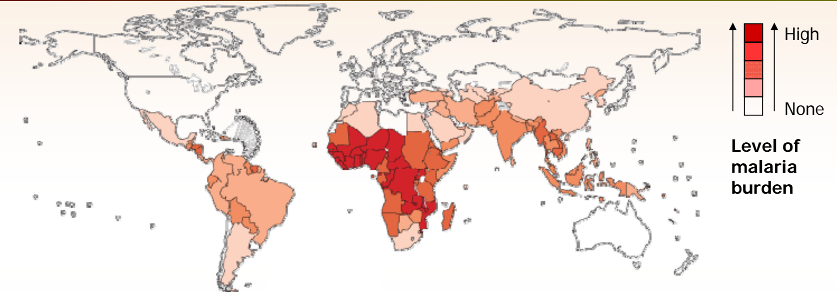
Putting Bed Net Scale-up in Context

Prepared by the Malaria No More Policy Center, February 2008

Malaria imposes a staggering worldwide burden . . .



Death toll	• At least 1 million deaths annually; one child every 30 seconds
Incidence	• More than 350 million cases worldwide
Health impacts	• Debilitating fevers, low birth weights, anemia, epilepsy—and death
Economic impacts	• $12 billion in lost productivity and health costs a year

Source: World Malaria Report 2005, expert interviews

…and sub-Saharan Africa bears the brunt

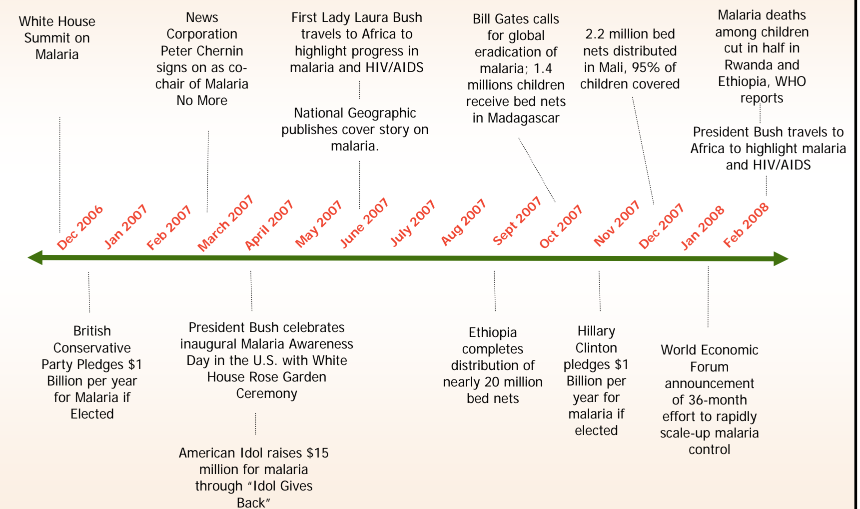
Majority of cases/deaths
- Africans suffer from the majority of worldwide malaria deaths (90% or at least 900,000) and malaria cases (60% or at least 210 million)

Huge stress on health systems
- Countries in Africa with the heaviest burdens are force to expend significant resources on malaria:
  - 40% of health expenditure
  - 20-45% of hospital admissions
  - 50% of outpatient visits

Deadliest virus and worst mosquito
- Africa is home to the most deadly form of the parasite (*Plasmodium falciparum*) and has the climate and vector (*Anopheles* mosquito species) most conducive to proliferation

Lack resources to effectively combat
- Many Sub-Saharan African governments lack the funds and/or infrastructure to single-handedly mount effective anti-malaria campaigns

Source: World Malaria Report 2005, expert interviews



Donor funding is up 300% over three years

U.S. President's Malaria Initiative - $1.2 billion in 15 target countries, 2006 – 2010
- U.S. gov spends additional ~$87 million for non-PMI malaria control
- 16 million people reached prevention or treatment in first two years
- 30 million people expected to be reached with FY07 funds

