PROGRESS AGAINST MALARIA

WINNING THE FIGHT AGAINST A DEADLY DISEASE

LIVING PROOF
Real Lives. Real Progress.

Global efforts to fight malaria over the last decade have contributed to dramatic declines in malaria-related illness and death. Increases in coordination, political attention, and funding have led to an unprecedented scale-up of effective interventions such as insecticide-treated bednets, indoor spraying and new drug treatments.

The last decade has witnessed major new investments in malaria control efforts around the world. Under the umbrella of the Roll Back Malaria (RBM) Partnership, a host of global institutions and funders have come together to agree on, fund and implement a cohesive strategy for the rapid scale-up of malaria control in sub-Saharan Africa and across the globe, including the development of a robust pipeline for new drugs and other tools to fight the disease.

Significant financial and technical support has allowed countries to make solid progress in the fight to control malaria. Illness and deaths have fallen dramatically in many countries, prompting some to consider the long-term prospects for elimination and eventual eradication.

Global Progress

Funding from international donors for malaria control increased dramatically from $50 million (U.S.) in 1997 to $1.7 billion (U.S.) in 2009.[1] The increased commitment to scaling up malaria control led to the establishment of three major new initiatives:

- **The Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)** was established in 2002 as an innovative financing mechanism to raise and disburse funding to countries in need. As a partnership representing public and private stakeholders, the Global Fund uses a demand-driven, performance-based model. Countries can apply for grants to finance their response to malaria, and continued financing is dependent on achievement of targets. The Global Fund provides two-thirds of all global malaria funding, supporting more than 83 countries and distributing more than 122 million nets since 2002.[2]
- **The World Bank's Malaria Booster Program,** established in 2005 to help countries in sub-Saharan Africa reduce illness and death from malaria by 2015, has invested nearly $500 million (U.S.) in 20 countries to improve and expand their malaria control programs.[3] In 2010, the World Bank also committed an additional $200 million to fund the production and distribution of 25 million bed nets to close half of the existing gap in universal bednet coverage.
- **The United States President's Malaria Initiative (PMI)** was established in 2005 by the U.S. government to reduce the number of malaria-related deaths by 50 percent in 15 sub-Saharan African countries by expanding coverage of four highly effective malaria prevention and treatment measures to the most vulnerable populations. This five-year initiative provides over $1.2 billion to reduce the burden of malaria and help relieve poverty in Africa.[4]

Significant investments in research and development (R & D) for malaria control and eradication have been stimulated through leadership and funding from the Bill & Melinda Gates Foundation. Established in 1994 and now the largest private grant-making foundation in the world, the Bill and Melinda Gates Foundation has invested more than $1.2 billion (U.S.) in malaria R & D between 1998 and 2007, with a particular emphasis on development of drugs for treatment and an effective malaria vaccine.[5]

Innovation and Scientific Advances

Recent developments have significantly increased the effectiveness of malaria control efforts, providing the opportunity to mount a major campaign against the disease.

Investments in R & D have brought forward a host of new drugs and other tools to treat and prevent malaria.

- New **Rapid Diagnostic Tests (RDTs)** allow greater access to malaria diagnosis in remote, under-resourced areas. RDTs help prevent mistreatment and overtreatment, which can lead to drug resistance and drug waste.
- **Artemisinin-based Combination Therapy (ACTs)** became available in the late 1990s and are now in widespread use,

providing the most effective treatment for malaria and replacing drugs that were losing effectiveness due to resistance. Medicines for Malaria Venture (MMV), a 10-year-old, not-for-profit public-private partnership, is leading the development of a future arsenal of malaria treatments.

New efforts are also ensuring that drugs get to those who need them.

- The Global Fund, along with several key partners, has launched a pilot of the **Affordable Medicines Facility for malaria (AMFm),** an innovative global business strategy to expand access to affordable ACTs through the private sector by subsidizing the cost of ACTs, improving the supply chain, and strengthening the incentives for private suppliers to provide the right drug at a low cost.[6] It is estimated that this initiative will save from 175,000 to 298,000 lives per year.[7]

New and better tools are being made available to prevent malaria:

- The introduction of **Long-Lasting Insecticide-Treated Bed Nets (LLINs),** which incorporate insecticides directly into net fibers, has dramatically increased protection against malaria. LLINs are significantly more durable and cost-effective than previous insecticide-treated bed nets (ITNs), which require annual retreatment with insecticides.
- The assessment and implementation of **Intermittent Preventive Treatment in pregnancy (IPTp)** in high-burden areas effectively reduces risk of infection among pregnant women and their unborn children, improving the newborn's health and chances of survival. World Health Organization (WHO) has recommended IPTp for mothers in areas of moderate to high malaria transmission where drug resistance is not a problem. Plans for scaling up implementation are under way.

