Progress towards Malaria Elimination in South Africa

National Department of Health
Directorate: Malaria

B. Shandukani, D Moonasar, E. Misiani and F.G. Benson

Durban, South Africa | 10 September 2011
Outline

1. Malaria Elimination Strategy
2. Systematic Approach to Elimination in South Africa
3. Malaria Situation in South Africa
4. Interventions for Malaria Elimination
5. Plans for 2011
6. Challenges and Way Forward
Malaria Elimination Strategy
Goals and Objectives of the 2011-2018 Malaria Strategic Plan

– **Goal:** Reduce local malaria transmission to zero by 2018

– **Objectives:**
  
  • 100% ACT coverage by 2011 onwards;
  
  • Scale-up IVM (>90% IRS; 100% LLINs in targeted areas by 2015);
  
  • Scale-up surveillance (Active: 100% cases investigated within 7 days or reporting; Passive: 100% of cases notified within 24 hours of diagnosis, by 2013);
  
  • Scale-up EPR (all outbreaks investigated within 2 weeks of detection by 2013);
  
  • 100% of risk groups targeted with appropriate IEC; and
  
  • Strengthen human resource capacity at all levels (100% of identified positions filled and appropriately capacitated).
A Systematic Approach to Elimination in South Africa
From Control to Elimination

Control & Consolidation

Pre-elimination

Elimination

Prevention of reintroduction

SPR < 5 per 1000 fever cases

<1 case/1000 population at risk/year

0 locally acquired cases

WHO certification

1st program reorientation

2nd program reorientation

SPR: slide positivity rate
## District Incidence Stratified Against Elimination Continuum (Incidence /1000 population at risk)

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Cases</th>
<th>Phases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LIMPOPO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPRICORN</td>
<td>(0.00 - 0.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOPANI</td>
<td>(0.15 - 13.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEKHUKHUNE</td>
<td>(0.00 - 0.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VHEMBE</td>
<td>(0.33 - 12.74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MPUMALANGA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EHLANZENI</td>
<td>(0.11 - 0.51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GERT SIBANDE</td>
<td>(0.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NKANGALA</td>
<td>(0.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KWAZULU-NATAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMAJUBA UMZINYATHI, ETHEKWINI and others</td>
<td>(0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZULULAND</td>
<td>(0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UMKHANYAKUDE</td>
<td>(0.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>uTHUNGULU</td>
<td>(0.04)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Cases**
  - > 5 cases/1000
  - < 5 cases/1000
  - < 1 case/1000
  - 0 Cases

- **Phases**
  - Control
  - Pre-elimination
  - Elimination
  - Prevention of Reintroduction
## A Systematic Approach to Malaria Elimination

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish the status of the Malaria Control Programme in South Africa</td>
<td>High-level vision and strategy for the malaria elimination program</td>
<td>Defined and detailed impact indicators</td>
</tr>
<tr>
<td>Establish baselines for major impact indicators and targets</td>
<td>Defined major impact indicators and targets</td>
<td>Defined and detailed process indicators</td>
</tr>
</tbody>
</table>

### 4. Malaria Elimination Implementation Plan
- Define key activities
- Identify key stakeholders
- Define key roles and responsibilities
- Define targets for implementation

### 5. Resource Mobilisation
- Develop concept paper for resource mobilization for national elimination efforts
- Sources
  - Government
  - Donors
  - Partners

### 6. Implementation of Malaria Elimination (re-orientation)
- Implement with partners
- Monitor and evaluate
- Report to government and scientific community
Malaria Situation in South Africa
To significantly reduce your risk, take precautionary measures against mosquito bites throughout the year in ALL RISK areas.

- **Malaria High Risk Areas (South Africa)**
  - Antimalarial drugs are recommended from September to May for all travellers.

- **Low Risk Areas**
  - Only non-drug measures to prevent mosquito bites are recommended.

Consult country specific map

Mefloquine OR Doxycycline OR Atovaquone-Proguanil are recommended in the malaria affected areas of these countries.

