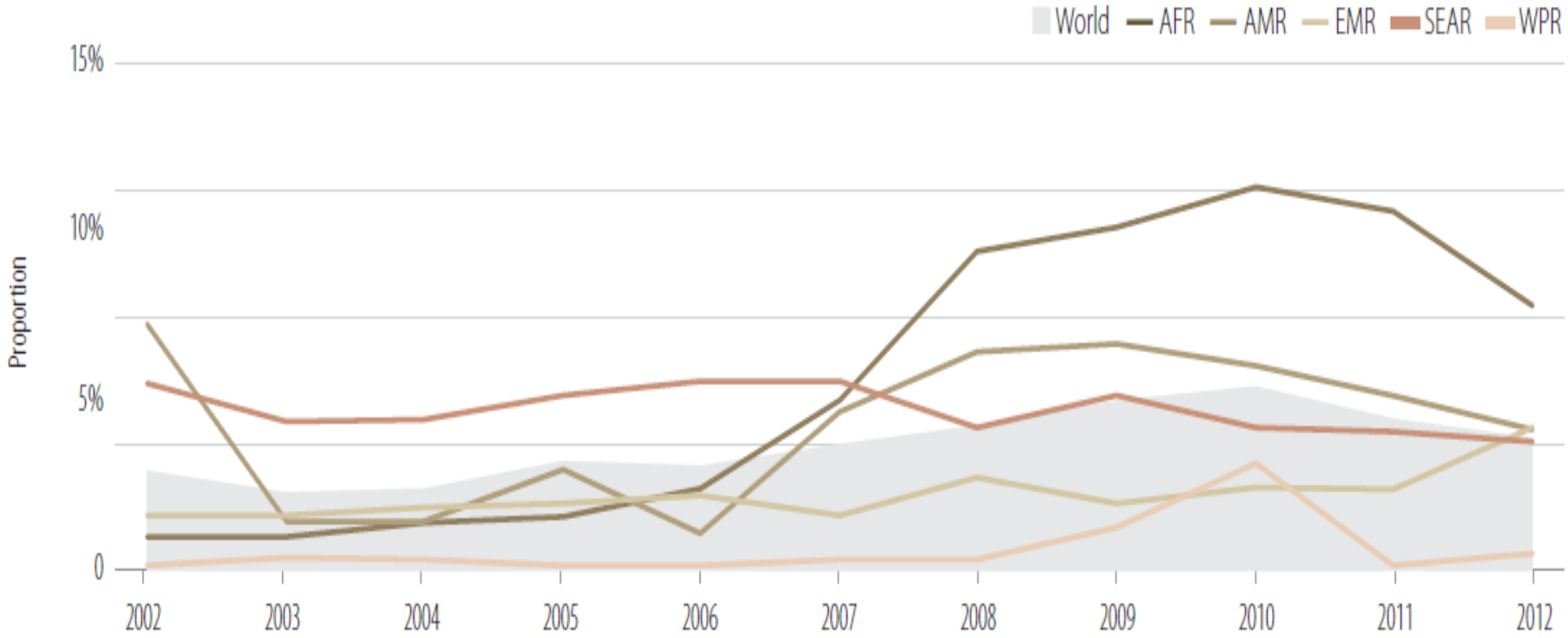


ITN, insecticide-treated net

Source: *ITN coverage model from the Institute for Health Metrics and Evaluation, which takes into account ITNs supplied by manufacturers, ITNs delivered by National Malaria Control Programmes and household survey results (1). Includes Djibouti, Somalia, South Sudan and Sudan which are in*

Indoor Residual Spraying

Figure 4.6 Proportion of population at malaria risk protected by IRS, by WHO Region, 2002–2012



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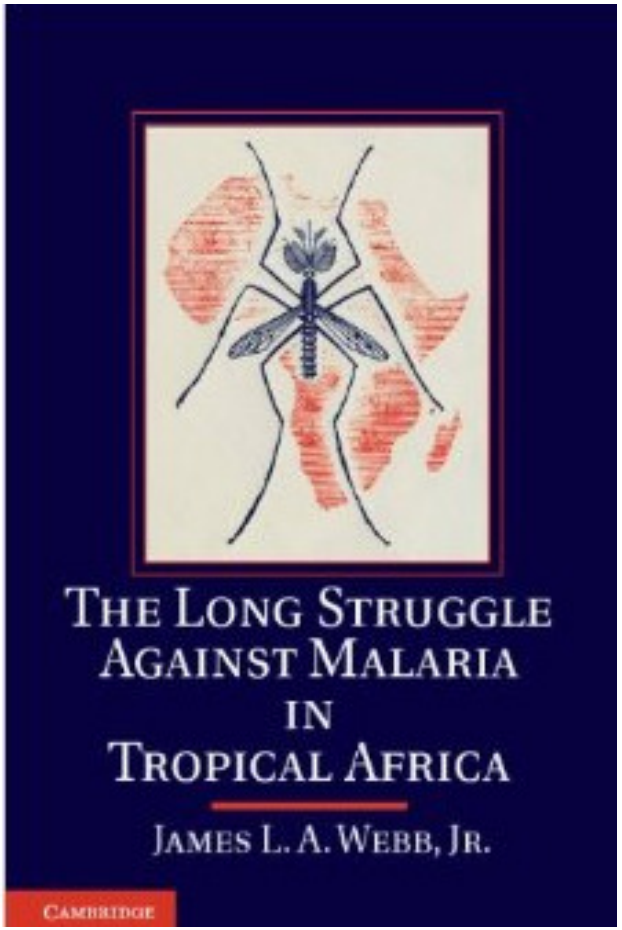
After success, and immunity wanes, an obligation to maintain gains