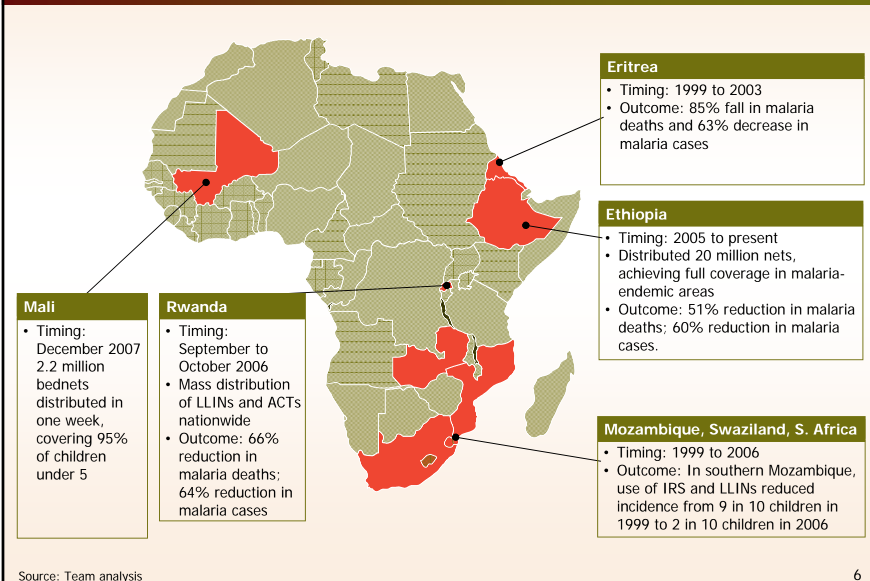
World Bank Booster Programme – launched in September 2005.
- $452 million to be spent by June 2008. Nine fold financing increase in 24 months.
- Booster Phase II now under development with greater than $500 million expected

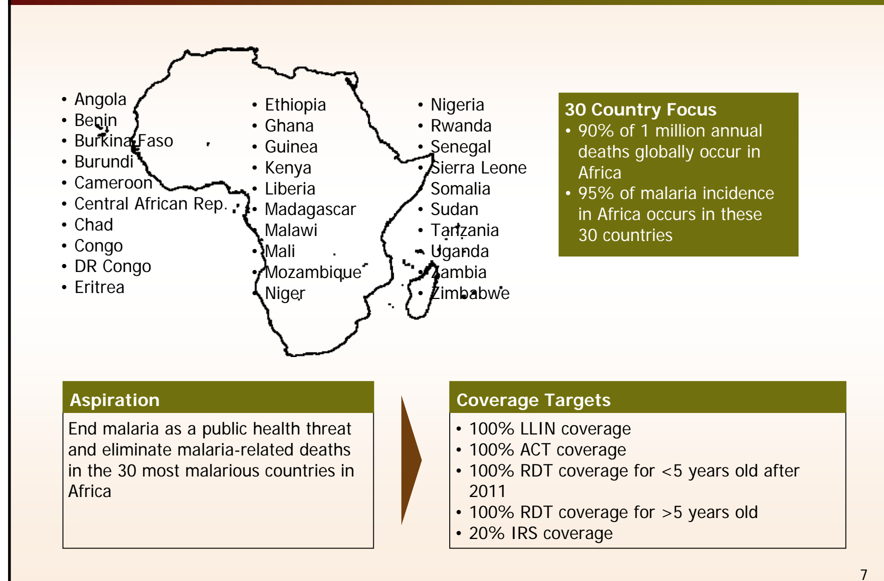
Global Fund – More than $3.6 billion in malaria financing over five years, including $470 million in new funding in 2007, the largest single round to date.
- 146 programs in 78 countries
- 46 million bed nets to families
- Financing for 44 million people to be treated with effective drugs

We have proven, highly affordable tools

	Unit costs
Bednets (LLINs)	• Average annual cost per person is $1.00 (including distribution)
Indoor spraying (IRS)	• Average annual cost per person is $3.50
Prevention for pregnant women (IPT)	• Average cost is $0.20 (plus negligible distribution costs)
Drugs (ACTs)	• Average cost is $1.17 plus distribution
Diagnostic tests (RDTs)	• Average cost is $0.70 plus distribution