- **Towns**
  - 1. Tshipese
  - 2. Hans Merensky
  - 3. Groot-Letaba
  - 4. Klaserie
  - 5. Kruger National Park
  - 6. Thornybush
  - 7. Sable Sand
  - 8. Blyderivierpoort
  - 9. Nkumu
  - 10. Tembe
  - 11. Greater St Lucia Wetland Park (incl. Mkuzi)
  - 12. Hluhluwe
  - 13. Umfolozi
  - 14. Rthala
  - 15. Phongolapoort
  - 16. Maputo Elephant Reserve
  - 17. Limpopo Transfrontier Park
  - 18. Banhine National Park
  - 19. Matalotla Nature Reserve
  - 20. Hlane Wildlife Sanctuary
  - 21. Mhaya Nature Reserve

- **Game Reserves**
  - 1. Tshipese
  - 2. Hans Merensky
  - 3. Groot-Letaba
  - 4. Klaserie
  - 5. Kruger National Park
  - 6. Thornybush
  - 7. Sable Sand
  - 8. Blyderivierpoort
  - 9. Nkumu
  - 10. Tembe
  - 11. Greater St Lucia Wetland Park (incl. Mkuzi)

- **Regional Areas**
  - 1. Limpopo Province
  - 2. North West Province
  - 3. Gauteng Province
  - 4. Mpumalanga Province
  - 5. KwaZulu Natal Province
  - 6. Northern Cape Province
  - 7. Western Cape Province
  - 8. Eastern Cape Province

- **International Borders**
  - 1. Botswana
  - 2. Mozambique
  - 3. Zimbabwe

- **Cities**
  - 1. Hoedspruit
  - 2. Lydenburg
  - 3. Sabie
  - 4. Nelspruit
  - 5. Middelburg
  - 6. Mbabane
  - 7. Mkuze
  - 8. Kosi Bay
  - 9. Hlabisa
  - 10. Mahlabatini
  - 11. St Lucia
  - 12. Ndwedwe
  - 13. Inhawu
  - 14. Jozini
  - 15. Sodwana Bay
  - 16. Mahlahlahla
  - 17. Thohoyandou
  - 18. Giyani
  - 19. Phalaborwa
  - 20. Pilgrims Rest
  - 21. Skukuza
  - 22. Kosi Bay
  - 23. White River
  - 24. Komatipoort
  - 25. Malelane
  - 26. Barberton
  - 27. Mbabane
  - 28. Mbombela
  - 29. Mbeki
  - 30. Kosi Bay

- **Distances**
  - 1. Kilometers
  - 2. Miles

- **Countries**
  - 1. South Africa
  - 2. Mozambique
  - 3. Zimbabwe
  - 4. Botswana
  - 5. Swaziland

- **Maps**
  - 1. Health Map of South Africa
  - 2. South Africa
  - 3. Limpopo
  - 4. North West
  - 5. Gauteng
  - 6. Mpumalanga
  - 7. KwaZulu Natal
  - 8. Northern Cape
  - 9. Western Cape
  - 10. Eastern Cape

- **Symbols**
  - Red areas indicate high risk
  - Yellow areas indicate low risk
  - Green areas indicate game reserves
  - Pink areas indicate cities

- **Legend**
  - Malaria High Risk Areas (South Africa)
  - Low Risk Areas
  - Consult country specific map
  - Mefloquine OR Doxycycline OR Atovaquone-Proguanil
Between 2000 & 2010, mortality reduced by 96%; morbidity by 89%
Case Importation

Limpopo Case Importation 2000 - 2010

Number of Malaria Cases

Year

Imported
Untraceable
Local
Interventions for Malaria Elimination
### Interventions: Surveillance

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Control programme</th>
<th>Pre-elimination programme</th>
<th>Elimination programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance</td>
<td>Improve surveillance, national and provincial coverage</td>
<td>Elimination database</td>
<td>Case investigation and classification</td>
</tr>
<tr>
<td></td>
<td>Country and provincial profiles</td>
<td>GIS-based database on cases, interventions and vectors</td>
<td>Foci investigation and classification</td>
</tr>
<tr>
<td></td>
<td>Malaria surveys</td>
<td>Active case detection</td>
<td>Routine genotyping</td>
</tr>
<tr>
<td></td>
<td>Commodity tracking (drugs, insecticides, RDTs, etc)</td>
<td>Classification of malaria cases</td>
<td>Malaria surveys</td>
</tr>
<tr>
<td></td>
<td>Monitoring of expenditure</td>
<td>Central records bank</td>
<td>Immediate notification of cases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Genotyping, isolate bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malaria information surveys and other evidence generating activities/research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Immediate notification of cases</td>
<td>Meteorological monitoring</td>
</tr>
</tbody>
</table>
### Interventions: Epidemic Preparedness and Response

