Objectives

- Overview of progress in malaria control, by intervention (data from World Malaria Report 2011)
- Roles of Global Malaria Programme
- Key deliverables: 2011-2015
  - Overview of MPAC
  - Challenges
  - Opportunities

World Malaria Report 2011

- 2011 Report released on 13 December 2011
- Annual reference on the status of global malaria control & elimination. Data to 2010 and 2011
- Principal data source is national programs in 106 endemic countries with support from: WHO Regional offices, ACT Watch, AMFm, ALMA, CDC, CHAI, Columbia University, DFID, DHS, FIND, GHG UCSF, Global Fund, IHME, ISGlobal, JHU, PATH, R4D, RBM, Tulane University, UNICEF, UNSE, USAID
- Summarizes key malaria targets & goals
- Documents trends in financing, intervention coverage and malaria cases and deaths
- Updates malaria burden estimates for decade: 2000-2010
- NEW: Profiles for 99 countries with ongoing transmission

Past and projected international funding for malaria control

Malaria Funding 2000-2009, sub-Saharan Africa

Number of LLINs delivered by manufacturers to countries in sub-Saharan Africa

• 294 million LLINs procured for distribution in Africa between 2008 and end 2010

Source: Alliance for Malaria Prevention. Data for the 1st three quarters of 2011 were estimated by WHO to model an annual estimate.
Intermittent preventive treatment in pregnancy (IPTp): historical context

- IPTp with SP has been WHO policy for high transmission areas of Africa since 1998
- Uptake remains sub-optimal
- Recently hampered by concerns about SP resistance

Universal diagnostic testing

- WHO recommends confirmation of malaria through parasite-based diagnosis in all patients prior to instituting treatment (Malaria Treatment Guidelines 2010)
- Rationale:
  - Malaria prevalence amongst fever cases decreasing in many areas: fever no longer equals malaria
  - Quality-assured RDTs are now available
  - Malaria diagnostic testing:
    - Improves differential diagnosis & fever management
    - Diminishes unnecessary use of ACTs
    - Provide accurate surveillance data to manage programmes

Senegal: Rapid Diagnostic Tests (RDTs) are scaled up, and the need for antimalarial treatment drops

RDT Introduction, Zambia

Number of patients examined by microscopy, by WHO Region
Malaria RDT sales

Sales to public and private sectors  Sales by panel detection score (PDS)

Proportion of African children under 5 with fever receiving a blood test for malaria

Proportion of suspected malaria cases at public health facilities receiving a parasitological test

Despite improvements, long way to go to reach universal access to diagnostic testing, especially in Africa

Universal access to malaria diagnostic testing: an operational manual

- Target Audience: managers at national, regional or district levels
- Content: emphasis on HOW as opposed to WHAT
- Technical inputs: 15 agencies and 5 malaria control programmes
- Released: September 2011

ACT sales to the public sector, 2005–2010

Proportion of treated children receiving an ACT
Estimates of malaria cases and deaths by WHO Region, 2010

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated cases</th>
<th>Lower</th>
<th>Upper</th>
<th>% of change</th>
<th>Reported/Estimated</th>
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<tr>
<td>Africa</td>
<td>157,586</td>
<td>150,606</td>
<td>164,566</td>
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<td>20,000</td>
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<tr>
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<td>1,100</td>
<td>10%</td>
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<tr>
<td>Eastern Mediterranean</td>
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<td>0.2</td>
<td>0.2</td>
<td>0%</td>
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<tr>
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<tr>
<td>South-East Asia</td>
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<td>22,000</td>
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<td>493,000</td>
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<td>10%</td>
<td>51,000</td>
</tr>
</tbody>
</table>

Estimated trends in malaria cases (per 1000) and deaths (per 100 000) persons at risk by WHO Region, 2000–2010

Reduction in malaria burden since 2000

WHO committed to fulfill its mandate within a strong and diverse malaria community

Role of GMP within WHO

WHO Global Malaria Programme: four key roles

- GMP is WHO's disease-specific programme on malaria prevention, control, and elimination
- GMP leads WHO efforts to support WHO Member States on all aspects of malaria control
- GMP is responsible for coordination of WHO efforts on malaria prevention, control & elimination
- GMP together with the 6 WHO Regional Offices and 193 WHO Country Offices, provides a unique global footprint for malaria control efforts