Source: Expert interviews, WHO Technical Costing Model


Success stories are emerging across Africa
Eritrea
• Timing: 1999 to 2003
• Outcome: 85% fall in malaria deaths and 63% decrease in malaria cases
Ethiopia
• Timing: 2005 to present
• Distributed 20 million nets, achieving full coverage in malaria-endemic areas
• Outcome: 51% reduction in malaria deaths; 60% reduction in malaria cases.
Mali
• Timing: December 2007 2.2 million bednets distributed in one week, covering 95% of children under 5
Rwanda
• Timing: September to October 2006
• Mass distribution of LLINs and ACTs nationwide
• Outcome: 66% reduction in malaria deaths; 64% reduction in malaria cases
Mozambique, Swaziland, S. Africa
• Timing: 1999 to 2006
• Outcome: In southern Mozambique, use of IRS and LLINs reduced incidence from 9 in 10 children in 1999 to 2 in 10 children in 2006
Source: Team analysis
6


Now we must rapidly scale-up malaria control where it's needed most
• Angola
• Benin
• Burkina Faso
• Burundi
• Cameroon
• Central African Rep.
• Chad
• Congo
• DR Congo
• Eritrea
• Ethiopia
• Ghana
• Guinea
• Kenya
• Liberia
• Madagascar
• Malawi
• Mali
• Mozambique
• Niger
• Nigeria
• Rwanda
• Senegal
• Sierra Leone
• Somalia
• Sudan
• Tanzania
• Uganda
• Zambia
• Zimbabwe
30 Country Focus
• 90% of 1 million annual deaths globally occur in Africa
• 95% of malaria incidence in Africa occurs in these 30 countries
Aspiration
End malaria as a public health threat and eliminate malaria-related deaths in the 30 most malarious countries in Africa
Coverage Targets
• 100% LLIN coverage
• 100% ACT coverage
• 100% RDT coverage for <5 years old after 2011
• 100% RDT coverage for >5 years old
• 20% IRS coverage
7

The Business Case for Rapid Scale-Up

There is a compelling humanitarian and business rationale for rapid scale-up .

According to a new study by McKinsey & Co. and Malaria No More, rapid scale-up of malaria control over five years will:

- **Save 3.5 million lives**
- **Increase annual economic output by ~$30 billion**
- **Prevent 672 million malaria cases**
- **Free up 427,000 needed hospital beds**

As coverage rises, you get increasing returns, producing tremendous efficiencies and cost savings to rapid scale-up vs. a the current funding trajectory.

An investment of approximately $2.2 billion a year for five years (or $10.8 billion total) will achieve these outcomes.

8

Rapid scale-up achieves much higher coverage levels

- The **current funding path** assumes moderate growth over 2007 funding levels
  - Implies a continuation of the uneven build-up in coverage levels over the last five years, with some countries making significant progress and others lagging behind
  - Coverage based on how far funding can go, not on need
- A **rapid scale-up** projects the attainment of coverage targets sufficiently ambitious to end malaria as a public health crisis in Sub-Saharan Africa
  - Coverage based on country-specific needs

Key coverage levels in 2012

	Coverage level today (Percent)	Current funding path (Percent)	Rapid scale-up (Percent)
1 LLIN coverage	~20	57	100
2 ACT coverage	~8	13	100
3 IPT coverage among pregnant women	~12	40	84
4 RDT coverage	Negligible	0-10	100
5 Homes receiving IRS	Negligible	4	20

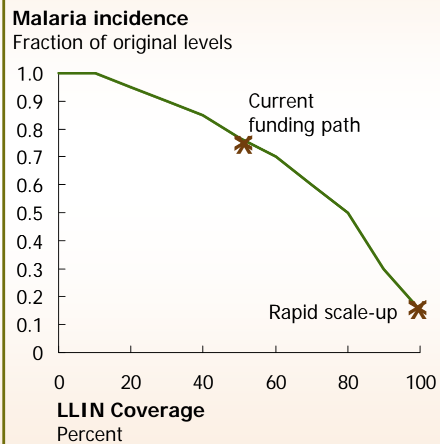
Note: Current coverage levels estimated, extrapolating from most recent data. 100% coverage level does not imply 100% usage
Source: UNICEF, "Malaria and Children," October 2007; literature search, team analysis