The First Large-Scale Use of Synthetic Insecticide for Malaria Control in Tropical Africa: Lessons from Liberia, 1945–1962

J. HISTORY OF MEDICINE AND ALLIED SCIENCES 2010

James L.A. Webb Jr.
Department of History,
Colby College, USA

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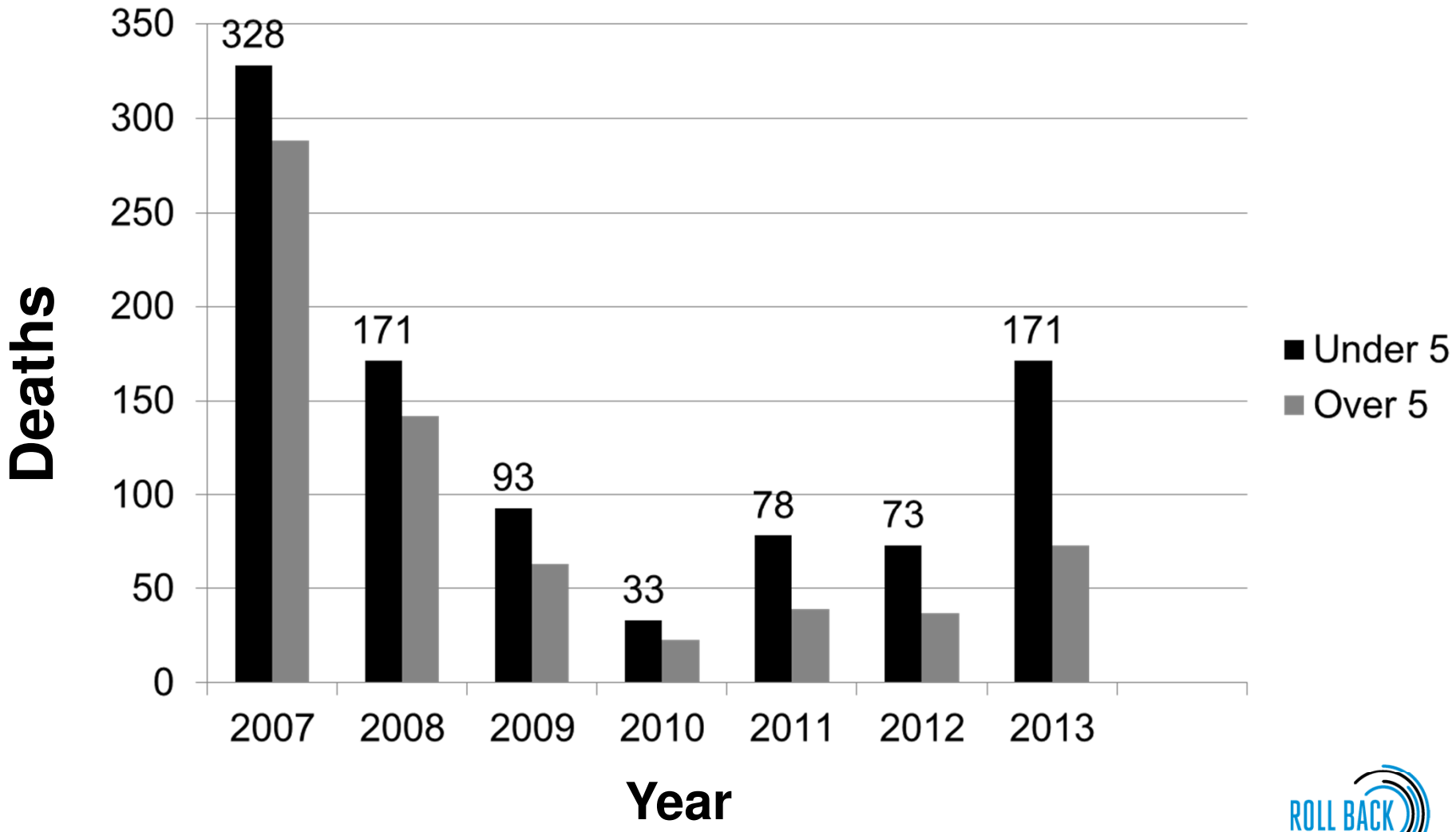
Malaria Deaths, XXX District



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Priorities and opportunities

1. Pyrethroid resistance

2. Sustaining Universal LLIN Coverage

3. New Paradigms for vector control and outdoor/residual transmission

4. Multisectoral Responses

5. Larviciding

6. Entomological monitoring and stratification.

Caveat...