A strong and diverse malaria community

- Providing leadership on matters critical to health
- Shaping the research agenda
- Setting norms and standards, and promoting and monitoring their implementation
- Articulating ethical and evidence-based policy options
- Providing technical support, catalyzing change, and building sustainable institutional capacity
- Monitoring the health situation and assessing health trends

The Roll Back Malaria partnership provides global advocacy as well as partner coordination mechanisms through the RBM Secretariat, Working Groups and the Global Malaria Action Plan (GMAP)

WHO Global Malaria Programme:

- Set, communicate and promote the adoption of evidence-based norms, standards, policies, and guidelines
- Chart the course for malaria control & elimination, as well as new opportunities for action
- Develop approaches for capacity-building, systems strengthening, and surveillance
- Keep independent score of global progress
**GMP deliverables**

**Role I: norms and standards**

2011–2012

- Re-defined policy setting processes (Malaria Policy Advisory Committee) (Q1 2012)
- Revised malaria manual handbook (Q2 2012)
- Seven malaria reference tools (Q2 2012)
- Global malaria surveillance guidelines (Q2 2012)
- Guidelines on implementing intermittent Preventive Treatment in infants (IPTi) (Q4 2011)
- Policy decisions & guidance on intermittent Preventive Treatment in children (IPTc) (Q1 2012)
- Updated tools to monitor drug efficacy and drug resistance (Q3 2011, and ongoing)
- Guidelines on methods for monitoring insecticide resistance (LLIN) monitoring (Q3 2011)
- Updated field manual on malaria elimination for special populations and settings (Q4 2011)
- Guidelines on methods for monitoring insecticide resistance (Q2 2012)

2013–2015

- Updated malaria treatment guidelines
- Updated guidelines on malaria diagnostics
- Guidance on parasite detection and surveillance in very low-transmission areas
- Guidance for universal vector control coverage (integrated vs. delivery methods)
- Guidance for public ownership and ownership of the management of LLIN
- Guidance on trial source control
- Updated field manual on malaria elimination for low and moderate endemic countries
- Guidance on malaria control in special populations and settings:
  - Migrants
  - Urban malaria
  - Cross-border transmission

**Role II: keep independent score**

2011–2012

- World Malaria Report (annually)
- Global Anti-Microbial Drug Resistance report (every 3 years)
- Annual malaria updates for international travelers
- Malaria country malaria elimination certification

2013–2015

- Review of cost-effectiveness of malaria interventions (Q4 2011)
- Online database to track progress in attainment of oral artemether-lumefantrine (LAUNCHED)
- Topical reports on progress towards 2010 targets, e.g. elimination, malaria outside of Africa (Elimination Report LAUNCHED)
- Guidance on: (i) tracking malaria expenditures; (ii) inter-agency operational manuals; (iii) testing (Q1 2012)
- Launch of Elimination Scenario Planning tool (Field Testing Q1 2012)
- Launch of Elimination Scenario Planning tool (Field Testing Q1 2012)
- Global strategy for Artemisinin Resistance Containment (Q4 2011)
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- Global Strategy for Artemisinin Resistance Containment (Q4 2011)

**Role III: develop approaches for capacity-building**

2011–2012

- Good Procurement Practices for malaria Rapid Diagnostic Tests (GMP) (LAUNCHED)
- Development of template, approach, and manuals for District malaria program management (LAUNCHED)
- Train the trainer manual on RDTs (proc 2012)
- Basic malaria microscopy training manual (late 2012)
- Malaria elimination training module (late 2012)
- Develop a template for producing regular National Malaria Bulletin (Q2 2011)

2013–2015

- Develop generic version of Volunteer Residual Spraying (IRS) training manual
- Manuals for quality assurance of RDTs in peripheral health facilities and at community level (ongoing)
- Establish regional and national systems to access microscopy experts, develop reference slide banks and pool consultants on microscopy quality assurance (QA)
- Malaria certification and integrated malaria control
- Analysis of human resource needs by level and settings for effective vector control

**Role IV: identify threats and opportunities**

2011–2012

- Inter-agency operational manual on universal access to malaria diagnostics (LAUNCHED)
- Public, launch and coordinate Global Plan for Artemisinin Resistance Containment (LAUNCHED)
- Launch of Elimination Scenario Planning tool (Field Testing Q1 2012)
- Public, launch and coordinate Global Plan for Insecticide-Resistant Management (March 2012)
- Development of insecticide resistance database and production of Global report on insecticide resistance (by 2015)
- Publish 2nd edition of the “Workbook for Malaria Control in Complex Emergencies” (late 2012)