Malaria vaccine research has progressed rapidly over the last few years. More than $600 million (U.S.) has been spent on vaccine research since 1999.[8] More than 16 malaria vaccine candidates were in clinical development in 2006, up from zero malaria vaccines in clinical trials in 1985, and one vaccine is currently in phase three clinical development.[9]

Results

As a result of scaled-up investments in malaria control interventions, **millions of people have better access to prevention and effective treatment for malaria.**

- Nearly three-quarters of a million children's lives have been saved in 34 malaria-endemic African countries in the past five years
- Production of insecticide-treated bednets more than tripled, from 30 million in 2004 to an estimated 110 million in 2008. In Senegal, a 30 percent reduction in all-cause mortality in children under five between 2005 and 2008 coincided with a 24 percent increase in household ownership of one or more ITNs.[10]
- Average use of bednets by children across 26 African countries rose from 2 percent in 2000 to 22 percent in 2008. Eleven of these countries achieved at least a 10-fold gain in bednet use for children.
- ACT distribution increased from 6 million doses in 2005 to nearly 50 million in 2006, with more than 90 percent being delivered to Africa.[11]
- The supply of ACTs provided through government hospitals and clinics has increased significantly due to the negotiation of drug prices and large grants provided by the Global Fund, PMI and others. Nearly 160 million doses of ACT were procured in 2009, up from just 500,000 in 2001.
- Policy on IPTp for pregnant women was adopted in 33 African countries by 2006.
- Approximately 120 million people were covered by indoor residual spraying (IRS) of houses in 2006. Sao Tome and Principe, South Africa and Swaziland lead the African region

WHAT IS MALARIA?

Malaria is an infectious disease that, despite being treatable and preventable, still causes nearly one million deaths per year.[20] Malaria is caused by the *Plasmodium*[21] parasite and is transmitted to humans through the bite of an infected *Anopheles* mosquito. Malaria infects people of all age groups; however, those who lack immunity—young children, pregnant women, and people living with HIV/AIDS—are more vulnerable to the disease.

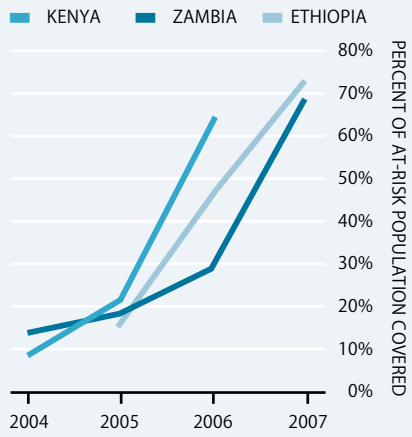
Roughly 50 percent of the world's population (3.3 billion people) is at risk for malaria. In 2008, there were 247 million cases of malaria and nearly one million deaths. There are approximately 100 malarious countries, 45 of which are in sub-Saharan Africa.[22] Ninety percent of malaria deaths occur in Africa, and 85 percent of those who die are children under five years of age.[23]

The disease burden is highest in poor, rural areas and contributes annually to an estimated 1.3 percent reduction in economic growth in high-burden countries.[24] Malaria reduces school attendance, impairs cognitive develoment in children, and lowers productivity.[25]

Malaria can be effectively prevented and treated using tools that exist today. A multipronged approach using ITNs, IRS, IPTp of children and pregnant women, and prompt diagnosis and treatment using ACTs has been proven to prevent death and significantly reduce illness.

INCREASING COVERAGE

with Insecticide-Treated Bednets



Source: WHO, *World Malaria Report 2008*

with coverage of nearly 100 percent of their at-risk populations. PMI alone supported IRS in 14 countries, protecting 24.8 million people in 2008, up from 18.8 million people protected in 2007.

Experience shows that when coverage with ITNs, indoor residual spraying and rapid diagnosis and treatment are scaled up, the number of people sickened by the disease declines rapidly. A growing number of countries are experiencing these dramatic benefits.[12]

Malaria cases are declining. Within Africa, nine countries (all with high intervention coverage and relatively small populations) cut malaria cases by 50 percent or more between 2000 and 2008. Outside Africa, malaria cases also declined by 50 percent or more during the same time period in at least 29 countries.[13]

Deaths from malaria have been reduced. As malaria cases continue to decline in many parts of the world, so do the number of deaths from malaria. Several countries with high intervention coverage reported dramatic reductions in the number of deaths due to malaria between 2001 and 2006: Rwanda (50 percent), Cambodia (50 percent), Philippines (76 percent), Eritrea and Zanzibar (80 percent), and Sao Tome and Principe (90 percent).[14] Since 2006, Zambia has also more than halved malaria deaths.

