IRS for Cross Border Malaria Control and Elimination

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Presentation Outline

• Why IRS?
• Where IRS?
• Who are the key stakeholders?
• What is the Impact?
• What are the Challenges
• What is needed to sustain IRS?
• How will we make the case for IRS?
Why IRS?

- Existing in Southern Africa since 1940’s
- Vast technical skills and technical experience exists
- High level of political support
- Common Vectors Anopheles Arabiensis
- Community acceptance and support for IRS relatively high.
- Proven impact on reduction of malaria morbidity and mortality.
Where are the Cross Border Malaria Initiatives? & who are the key stakeholders?

- **TLMI**: Trans Limpopo Malaria Initiative- South Africa and Zimbabwe
- **MOZIZA**: Moziza- Mozambique, Zimbabwe and South Africa;
- **LSDI**: Lubombo Spatial Development Initiative South Africa, Mozambique and Swaziland
- **TZMI**: Trans-Zambesi malaria initiative- TZMI; Angola; Botswana; Namibia; Zimbabwe; and Zambia
- **TCMI**: Trans Cunene malaria initiative; Angola and Namibia
Overview of Malaria Elimination - E8 Countries, 2009

API rates (incidence/1,000 at-risk population)
- No cases
- 1 or less
- >1-5
- >5-25
- >25-50
- >50-100
- >100-200
- >200-600

API: Annual Parasite Incidence, used to measure the number of cases recorded in a given year relative to population
Note: Includes all cases, both confirmed and clinically diagnosed, both imported and local
Source: WHO World Malaria Report 2009; South African Department of Health; Swaziland Ministry of Health, Statistics South Africa
Elimination 4 Countries, 2010:
Botswana; Namibia; South Africa and Swaziland

Endemic districts only

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Measuring the Impact from IRS Spraying Programmes

- Malaria morbidity
- Malaria Mortality
- Vector Density and
- Vector species eradication..
Total Malaria cases in South Africa, 1971-2010

Prior to 1985
Malaria cases low - corresponding to chloroquine effectiveness

1987
Chloroquine resistance discovered; switch to sulfadoxine-pyrimethane (SP)

1996
DDT use curtailed

2000
LSDI initiative launched; 3-country cross-border malaria control program commences
DDT Reintroduced for Malaria a Vector Control

2001
62% resistance to SP detected in KZN; change to Coartem

2003
Coartem introduced in all malaria-endemic provinces in RSA

Malaria Transmission Maps; 1938 and 2008

Malaria Risk Map Southern Africa 1938

Malaria Risk Map; South Africa 2008

Ministry of Health South Africa
Progress towards elimination in South Africa, 2010

API rates (incidence/1,000 at-risk population)

- No cases
- 0.05 or less
- >0.05 – 0.1
- >0.1 – 0.5
- >0.5 – 1.5
- >1.5 – 2.1

Note: Includes all cases, both confirmed and clinically diagnosed, both imported and local. Source: South African Department of Health, Statistics South Africa
Incidence map of municipalities in Limpopo Province, South Africa and Matabeleland South Province, Zimbabwe. Focus districts for the Trans-Limpopo Malaria Initiative show the highest burden of malaria (incidence rates for 2009: Beitbridge – IR 2009; Mutale – 9.79; Musina – 5.46).
MOZIZA Districts

<table>
<thead>
<tr>
<th>Country</th>
<th>District</th>
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<tbody>
<tr>
<td>Zimbabwe</td>
<td>Beitbridge</td>
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<td></td>
<td>Chipinge</td>
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<td></td>
<td>Chiredzi</td>
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<td>Mwenezi</td>
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<tr>
<td>Mozambique</td>
<td>Chicualacualia</td>
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<td></td>
<td>Massangena</td>
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<td></td>
<td>Machaze</td>
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<td></td>
<td>Mossurize</td>
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<tr>
<td>South Africa</td>
<td>Vhembe</td>
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LSDI Background

- The Lubombo Spatial Development Initiative (LSDI) is a programme by the Governments of Mozambique, Swaziland and South Africa to develop the Lubombo region into a globally competitive economic zone.

- Aim to create sustainable employment and equity in access to economic opportunity in the region.