2013–2015

- Global Strategy for Combating and Advancing Gains in Malaria control: transmission reduction, and elimination from 2015-2025
- Update Global Plan for Artemisinin Resistance Containment (by 2013)
- Global strategy for P. vivax control and elimination
- Update existing technical guidelines on preventive and control of malaria epidemiology
- Policy recommendation on RTS, malaria vaccine (with WHO-IVB)

**Recent GMP Products (1)**

![Image](image1.png)

**Recent GMP Products (2)**

![Image](image2.png)
Recent GMP Products (3)

Malaria Policy Advisory Committee (MPAC) - background

- Setting policy, norms and guidance on malaria control is primary role of WHO/GMP
  - Malaria Expert Committee - 20th (last) meeting in 1998
  - Technical Expert Groups (TEGs) - since mid-2000s
  - Ad-hoc Technical Consultations as needed
- Scale up of malaria control + major investment in research = rapidly evolving policy environment for new tools and technology
- GMP strengthening policy setting process to be more:
  - Timely
  - Transparent
  - Accountable

MPAC: basic elements

The Malaria Policy Advisory Committee (MPAC) will provide independent strategic advice and technical input to WHO for the development of policies related to malaria control and elimination

- 15 members, integrators, with broad range of
  - Expertise, professional affiliation, gender, geography
- To meet twice a year
- Open call for nominations
- Nominated by selection committee
- Appointed by WHO for three-year terms, renewable once
- Recommendations to be published within two months of meetings

MPAC: Chronology

- GMP Advisory Group on policy setting was convened in Geneva in March 2011
  - Review previous and existing WHO/GMP policy setting processes
  - Consider successful models from other WHO departments
  - Propose draft ToR for new policy setting body
- Selected model based on SAGE, to be called Malaria Policy Advisory Committee (MPAC)
- Draft ToR of MPAC sent to over 40 resource persons and stakeholders on 21 April; ~90% response rate
- Open call for nominations, September 2011: 100 applications received; 15 selected by independent nomination panel, and approved by WHO DG
- Inaugural meeting: 31 January – 2 February 2012

MPAC: organogram

Malaria control and elimination: GMP vision for 2011 – 2015

The era of one-size-fits-all approach for malaria control is coming to an end as malaria transmission drops and new interventions are introduced

- Sustaining high intervention coverage may prove more difficult than initially achieving it
- Resistance to antimalarials and insecticides are major threats to continued success
- Malaria control paradigm is shifting, as countries move from lowering morbidity & mortality to reducing transmission
- Fundamental changes are happening (e.g. universal diagnostic testing) and are on the horizon (e.g. a malaria vaccine)
- Routine surveillance is critical to sustained control and eventual elimination

P. vivax will become increasingly important as P. falciparum burden drops; P. vivax poses a more formidable elimination challenge
Major challenges ahead

- Political commitment
- Financial resources
- Procurement and supply chain management
- Health system capacity
- Delivering quality case management in the private sector
- Human resource capacity
- Antimalarial drug resistance
- Insecticide resistance
- Inadequate surveillance and controversies over burden estimation
- Delivering results in highest burden countries

Challenge: Political commitment

- Context
  - Major shift towards non-communicable diseases
  - Sense that malaria has already made significant progress, so needs less support going forward
  - Fatigue (this is a long fight)
- Potential solutions
  - Consistent evidence-based policy setting (MPAC)
  - Careful and consistent documenting of impact
  - Link to wider health & development efforts
  - Resolutions from major organizations (e.g. UN, WHO)
  - Organizational support (e.g. ALMA)
- Risks
  - Advocacy sometimes out ahead of reality: a fine line

Continued global political commitment

- Creation of African Leaders Malaria Alliance (ALMA), 2009
- United Nations General Assembly resolution on malaria: April 2011
- World Health Assembly (WHA) resolution on malaria: May 2011
  - Resolution text is in your packets
- Roll Back Malaria Partnership revised objectives, targets, and Priorities: June 2011

Challenge: Financial

- Context
  - Despite increases in financing, well short of estimated 6 billion USD per year required
  - Concerning data to suggest that funds could decline by 2015
  - Global financial crisis and competing priorities with potential to worsen the situation
- Potential solutions
  - Increased efficiency and value for money
  - Increased domestic funding for malaria
  - Innovative financing mechanisms
  - See also: solutions for political commitment
- Risks
  - Worsening financial crisis; continued financial challenges at Global Fund