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For every complex problem, there is an answer that is clear, simple and wrong

H.L. Mencken

Strength of VCWG is its diversity

Building capacity to analyze local challenges and adapt norms to find local, optimum solutions

Refer to VCWG Terms of Reference

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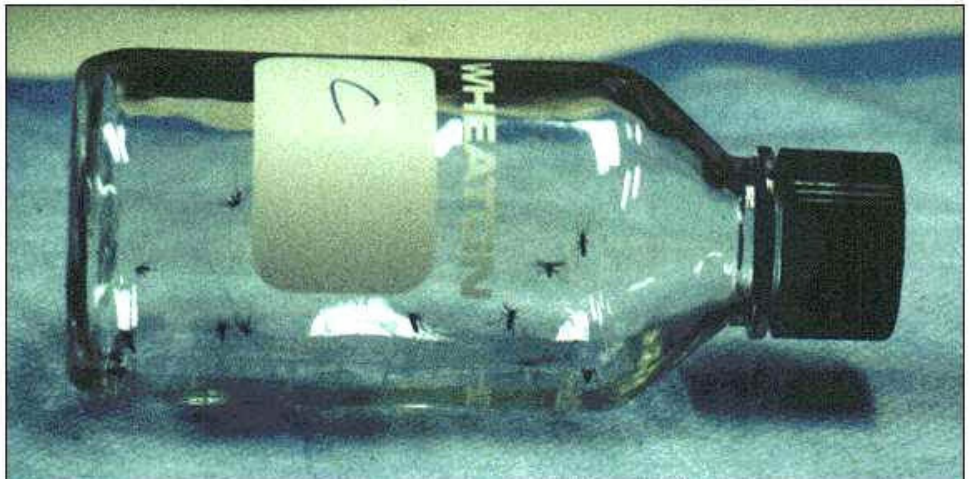
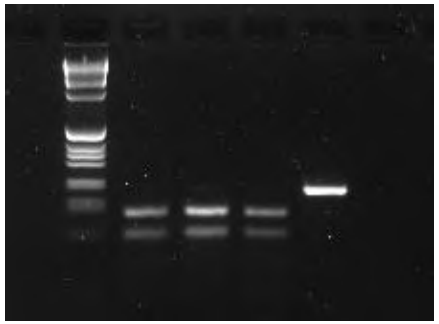
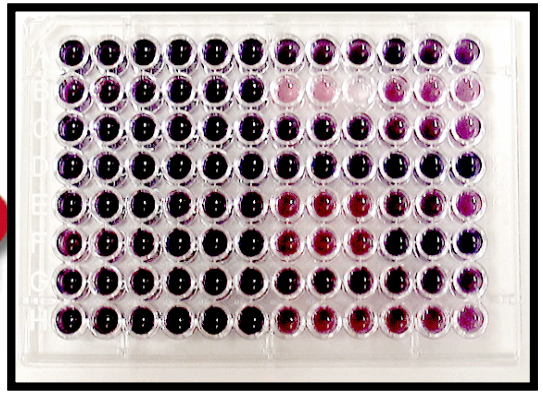
1. Insecticide Resistance

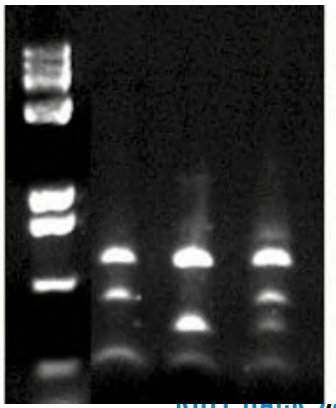




Ace-1 resistance PCR-RFLP. Lane 1, 1kb ladder, lanes 2-4 *An. gambiae* homozygous for *ace*-1 resistance mutation, lane 5 homozygous *An. arabiensis* negative for the *ace*-1 mutation



oxidase enzyme bioassay with elevated enzyme levels indicated by the darker colors



East African PCR. Lane 1, 1 kb marker, 2, resistant, 3, susceptible, and 4,

GPIRM strategy and the VCWG

Short-term (~3 years)
Preserve susceptibility and slow the spread of resistance on the basis of current knowledge, and reinforce monitoring capability and activities

Medium-term (3–10 years)
Improve understanding of IR and tools to manage it, and adapt strategy for sustainable vector control accordingly

Long-term (≥10 years)
Use innovative approaches for sustainable vector control at global scale

Five pillars of strategy

I	Plan and implement insecticide resistance management strategies in malaria-endemic countries.
II	Ensure proper, timely entomological and resistance monitoring and effective data management.
III	Develop new, innovative vector control tools.
IV	Fill gaps in knowledge on mechanisms of insecticide resistance and the impact of current insecticide resistance management approaches.
V	Ensure that enabling mechanisms (advocacy, human and financial resources) are in place.

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GPIRM elements and the VCWG

(i) planning and implementing insecticide resistance management strategies:

Establish intersectoral committees (e.g IVM).
2013 EMRO and AFRO workshops to roll out.

(ii) ensuring proper, timely entomological and resistance monitoring;

WHO Guide now includes complementary CDC Bottle Bioassay. Access to test materials? Prototype monitoring plan developed by GF and GMP

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GPIRM Elements continued

(iii) developing new and innovative vector control tools;

IVCC, VCAG et al.

(iv) filling in knowledge gaps on mechanisms of insecticide resistance and the impact of current insecticide resistance management approaches;

Africa Network for Vector Resistance

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GPIRM elements cont.

(v) **ensuring that key enabling mechanisms (advocacy as well as human and financial resources) are in place.**

- **Training workshops, e.g. CDC/PMI/WHO Myanmar**

Photo: Bill Brogdon, CDC

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2. Sustaining universal LLIN Coverage

World Health Organization

GLOBAL MALARIA PROGRAMME

WHO Recommendations for Achieving Universal Coverage with Long-Lasting Insecticidal Nets in Malaria Control

September 2013

WHO Guidance Note for Estimating the Longevity of Long-Lasting Insecticidal Nets in Malaria Control

September 2013

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2. Sustaining Universal LLIN Coverage (cont.)

WHO Guidance document on '*prioritizing LLIN deployment*' 2014?