Of the approximately 100 remaining countries with malaria in the world, 39 are working to eliminate malaria either nationally or subnationally.[15] The United Arab Emirates, Mauritius, Morocco, and Oman recently interrupted transmission of the disease and have been certified by WHO as malaria-free or are currently pursuing certification. Many others have established malaria-free zones in parts of their country, and are working toward a national goal of elimination.

Moving Forward

Despite recent successes in malaria control, continued investments are needed to maintain and expand access to tools for prevention and treatment, and to develop new strategies and interventions to stay ahead of emerging resistance to drugs and insecticides.

Sustaining financing

The fight to control, eliminate, and eventually eradicate malaria will not be won easily. The RBM Global Malaria Action Plan (GMAP) estimates that funding for research, tool development, and implementation of malaria control and elimination efforts will need to increase nearly fourfold from current levels [from $1.5 billion (U.S.) to $5.5 billion (U.S.) per year], and must be sustained through at least 2020.[16] Long-term investment strategies and innovative financing models are needed to help countries plan and sustain long-term investments.[17]

Overcoming barriers to access and coverage

Implementation of successful malaria control and elimination programs in countries continues to be hampered by gaps in national program capacity, inadequate distribution systems, and weak health systems. Innovative and systemic solutions are needed to help countries sustain and expand coverage of prevention and treatment. Successful distribution mechanisms and established networks for the scale-up of interventions will promote greater efficiency in malaria programs.

Investing in research and development to stay ahead of resistance and develop tools for eradication

Over time, mosquitoes will become resistant to today's insecticides and malaria parasites will become resistant to today's drugs. Early resistance to ACTs is already emerging along the Thailand-Cambodia border.[18] Although a major effort to contain the resistance is underway by a collaboration of global partners, investment in R & D must be scaled up to stay ahead of resistance and tools must be developed to achieve ultimate eradication of the disease.

COUNTRY SPOTLIGHT: SCALING UP FOR IMPACT IN ZAMBIA

Despite being one of the poorest countries in the world, Zambia has made remarkable progress in its fight to control malaria in a relatively short period. A country of more than 12 million people, all of whom are constantly at risk for malaria, Zambia's success has been made possible by the commitment of the government and coordination among malaria partners. Implementation of a country plan by the National Malaria Control Program, a single coordinating mechanism supported by many local and international partners, has helped ensure that efforts are synchronized for maximum impact.[26]

The National Malaria Control Program successfully implements four key intervention strategies [LLINs, IRS, IPTp (for pregnant women), and ACTs] to provide a comprehensive approach to malaria prevention and treatment. Since 2001, a national scale-up of LLINs has increased the number of households that own LLINs from 115,000 to nearly 3.4 million in 2007. Additional approaches, such as the number of houses treated with IRS, increased from 69,000 in 2003 to 657,000 in 2007. ACT administration increased from 1.1 million doses in 2004 to 3 million doses in 2007. Starting in 2004, IPTp became standard practice, and in 2008 Zambia had achieved 60 percent IPTp coverage—the highest level in Africa alongside Sao Tome and Principe. Major funding for Zambia's efforts is provided by PMI and the Global Fund.

The widespread deployment of these four simple control measures is having a remarkable impact on the burden of malaria.[27] Overall, malaria deaths decreased by 37 percent between 2001 and 2006, and had decreased by 66 percent by 2009. Malaria prevalence and severe anemia prevalence (which is closely associated with malaria) in children under five decreased to 10.2 percent and 4.3 percent, respectively, between 2006 and 2008. Since 2002, it is estimated that the lives of more than 75,000 children under five have been saved because of intensified malaria control efforts.

Zambia exemplifies what can be accomplished when a comprehensive approach to malaria control is combined with sufficient political will, financial investment, and global support.

A first-generation vaccine against malaria has been developed and is in final clinical trials, yet it is expected to be only 50 percent effective, raising significant policy questions about how, where, and at what cost it should be used. The world has no experience in launching a vaccine of such partial efficacy, and additional policy planning is urgently needed before the vaccine becomes available.

Supporting Malaria Control and Elimination Outside Africa

Plasmodium falciparum, the dominant malaria parasite in Africa, has received the majority of global attention and investment to date. However, recent research has shown that the burden of *P. vivax,* which exists primarily in Asia and Latin America, has been underestimated.[19] The development of new tools against *P. vivax* is needed to control and eliminate this more persistent parasite species.