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Control programme</th>
<th>Pre-elimination programme</th>
<th>Elimination programme</th>
</tr>
</thead>
</table>
| EPR           | • Meteorological monitoring  
               • Early warning and detection systems  
               • Seasonal planning  
               • Epidemic preparedness and response within 2 weeks of detection (strengthen) | • Malaria early warning systems (MEWS), Meteorological monitoring  
               • Early warning and detection systems  
               • Seasonal planning  
               • Epidemic response | • Meteorological monitoring  
               • Early warning and detection systems  
               • Seasonal planning  
               • Epidemic response |
## Interventions: Vector Control

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control programme</th>
<th>Pre-elimination programme</th>
<th>Elimination programme</th>
</tr>
</thead>
</table>
| Vector Control | • Develop IVM guidelines  
• GIS mapping of localities  
• Transmission reduction through high (90%) population coverage of IRS  
• Entomological surveillance (prevalence, distribution and behaviour)  
• Insecticide resistance monitoring | • GIS mapping of localities  
• Total (90%) coverage by IRS in targeted areas (foci)  
• Entomological surveillance  
• Insecticide resistance monitoring  
• Implement IVM guidelines in specific situations  
• Insecticide resistance management implementation | • GIS mapping of localities  
• Total (100%) coverage by IRS in targeted areas (foci)  
• IVM as a complementary measure in specific situations  
• Entomological surveillance  
• Insecticide resistance monitoring |
## Interventions: Health Promotion

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control programme</th>
<th>Pre-elimination programme</th>
<th>Elimination programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Promotion</td>
<td>• Develop a communication strategy for malaria elimination</td>
<td>• Advocacy for malaria elimination</td>
<td>• Intensify HP</td>
</tr>
<tr>
<td></td>
<td>• Advocacy for malaria elimination</td>
<td>• Intensify HP</td>
<td>• IVM in context of community participation</td>
</tr>
<tr>
<td></td>
<td>• Traditional healers including Health Promotion (HP)</td>
<td>• IVM in context of community participation</td>
<td>• Prevention of malaria in travellers</td>
</tr>
<tr>
<td></td>
<td>• Case Management</td>
<td>• Community Integrated Management of Childhood Illnesses (IMCI)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Personal protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• KAP surveys (xenophobia, taking of blood)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Coverage indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ongoing KAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Integrated vector management (IVM) in context of community participation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Interventions: Programme Management

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control programme</th>
<th>Pre-elimination programme</th>
<th>Elimination programme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programme Management</strong></td>
<td>• Partnerships strengthening procurement, supply management</td>
<td>• Develop costed implementation plans each province</td>
<td>• Functional Malaria Elimination Committee</td>
</tr>
<tr>
<td></td>
<td>• Resource mobilisation (human resource, financial and commodity)</td>
<td>• Legislation (regulation) on malaria</td>
<td>• Advocacy for malaria elimination</td>
</tr>
<tr>
<td></td>
<td>• Regional initiative</td>
<td>• Regional initiative – support control activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cross-border initiative</td>
<td>• Mobilisation of domestic funding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Integration with health programmes for delivery of interventions</td>
<td>• Establish Malaria Elimination Committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Domestic/external funding</td>
<td>• Advocacy for malaria elimination</td>
<td></td>
</tr>
</tbody>
</table>
Plans for 2011
Action for 2011

- Develop a malaria elimination monitoring and evaluation plan
- Draft Malaria Active Case Detection Guidelines
- Conduct active case detection pilot
- Train Malaria Control staff on EPR
- Develop a GIS map for vector and parasites
- Strengthen the malaria information system
Challenges

Summary of challenges

- Shortage of skilled human resources
  - Entomological Capacity
  - Information officers
- Streamlining of malaria information systems
- Regular data analysis to inform provincial and district programmes
- Need for strong monitoring and evaluation tool

General Challenges

- Surveys to support DOH Policy
- Importation of malaria cases
- Migrant populations
- IEC (target messages)
Areas for research

- Risk factors for local malaria transmission
- Insecticide Resistance studies
- Drug Resistance studies
- Quality Assurance of RDTs and Microscopy
- Role of ITMs in elimination
- KAPs to determine community perceptions on malaria
- Feasibility of border screening for prevention of re-introduction
- Feasibility of ACD in low transmission settings
“Eliminating malaria needs change in mindset, change in game plan and renewed energy. There is no time better than now to rid South Africa of malaria...”