Translating WHO guidance into reality:

- Continuous distribution work stream
- LLIN durability work stream
- Alliance for Malaria Prevention

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3. New Paradigms and Outdoor Transmission

'We don't know what we don't know'

Breaking silos and
making connections for innovation

3. Outdoor transmission and new paradigms

Photo credit:
Mar Mar Win

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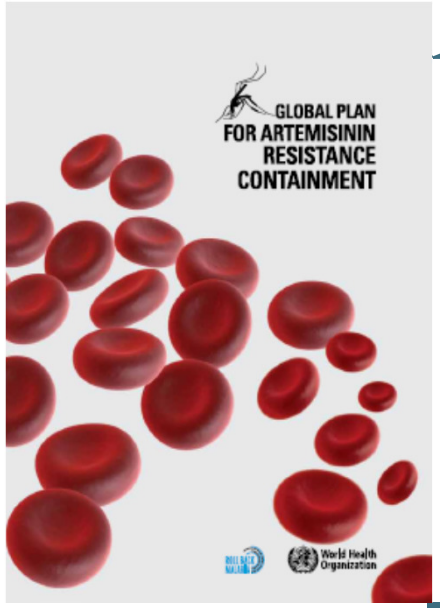
Global Plan for Artemisinin Resistance Containment (GPARC): January 2011



Contain or eliminate artemisinin resistance where it already exists
Prevent artemisinin resistance where it has not yet appeared

1. Stop the spread of resistant parasites
2. Increase monitoring & surveillance to evaluate the AR threat
3. Improve access to diagnostics & rational treatment with ACTs
4. Invest in artemisinin resistance-related research

5 Motivate action and mobilize resources

Supplement LLINs: Outdoor Transmission

Informal consultation on operational research to support accelerating malaria elimination in the context of artemisinin resistant falciparum malaria in the Greater Mekong Sub-Region

9th to 10th December, 2013

- Personal protection and use of ivermectin
- Vector mapping: moving from at-risk *populations* to at-risk *locations*
- Implementation research on current tools

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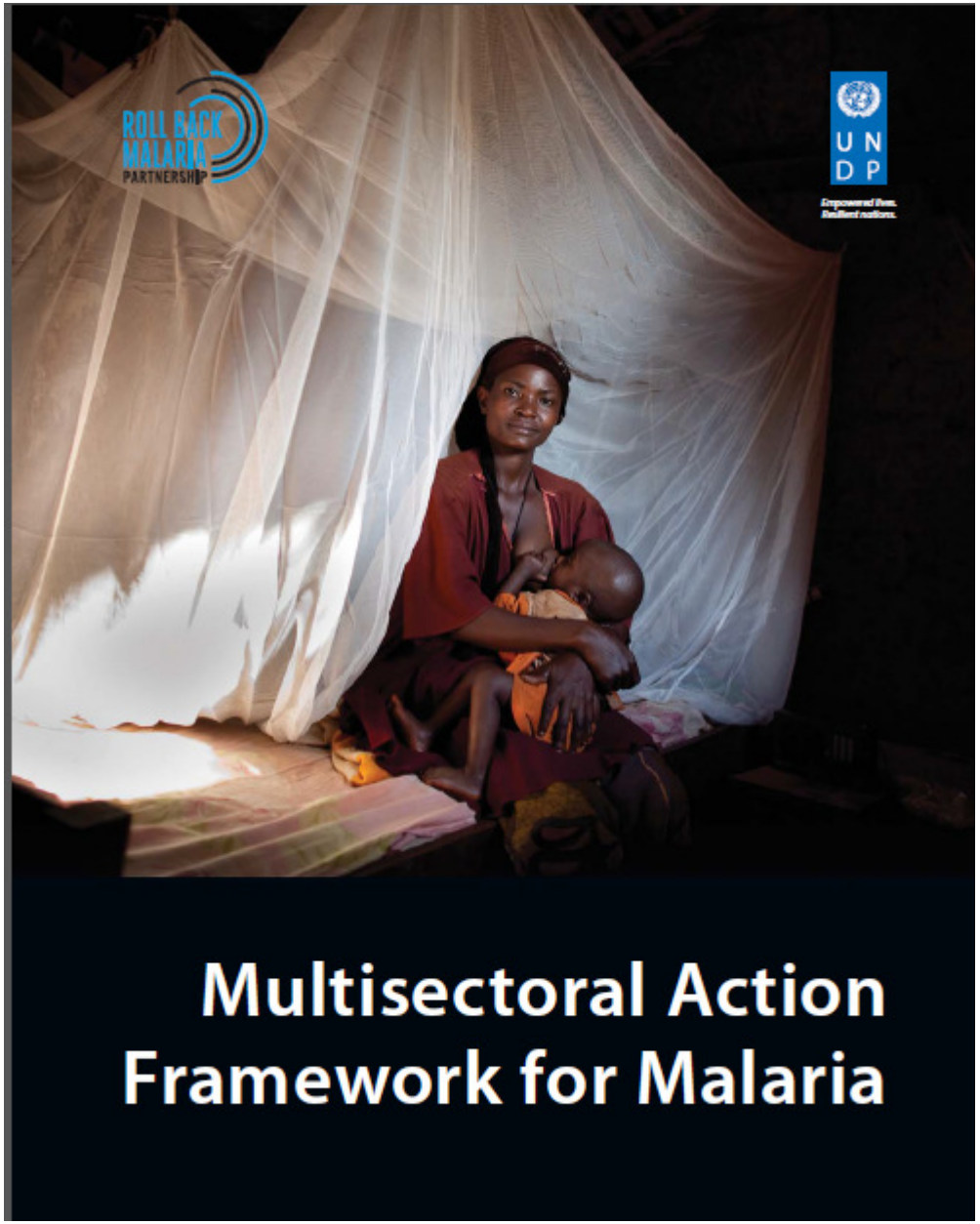