Official development assistance for malaria and other health and population activities

Median total domestic government spending in malaria-endemic countries by WHO Region

- Source: OECD database on foreign aid flows http://daks.oecd.org/dac/

- Source: International Monetary Fund: World Economic Outlook database, September 2011

- If 1% of total domestic spending were used for malaria control, these would raise US$1.39 per capita in 75 out of 99 countries with ongoing malaria transmission - the cost to cover each person with ITN.
Innovative financing

- Financial transactions taxes:
  - UNITAID raised US$ 210 million in 2010
  - Currently operates in 9 countries: could be extended
- Tax on bonds and derivatives transactions (0.0001% - 0.2% per transaction)
  - Could generate €265 billion across G20 countries
  - But some opposition and other uses have been proposed
- Schemes potentially useful on smaller scale
  - Tourist tax, cigarette taxes
  - Malaria bonds

Savings on commodities: test and treat versus presumptive treatment

Impact of malaria control on treatment costs

Challenge: Antimalarial drug resistance

Global Plan for Artemisinin Resistance Containment (GPARC)
Challenge: Insecticide resistance

- Context
  - Current vector control efforts highly dependent on pyrethroids
  - Resistance to pyrethroids is widespread, particularly in Africa
  - Resistance to other insecticides also present in many settings
    - Not associated with widespread control failures to date
- Potential solutions
  - Fully implement the Global Plan for Insecticide Resistance Management in malaria vectors (GPIRM)
    - Such a plan requested by World Health Assembly and the RBM Board
- Risks
  - Short term costs of IRM prevent timely action

Global Plan for Insecticide Resistance Management (GPIRM) in malaria vectors

- Global strategy to coordinate action against insecticide resistance and ensure continued effectiveness of current & future vector control tools on transmission, morbidity and mortality
- Currently being developed with input from >140 stakeholders
- Launch: March-April 2012
- End goal of GPIRM: Maintain effectiveness of malaria vector control in the long-term
- Near-term objective of GPIRM: Preserve susceptibility of major malaria vectors to pyrethroids and to other classes of insecticides at least until a range of new classes is made available for large-scale vector control

GPIRM strategy: a window of opportunity to improve sustainability and impact of vector control

- Short-term (~3 years)
- Medium-term (3-10 years)
- Long-term (10+ years)

GPIRM is being developed to coordinate action on the prevention and management of insecticide resistance

1. Define what is known, what is assumed and what remains unknown with regard to insecticide resistance among malaria vectors, its trajectory, its operational impact and options for managing the problem
2. Estimate the potential impact of insecticide resistance on malaria burden as well as the financial cost of monitoring and managing insecticide resistance
3. Using these elements as the foundation, define the plan for managing insecticide resistance and the way forward, including:
   - Short-term action plan with clear responsibilities
   - Ongoing research and development requirements

Challenge: Delivering results in countries with highest malaria burden

- Context
  - Major progress in last decade, but progress lagging in highest burden countries
- Potential solutions
  - WHO-GMP and RBM Malaria Situation Room to track progress (intervention coverage and impact) in 10 countries in WHO African Region with highest burden
    - Proactively identify bottlenecks requiring resolution: political, financial, procurement and supply chain,
- Risks
  - Inadequate resources to fully scale up current interventions in countries with greatest burden
Need to increase our efforts in countries with the greatest malaria burden

Malaria deaths in 4 countries make up ~50% of global burden

Source: WHO 2010 Burden Estimates

Major opportunities ahead

- Malaria elimination
- New uses for existing tools. Example: Seasonal Malaria Chemoprevention
- New tools: malaria vaccine?
- Integrated community case management
- Improving efficiency and value for money. Example: a 5-year LLIN
- Stratification:
  - Using data for decision making
  - Determining the optimal intervention mix for different epidemiological settings
- Universal diagnostic testing, improved case management, and strengthened surveillance

Opportunity: Malaria Elimination

- Context
  - Many countries with strategic plans & en route to elimination
- Actions needed
  - Better document elimination successes through rigorous case studies (collaboration with Swiss TPH and Global Health Group at UCSF)
  - Develop more comprehensive guidance for accelerating progress from control to elimination
  - Provide realistic planning tools for countries
    - Elimination Scenario Planning (ESP) soon to be field-tested (collaboration with CHAI, GHG/UCSF, and Imperial College); launch in 2012
- Risks
  - Unrealistic expectations in some settings

