

# Malaria in Zanzibar

## New Control strategies: Is elimination possible?

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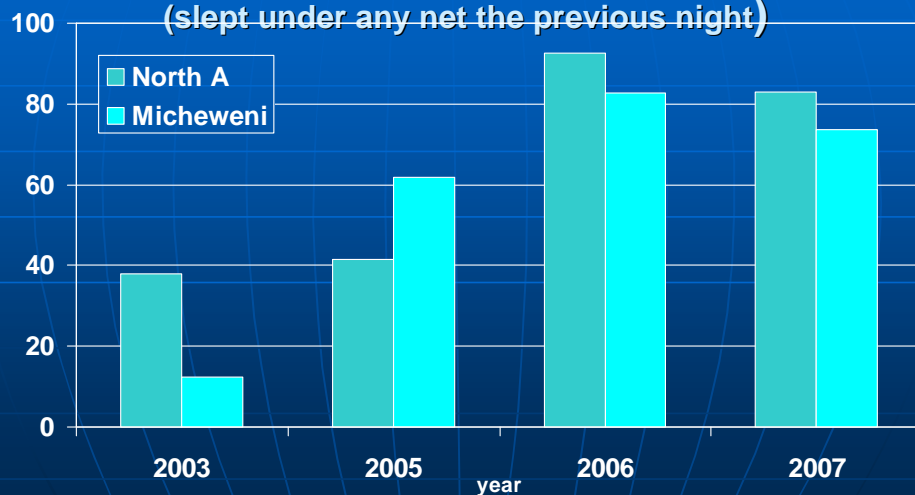
## Strategies for malaria control 2008

- Early diagnosis and effective treatment
- Mosquito control
- Surveillance

## Rolling Back Malaria in Zanzibar

- **Renewed malaria control efforts since 2001**
  - 2002 Introduction of bed nets
  - 2003: Introduction of ACT
  - 2004: Insecticide Treated Nets (ITNs)
  - 2005: Long Lasting Insecticide Treated Nets (LLIN)
  - 2006: Indoor Residual Spraying

## Results: Mosquito net use among children < 5 (slept under any net the previous night)



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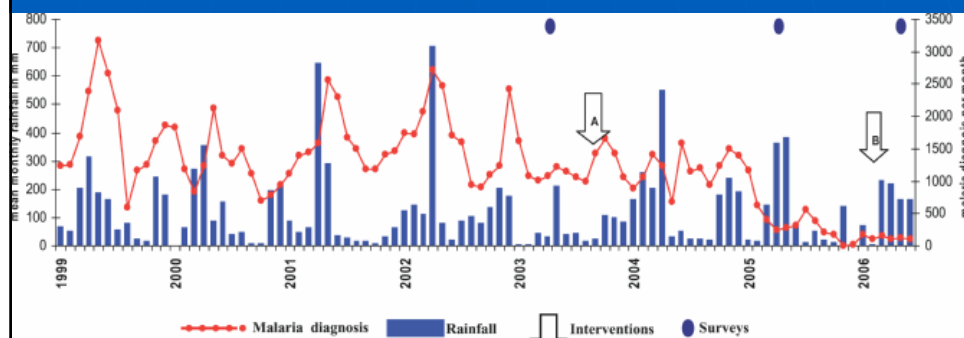
## Impact of Artemisinin-Based Combination Therapy and Insecticide-Treated Nets on Malaria Burden in Zanzibar

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# Methods

- **Repeat cross sectional surveys** (North A & Micheweni)
  - Selected Micheweni and North A
    - sentinel *in vivo* sites
    - Poorest economic and health indicators
- **Health Facility Records Review** (North A)
  - 2000 to 2006
  - 13 Public health facilities
- **Vital Statistics Review** (North A District)
  - 1999 to 2006

**Malaria Interventions, Cross-Sectional Surveys, Monthly Rainfall, and Reported Clinical Malaria Diagnoses in Children under 5 Years of Age in North A District, Zanzibar**



Source: Bhattarai A, Ali AS, Kachur SP, Mårtensson A, Abbas AK, et al. (2007) Impact of Artemisinin-Based Combination Therapy and Insecticide-Treated Nets on Malaria Burden in Zanzibar. *PLoS Med* 4(11): e309

**Malaria prevalence (%) in <5 children in Cross sectional community surveys**

Control measure	year	North A	Micheweni
(Bed nets)	1997		83.7
	2002	36.7	44.8
	2003	9.1	23.4
ACT+ITN	2005	5.3	26.9
LLIN	2006	0.3	8.4
IRS	2007	0	1.8
	2008	0.3	0.8
	2009	0	0

**Malaria positive febrile children at health facilities**

	North A	Micheweni
2003	35%	41%
2004	29%	45%
2005	20%	27%
2007	1.6%	1.5%
2008	0.2 %	0.8 %
2009	0%	0.07 %

**Malaria Admissions, Blood Transfusions, and Malaria-Attributed Deaths in North A District, Zanzibar, between 2000 and 2006**

Year	Malaria Admissions	RR	Blood Transfusions	RR	Malaria-attributed Mortality	RR
2000	1189	1.02	169	0.89	36	0.9
2001	1162	0.92	213	1.13	26	0.65
<b>2002</b>	<b>1261</b>	<b>1</b>	<b>189</b>	<b>1</b>	<b>40</b>	<b>1</b>
<b>2003</b>	<b>930</b>	<b>0.74</b>	<b>102</b>	<b>0.54</b>	<b>39</b>	<b>0.98</b>
<b>2004</b>	<b>445</b>	<b>0.35</b>	<b>77</b>	<b>0.41</b>	<b>18</b>	<b>0.45</b>
<b>2005</b>	<b>296</b>	<b>0.23</b>	<b>62</b>	<b>0.33</b>	<b>10</b>	<b>0.25</b>
<b>2006</b>	<b>49</b>	<b>0.04</b>	<b>29</b>	<b>0.15</b>	<b>0</b>	<b>-</b>

**Mortality of Children under 5 Years of Age in North A District, Zanzibar between 1998 and 2006**

Year	Under-5 deaths	RR	Infant deaths	RR	Child deaths	RR
1998	161	1.21	87	1.3	74	1.12
1999	165	1.24	97	1.45	68	1.03
2000	157	1.18	91	1.36	66	1
2001	131	0.98	86	1.28	45	0.68
<b>2002</b>	<b>133</b>	<b>1</b>	<b>67</b>	<b>1</b>	<b>66</b>	<b>1</b>
<b>2003</b>	<b>125</b>	<b>0.94</b>	<b>63</b>	<b>0.94</b>	<b>62</b>	<b>0.94</b>
<b>2004</b>	<b>97</b>	<b>0.73</b>	<b>57</b>	<b>0.85</b>	<b>40</b>	<b>0.61</b>
<b>2005</b>	<b>64</b>	<b>0.48</b>	<b>45</b>	<b>0.67</b>	<b>19</b>	<b>0.29</b>
<b>2006</b>	<b>66</b>	<b>0.50</b>	<b>48</b>	<b>0.72</b>	<b>18</b>	<b>0.27</b>

## Summary:

- community prevalence of malaria infection has dramatically decreased after 2003

### Between 2002 and 2006

- 96% decrease in hospital admissions due to malaria
- 85% decrease in blood transfusions
- 50% decrease in crude under-five deaths
- 28% decrease in infant deaths
- 73% decrease in child deaths

## Future challenges

- Is elimination possible? Is this sustainable? (the society, man, the mosquito, the parasite)
- Diagnosis- surveillance
- A model for sub-Saharan Africa?