RBM / UNDP

Launch September

2013

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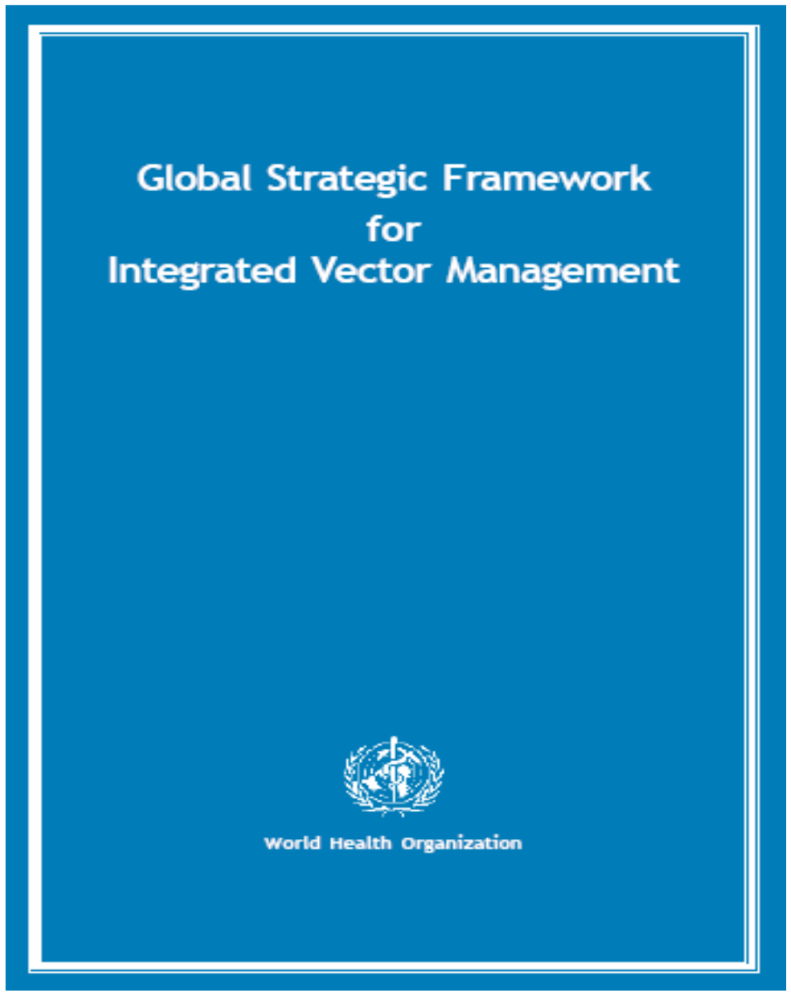
Multisectoral Action is Integrated Vector Management:

A rational decision-making process for optimal use of resources for vector control



- **Advocacy, social mobilization and legislation**
- **Cross sector collaboration**
- **Integrated approach**
- **Evidence-based decision-making**
- **Capacity-building**

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Multisector Control of Malaria in the Lake Victoria Basin

UN HABITAT
FOR A BETTER URBAN FUTURE

RBM and UNHabitat

- Infrastructure
- Housing
- Agriculture
- Education
- Business

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LVWATSAN

Lake Victoria Basin covers an area of 250,000 km2 with the lake taking

font size | Print | Email

68,000 km2. The basin has a population of 35 - 40 million people, with rapidly growing secondary towns, which has resulted in:

Unplanned, sponteneous and unsustainable growth
Run-down and non-existent basic infrastructure and services
Significant negative impacts on environment, and importantly, the fragile ecosystem of the lake
The lake is major-transboundary resource for EAC countries with a high potential to accelerate the growth of the