Elimination status of countries, 2011

Opportunity: Malaria vaccine

- One vaccine, RTS,S/AS01, in large Phase 3 trial
- 11 sites in 7 sub-Saharan African countries; >15,000 children enrolled. Trial due to finish in Q4 2014.
- Target population: EPI co-administration in African infants
- First results published in NEJM October 2011: overall efficacy in 5-17 month group against clinical malaria was 55.8% again during 12 months of follow-up
Joint Technical Expert Group (JTEG) on malaria vaccines

- Jointly convened by GMP and WHO Vaccine Department
- Terms of Reference: "Advise the secretariat of GMP and Vaccines Department on clinical trial data necessary and desirable for evaluation of public health impact of a malaria vaccine in malaria endemic countries"

JTEG members

- Chair, Peter Smith
- Fred Binka (MPAC member)
- Kamini Mendis (MPAC member)
- Malcolm Molyneux
- Paul Milligan
- Kalifa Bojang
- Mahamadou Thera
- Blaise Genton
- Janet Wittes (Biostatistician)
- Robert Johnson (Office Chief, NIAID Regulatory Affairs)
- Zulfiquar Bhutta (SAGE member, acts as liaison to SAGE)
- Graham Brown (MALVAC Chair)

Pathways for WHO Recommendations on Malaria Vaccine Use

Three JTEG meetings

Meeting 2 -- Nov 2010: Feedback on regulatory submission plans and Phase 4 study design
Meeting 3 -- 23-24 Feb 2012: Review of Phase 3 data to date, planning for first data on target population to be received Q4 2012

Process for WHO policy recommendation regarding RTS,S

- MPAC will have key role on language related to other malaria control measures, and range of transmission settings for recommendation
- SAGE will have key role related to schedule for addition of RTS,S to routine EPI programmes, and ensuring satisfactory co-administration data
- Joint MPAC/SAGE session is foreseen at time of possible policy recommendation; ?early 2015

Opportunity: Value for money

- Context
  - Financial gap in malaria control unlikely to be closed through increased resources alone
- Actions needed
  - Thoroughly examine current malaria control efforts to identify opportunities for increased efficiency and better value-for-money
- Risks
  - Insufficient data to make well-informed decisions
  - Product development timeline may be too slow to produce near-term gains
  - Unintended consequences of new approaches
Evidence that LLIN longevity is variable and 2 years or less in some settings / cases

- Multi-country analysis by A. Kilian et al found average 50% survivorship after 3 years
- Madagascar preliminary analysis of 3-year follow-up data:
  - survivorship of 51% of polyester and 41% of polyethylene LLIN
  - residents report most holes caused by sparks from fire
- Nigeria: AMP household surveys report high loss after 1 year
- Mentor Initiative: report high 3-year failure of 2 major current LLIN types in eastern Chad

Potential savings of a longer lasting ITN

<table>
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<tr>
<th></th>
<th>3 year net</th>
<th>5 year net</th>
<th>Saving</th>
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<tbody>
<tr>
<td>ITNs needed in Africa 2011-2020 (millions)</td>
<td>1,250</td>
<td>750</td>
<td>500</td>
</tr>
<tr>
<td>Financing required @ US$ 7.66 per ITN (US$ millions)</td>
<td>9,575</td>
<td>5,745</td>
<td>3,830</td>
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</table>

Opportunity: Universal Diagnostic testing, improved case management and strengthened surveillance

- **Context**
  - In 2010, WHO recommended diagnostic testing in all suspected malaria cases prior to treatment
  - Uptake is happening, but treatment remains presumptive in many settings
  - Without diagnostic testing, malaria surveillance is weak: we are flying blind
- **Actions needed**
  - Launch of T3 Campaign: Test, Treat, Track
  - Launch of Malaria Surveillance Guidelines (April 2012)
  - Coordinated efforts to support endemic countries to implement T3
- **Risks**
  - Resistance to paradigm change
  - Weak health systems
  - Inadequate investments (especially in surveillance)

Fighting malaria - a continuous cycle requiring balanced investment

- Surveillance, monitoring & evaluation
- Basic and applied research
- Program implementation
- Policy change
Keep our eye on the prizes

● First: near zero deaths from malaria
  ▪ In 2012, no one should die from malaria for lack of a 5 dollar bednet, a 50 cent diagnostic test, and a 1 dollar antimalarial treatment

● Ultimately: a world free of malaria