Endnotes

1. N. Ravishankar, P. Gubbins, R. J. Cooley, K. Leach-Kemon, C. M. Michaud, D. T. Jamison, C. J. L. Murray, "Financing of Global Health: Tracking Development Assistance for Health from 1990 to 2007," *Lancet* 373 (2009): 2113–2124; WHO, *World Malaria Report*, 2009
2. The Global Fund to Fight AIDS, Tuberculosis and Malaria, http://www.theglobalfund.org/en/pressreleases/?pr=pr_100608, 2010.
3. World Bank, *Booster Program for Malaria Control in Africa. Status of Financing in the Booster Program,* http://go.worldbank.org/6WZ5JH2CM0 (accessed 5 August 2009).
4. The President's Malaria Initiative, *Fourth Annual* Report, 2010.
5. D. McCoy, G. Kembhavi, J. Patel, A. Luintel, "The Bill & Melinda Gates Foundation's Grant-Making Programme for Global Health," *Lancet* 373 (2009): 1645–53.
6. Affordable Medicines Facility—Malaria. *AMFm Frequently Asked Questions,* updated April 2009.
7. Roll Back Malaria, *Counting Malaria Out: fact sheet, World Malaria Day,* 25 April 2009.
8. "Malaria Vaccine Researchers Face Cultural Challenges. World Report," *Lancet* 374 (11 July 2009): 104–105.
9. PATH, Malaria Vaccine Initiative, http://www.malariavaccine.org/malvac-state-of-vaccine-dev.php, 2010.
10. Roll Back Malaria, *The Global Malaria Action Plan. For a Malaria Free World,* 2008.
11. World Health Organization, *World Malaria Report 2008.*
12. S. J. Ceesay, C. Casals-Pascual, J. Erskine, S. E. Anya, N. O. Duah, A. J. Fulford, S. S. Sesay, I. Abubakar, S. Dunyo, O. Sey, A. Palmer, M. Fofana, T. Corrah, K. A. Bojang, H. C. Whittle, B. M. Greenwood, D.J. Conway, "Changes in Malaria Indices between 1999 and 2007 in The Gambia: a Retrospective Analysis," *Lancet* 372, No. 9649 (1 November 2008): 1545–1554.
13. WHO, *World Malaria Report 2009,* December 2009, http://www.who.int/malaria/world_malaria_report_2009/en/index.html
14. World Health Organization, *World Malaria Report 2008.*
15. R. G. A. Feachem, with A.A. Phillips and G.A. Targett (eds), *Shrinking the Malaria Map: A Prospectus on Malaria Elimination,* The Global Health Group, Global Health Sciences, University of California, San Francisco (2009).
16. Roll Back Malaria, *Malaria Funding & Resource Utilization: The First Decade of Roll Back Malaria*, 2010.
17. R. G. A. Feachem and The Malaria Elimination Group, *Shrinking the Malaria Map: A Guide on Malaria Elimination for Policy Makers,* The Global Health Group, Global Health Sciences, University of California, San Francisco (2009).
18. U. Samarasekera, "Countries race to contain resistance to key antimalarial," *Lancet* 374 (2009): 277-280.
19. R. N. Price, et al., "Vivax Malaria: Neglected and Not Benign," *Am. J. Trop. Med. Hyg.* 77 (Suppl.) (2007): 6.
20. World Health Organization, *World Malaria Report 2008.*
21. There are four types of human malaria: *Plasmodium falciparum, P. vivax, P. malariae,* and *P. ovale.* The most common are *P. falciparum* and *P. vivax. P. falciparum* is the deadliest type of malaria infection.
22. World Health Organization, *World Malaria Report 2008.*
23. The Global Fund to Fight AIDS, Tuberculosis and Malaria, *Malaria Background.* www.theglobalfund.org (accessed 8 August 2009).
24. World Health Organization, *Malaria Fact Sheet No. 94,* Updated January 2009, http://www.who.int/mediacentre/factsheets/fs094/en/index.html (accessed 9 August 2009).
25. United Nations Children's Fund (UNICEF), *Malaria,* http://www.unicef.org/health/index_malaria.html (accessed 9 August 2009).
26. R. W. Steketee, N. Sipilanyambe, J. Chimumbwa, J. J. Banda, A. Mohamed, J. Miller, S. Basu, S. M. Miti, C. C. Campbell, "National Malaria Control and Scaling Up for Impact: The Zambia Experience through 2006," *Am. J. Trop. Med. Hyg.* 79:1 (2008): 45–52.
27. Zambia Ministry of Health, National Malaria Control Programme, *Zambia Achieves Impact on Malaria: Using Results to Inform Actions* 2009.

Living Proof is about telling the real story of the incredible progress being achieved by people in developing countries, backed by the support of governments like ours. Investments in global development are achieving real results. They are saving lives, preventing and curing disease, and helping people, communities, countries escape from poverty for the long term. See the living proof for yourself. www.one.org/livingproof. Original content for this progress sheet was developed by the Global Health Group at the University of California, San Francisco and SEEK Development in Berlin.