Resource Centre | Search LVBC

- Biodiversity Database
- LVWATSAN MIS
- Subscribe to News Letter

LVBC NEWSLETTER

Multisector Control of Malaria in the Lake Victoria Basin

RBM and UNHabitat

- Infrastructure
- Housing
- Agriculture
- Education
- Business

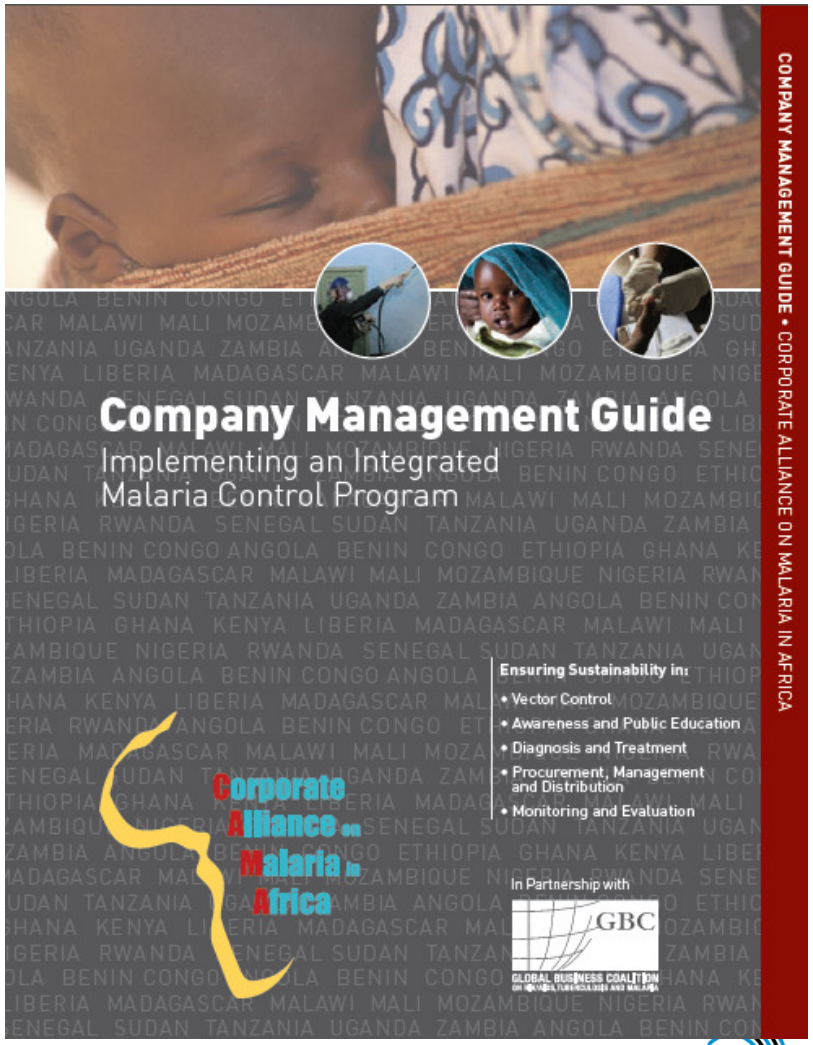
4. Multisector engagement (cont.)

Stockholm Convention and the UNEP Global Alliance

6. ***Funding should be made available*** *to support countries to transition away from the reliance on DDT for disease vector control, with the highest priority to assure that adequate systems and institutional capacity are in place to* ***train and support skilled staff for entomological monitoring****, operational research, evidence-based decision-making and to monitor programme performance.*

7. ***Funding should be made available to increase the national policy and management capacity*** *for translating international best practices on disease vector control and implementing quality assurance systems to assess programme performance and impact. .*

4. Multisector engagement (cont.)



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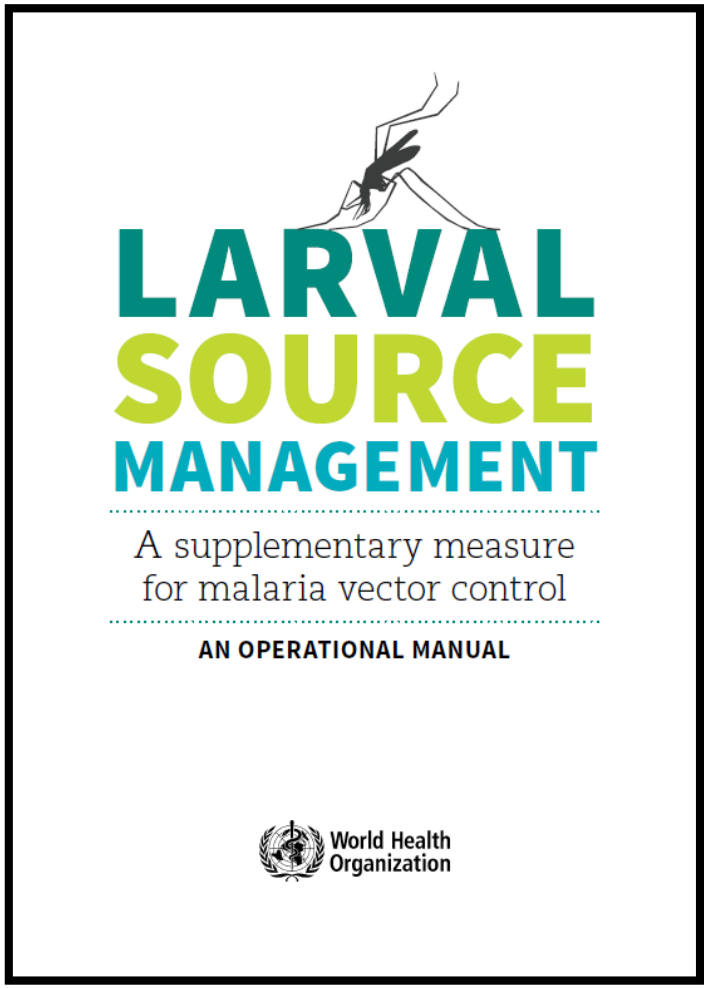
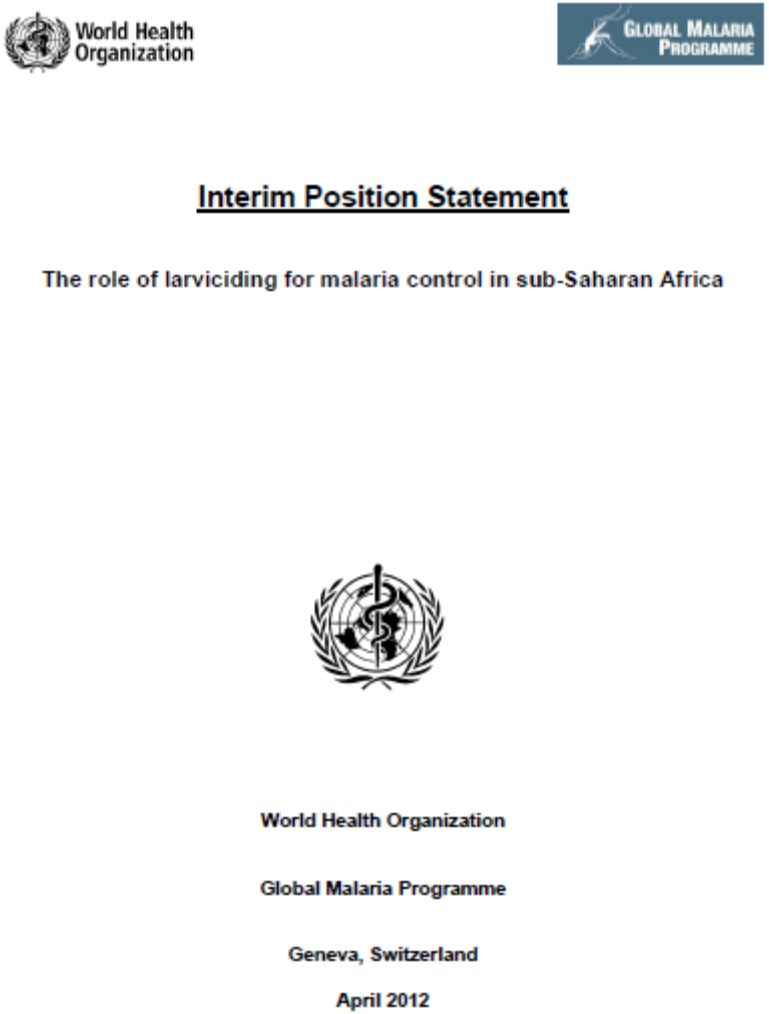
5. Investments in Larviciding