9

Higher coverage produces far superior results, huge cost savings

✖ Level reached by 2012

Malaria incidence
Fraction of original levels



LLIN Coverage
Percent

Malaria-related mortality can be brought down even faster if ACT coverage is similarly scaled-up

- As incidence declines with greater LLIN coverage, fewer possible cases can progress to severe malaria
- As ACT coverage increases, fewer patients who do have malaria go untreated

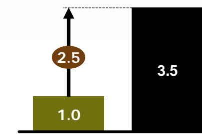
Source: literature search; country case examples; team analysis

Health – Total benefits

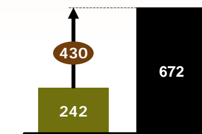
Current trajectory
Rapid scale-up

2.5 million more deaths and 430 million more malaria cases could be prevented over the next five years with a rapid scale-up

Malaria mortality reduction
Millions of deaths averted, 2008-12

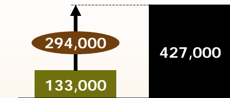


Malaria incidence reduction
Millions of cases averted, 2008-12



Massive reduction in the malaria burden would also free up substantial health system resources to fight other diseases

Hospital beds freed up at any given time for non-malaria uses, 2012



Key assumptions: 900,000 malaria-related mortalities in Sub-Saharan Africa currently, based on estimate of 1 million mortalities globally. 300 million cases of malaria annually in Sub-Saharan Africa, based on 500 million cases globally. 32.5% (an average of 20-45%) of hospital in-patient cases are attributable to malaria

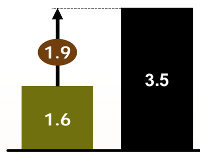
Source: Team analysis based on academic literature and country case examples

Outcome – Worker Productivity

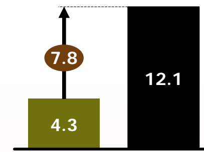
Current trajectory
Rapid scale-up

Rapid scale-up would dramatically reduce both the immediate and long-term consequences of a high malaria burden

Reduction in work missed due to illness of self or a child
Average days per adult per year



Reduction in school missed
Days per primary school age child per year



Key assumptions: Average time lost per episode per adult is 6 days, 3 days for direct illness and 3 days for child's illness. Adults are >14 years old. Primary school-age children (ages 6-14) have 4 malaria fevers a year and miss 5 days of school per episode

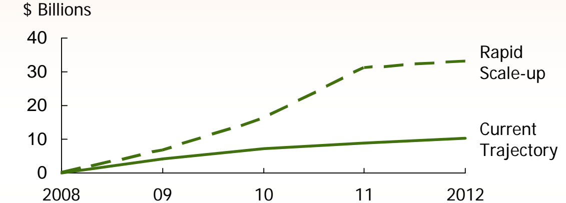
Source: Team analysis based on academic literature and country case examples

Outcome: Economic Benefits

Current trajectory
Rapid scale-up

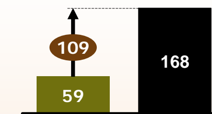
Rapid scale-up against malaria is likely to support substantial economic growth in sub-Saharan Africa within just five years

GDP increase attributable to malaria control in 30 target countries in Sub-Saharan Africa
$ Billions



Rapid scale-up will also yield the greatest increase in economic output per capita across the region

Immediate annual economic return of 2008-2012 malaria investments
Dollars of increased economic output per household



Key assumptions:
10% reduction in malaria incidence results in a 0.3% increase in GDP (following analysis pioneered in Gallup and Sachs, "The Economic Burden of Malaria"—see appendix for full cite)

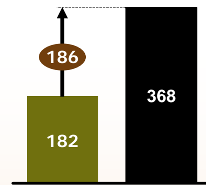
Source: Team analysis based on academic literature and country case examples

Outcome: Cost Effectiveness

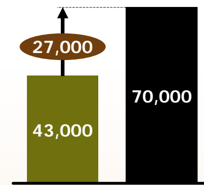
Current trajectory
Rapid scale-up

Community health effects of broad coverage translate into greater cost-effectiveness in terms of lives saved and cases averted