- **Rationale:** Malaria is an impediment to economic development in the region, hence the LSDI malaria initiative was set-up, by President Mbeki, President Chissano and King Mswati (III) in July 1999.

- Key interventions:
  - DDT
LSDI- Interventions

- Assessment of malaria control in Mozambique
- IRS recommended for rapid impact
- Insecticide resistant profile assessed
- RDTs introduced in 2000
- ACTs introduced in 2006
Progress 1

- Malaria incidence has declined in South Africa - KwaZulu-Natal and Mpumalanga Provinces and Swaziland – Lubombo region by 99% in 2009 compared to the baseline of 2000.

- Furthermore, the prevalence of the disease has decreased by 92% in southern Mozambique up to 2009.

- This model has proven to be successful in malaria control and copied for other initiatives such as:
  - Trans-Zambezi Malaria Control Initiative involving Angola, Botswana, Namibia, Zambia and Zimbabwe, and
  - the Trans-Kunene Initiative involving Angola and Namibia and the Zimbabwe.
Achievements on the LSDI

Changes in Percentage Prevalence of *Plasmodium falciparum* infection in Children Aged 2 to < 15

Maputo and Gaza Provinces, Mozambique — Lubombo Spatial Development Initiative (LSDI)
Impact LSDI

Average *A. funestus* group and *A. gambiae s.l.* per hut per day

Zone 1

Spraying

1999  2000  2001  2002  2003

Avg *A. funestus*

Avg *A. gambiae s.l.*
What are the Consequences of not sustaining IRS programmes
## % IRS Coverage in LSDI Provinces

<table>
<thead>
<tr>
<th>Province</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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<tbody>
<tr>
<td>Maputo</td>
<td>&gt;85</td>
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<td>&gt;85</td>
<td>&gt;85</td>
<td>70</td>
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<td>Gaza</td>
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<td></td>
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<tr>
<td>Mpumalanga</td>
<td>86</td>
<td>86</td>
<td>87</td>
<td>80</td>
<td>78</td>
<td>75</td>
<td>78</td>
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<td>KZN</td>
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<td><strong>89</strong></td>
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<td>Lubombo</td>
<td>&gt;80%</td>
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<td></td>
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<td><strong>92</strong></td>
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Maputo Province

Comparison of malaria cases during December 2008 to February 2011

<table>
<thead>
<tr>
<th></th>
<th>Rome</th>
<th>Mique</th>
<th>Munkiga</th>
<th>Manzouve</th>
<th>Matemba</th>
<th>Momba</th>
<th>Namacha</th>
<th>Matola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-08 to Feb-09</td>
<td>2959</td>
<td>1467</td>
<td>14045</td>
<td>2892</td>
<td>192</td>
<td>1211</td>
<td>450</td>
<td>11910</td>
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<tr>
<td>Dec-09 to Feb-10</td>
<td>1069</td>
<td>1167</td>
<td>10382</td>
<td>2004</td>
<td>106</td>
<td>1028</td>
<td>322</td>
<td>5151</td>
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<tr>
<td>Dec-10 to Feb-11</td>
<td>11067</td>
<td>4994</td>
<td>13282</td>
<td>2779</td>
<td>413</td>
<td>3490</td>
<td>621</td>
<td>11314</td>
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What are the challenges for Sustaining Cross Border Malaria IRS programmes

- Funding
- Lack of Leadership- who drives the collaboration?
- Lack of technical skills
- Bureaucracy
- Lack of understanding
- Competing interests from partners and stakeholders
How can we sustain Cross Border IRS programmes

- Secure funding; beyond donor support; local government funding ideal
- Build the capacity: Skills and Numbers
- Strong M&E mechanisms must be in place to
- Co-ordination must be in place
- articulate the case for IRS:
  - Harmonisation
  - Synchronisation
  - Optimisation
  - Collaboration.
Food for Thought!!!!

- Public Health interventions (PHI) must be simple
- Must mimic the transmission of malaria from mosquito to man
- If PHI is complicated then the mosquito will continue to win the battle!!!
- IRS is one among many simple interventions that has proven its might against the adversary of the mosquito vector.
Questions....