Workshops for product quality control and rational targeting, monitoring and evaluation

Need for technical collaboration

Photo: Nancy Lowenthal,
USAID Nigeria

6. Entomological Monitoring and Stratification

World Health Organization

GLOBAL MALARIA PROGRAMME

WHO Guidance Note on Capacity Building in Malaria Entomology and Vector Control

September 2013

Malaria control is at a critical juncture. The goal of malaria elimination in many settings might not be achieved, nor even current gains sustained without adapting to the changing threats and opportunities to controlling transmission.

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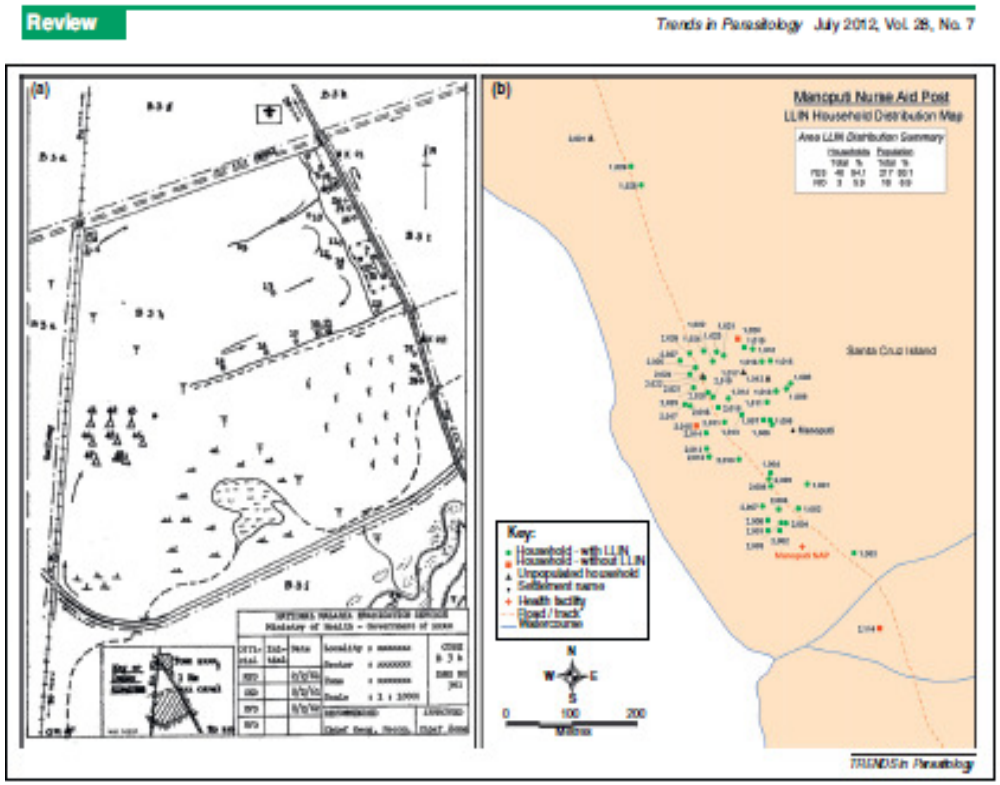
6. Entomological Monitoring and Stratification

Expand “Public Health” entomologist skills in epidemiology, information management, and mapping

Stratification and identification of transmission foci for more efficient use of resources



spatial decision support systems

Gerard C. Kelly, Marcel Tanner,, Andrew Vallely and Archie Clements

Recommendations to Countries

Establish intersectoral coordination mechanism;

Training needs assessment and curricula review;

Establish posts and career development opportunities;

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Recommendations to Countries (continued)

Intersectoral coordination mechanism establish agreements between Nationbal VBDC programs and universities, training and research institutions;

MoH to ensure sufficient resources for capacity building in bi-lateral and multi-lateral projects and funding requests based on national strategic plans.