Malaria mortality reduction
Lives saved per million dollars invested, 2008-12



Malaria incidence reduction
Cases averted per million dollars invested, 2008-12



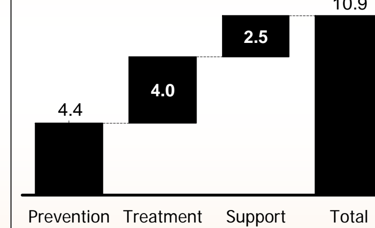
Rapid scale-up could save more than twice as many lives per dollar as the current funding trajectory

Source: Team analysis based on academic literature and country case examples

In sub-Saharan Africa, these coverage targets will require a ~$11 billion investment over 5 years

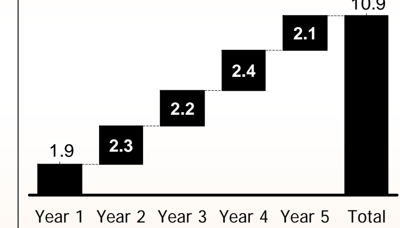
Prevention will be the focus, but treatment and support will also be crucial

Required investment by intervention
$ Billions



Just over $2 billion will be required annually

Required investment by year
$ Billions



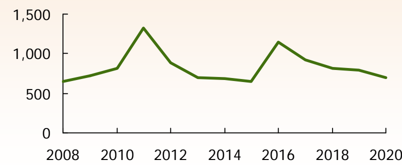
Rapid scale-up in investments can lead to 100% prevention and treatment coverage

Note: Numbers may not add up exactly due to rounding

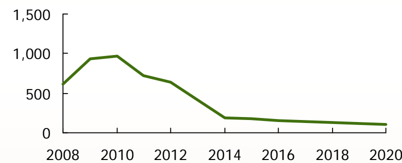
Appendix

After 2012, maintenance spending will be crucial to preserve success

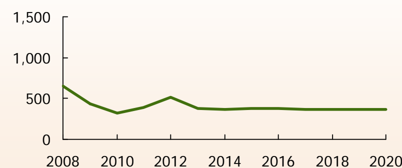
$ Millions



Prevention assumptions
- 3-year LLINs distributed in 2008 are replaced with 5-year LLINs in 2011. Those will need replacement in 2016, thus driving up costs in those years
- After malaria is under control, 100% coverage must be maintained



Treatment assumptions
- As ACT coverage increases, costs continue to rise until the effects of LLIN usage start to dramatically reduce the need for ACTs in 2010
- Malarial fevers after 2012 will continue must be treated with ACTs



Support assumptions
- Costs will be higher at the start to provide the infrastructure and personnel to carry out the interventions
- A steady maintenance level will be reached to ensure quality treatment and successful prevention efforts

Total spending declines from ~$2.1B per year during scale-up (2008-2012) to ~$1.8B per year during surveillance/ maintenance phase

Source: Support costs built on WHO projections for Africa, Team Analysis

Appendix

Our conclusions emerged from interviews with partners in the fight against malaria

Participation included critical organizations/ research institutions . . .

. . . and interviews with key leaders in the field

- Maru Aregawi (WHO)
- Suprotik Basu (World Bank)
- Valentina Buj (WHO)
- Kent Campbell (PATH)
- Des Chavasse (PSI)
- John Paul Clark (World Bank)
- Awa Marie Coll-Seck (RBM Secretariat)
- Valerie Crowell (WHO)
- Catheine Goodman (KEMRI/Wellcome Trust)
- Mark Grabowsky (Global Fund)
- Pierre Guillet (WHO)
- Arata Kochi (WHO)
- Jacob Kumaresan (WHO)
- Rob Mather (Against Malaria)
- Deb McFarland (Emory University)
- Kamini Mendis (WHO)
- Anne Mills (London School of Tropical Health)
- Melisse Murray (World Bank)
- Ricki Orford (PSI)
- Mac Otten (CDC/WHO)
- Steven Phillips (Exxon Mobil)
- Maryse Pierre-Louis (World Bank)
- Melanie Renshaw (UNICEF)
- Pascal Ringwald (WHO)
- Robin Slatter (Sumitomo Chemicals)
- Rick Steketee (MACEPA)
- Sergio Spinaci (WHO)
- Tessa Tan-Torres (WHO)
- Wilson Were (WHO)
- Eve Worrall (University of Liverpool)