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Recommendations to Partners

- Include clear component of capacity-building and **national "ownership"** in all technical and management activities;
- Support MoH to define and implement strategies for adequate human resources and systems **after partner engagement ends**;
- Provide financial and technical support for global and regional efforts to revise curricula and make available **training and mentoring opportunities for national staff.**

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Recommendations to WHO

- Develop **advocacy strategy** for public health entomology and vector control professionals, in collaboration with global, regional and national partners.

- **Mobilize resources** to implement capacity building activities;

- Facilitate needs assessment and curricula review

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Recommendations to WHO (continued)

- Develop prototype strategic plans for capacity-building; facilitate the development and dissemination of training materials;

- Support regional and global collaboration networks for training, technical support and continued mentoring;

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International networks

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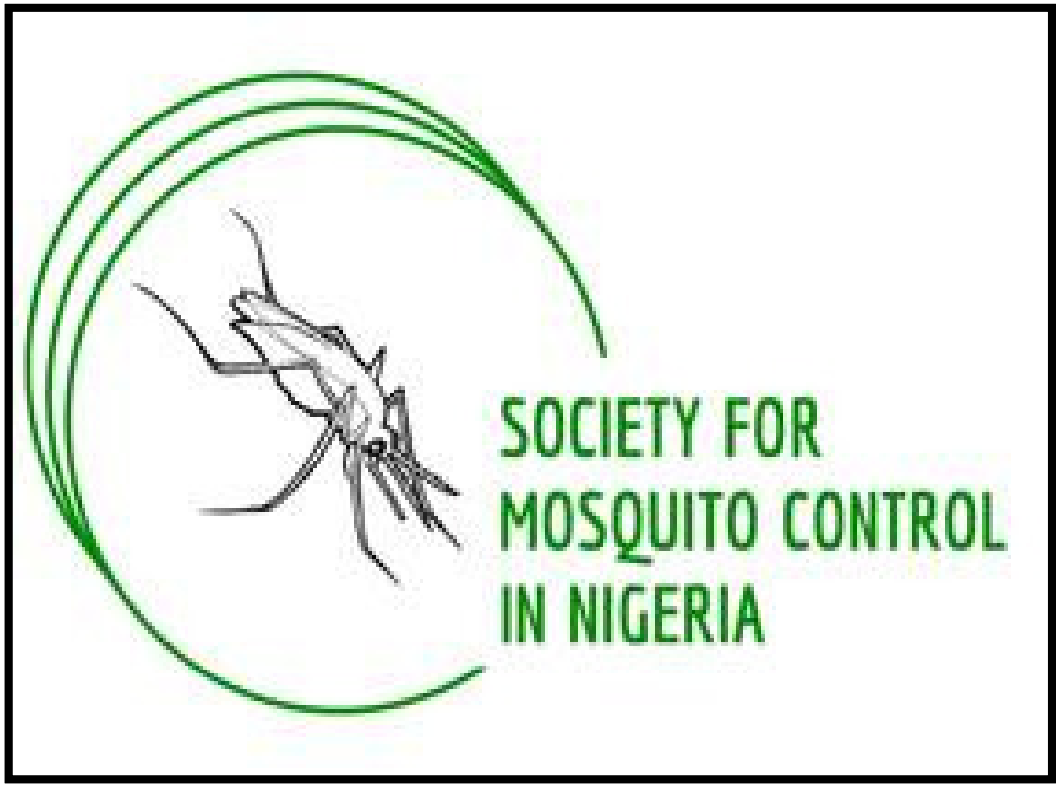
Regional Networks in Asia and Africa:

National Entomology and Vector Control Networks



MALARIA

Summary 1

- Pyrethroid resistance
- Sustaining universal LLIN Coverage
- New Paradigms for vector control and outdoor transmission
- Multisectoral Responses, incl IRS PPP
- Larviciding
- Entomological monitoring and stratification.

RBM Market Place, May RBM Board Meeting

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Summary 2:

Success over past decade, but we in the vector control community need to…

- Respond to resistance
- Enable programs to optimize resources and cost efficiencies
- Engage partners from other sectors.
- Build next generation of

  public health entomologists and

  vector control professionals

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Co-chair - Election Process - ToRs

- Two Co-Chairs or one Chair and one Co-Chair are elected by the VCWG members prior to the mid-year meeting of the RBM Board from different constituencies. (Co-) Chairs are elected for a two year term with potential renewal.

- The election procedure shall be transparent and secret and open to <u>all core members (institutions)</u> of the VCWG with one vote per core member.

- The Secretariat shall send out notifications one month prior to the election, soliciting nominations.

- Each core member has the right to nominate one person or self-nominate.

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http://www.rollbackmalaria.org/partnership/wg/wg_itn/docs/tor_VCWG.pdf

Elections, cont.

- Two weeks prior to the election the Secretariat shall obtain a confirmation from the nominees that they are interested and willing to run for election.

- Prior to the (Co-) Chair's endorsement by the Board, the Secretariat shall obtain an explicit assurance from their employer agreeing to the additional travel and workload related to assuming the role as Chair of a RBM Working Group.

- The election should be carried out through a secret ballot and can either take place during one of the VCWG meetings or through the use of electronic vote. A simple majority decides.

- The (Co-) Chairs are endorsed by the RBM Board at the mid-year Board Meeting.

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Co-chair - Election Process - Timelines

March 3rd

The Secretariat shall send out the notifications, soliciting nominations

March 17th

The Secretariat shall obtain a confirmation from the nominees that they are interested and willing to run for election

March 31st

Election date

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