



The Global Challenge of HIV/AIDS, Tuberculosis, and Malaria

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Summary

The spread of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), tuberculosis (TB), and malaria across the world poses a major global health challenge. The international community has progressively recognized the humanitarian impact of these diseases, along with the threat they represent to economic development and international security. The United States has historically been a leader in the fight against HIV/AIDS, TB, and malaria; it is currently the largest single donor for global HIV/AIDS and has been central to the global response to TB and malaria. The 112th Congress will likely consider HIV/AIDS, TB, and malaria programs during debate on and review of U.S.-supported global programs, U.S. foreign assistance spending levels, and foreign relations authorization bills.

Over the last decade, Congress has demonstrated bipartisan support for addressing HIV/AIDS, TB, and malaria worldwide, authorizing more than \$37 billion for U.S. global efforts to combat the diseases from FY2001 through FY2010. During this time, Congress supported initiatives proposed by President George W. Bush, including the President's Emergency Plan for AIDS Relief (PEPFAR) and the President's Malaria Initiative (PMI), both of which have demonstrated robust U.S. engagement in global health. Through the Global Health Initiative (GHI), President Barack Obama has led efforts to coordinate U.S. global HIV/AIDS, TB, and malaria programs and create an efficient, long-term, and sustainable approach to combating these diseases.

Despite progress in fighting HIV/AIDS, TB, and malaria, these diseases remain leading global causes of morbidity and mortality. Many health experts urge Congress to bolster U.S. leadership against these diseases and increase funding for such programs. In contrast, some Members of Congress have proposed cuts to these programs as part of deficit reduction efforts. This report reviews the U.S. response to HIV/AIDS, TB, and malaria and discusses several issues Congress may consider as it debates spending levels and priority areas for related programs. The report includes analysis of:

- **Funding Trends:** Combined funding for the three diseases has increased significantly over the last decade, from approximately \$832 million in FY2001 to \$7.5 billion in FY2010. The bulk of the increase has been targeted towards HIV/AIDS. More recently, funding for global HIV/AIDS has begun to level off, while funding for TB has seen modest boosts and funding for malaria has witnessed the largest increases. FY2011 appropriations, signed into law on April 15, 2011, included a slight decrease in funding for global HIV/AIDS programs, and a slight increase in USAID's global health budget, which includes TB and malaria programs. Some health experts applaud what they see as a shift toward less expensive efforts that maximize health impact. Others experts warn that divestment from HIV/AIDS may endanger fragile gains made against the epidemic and other diseases.
- **Disease-Specific Issues:** HIV/AIDS, TB, and malaria each present unique challenges. Rising numbers of people in need of life-long HIV/AIDS treatment has heightened concern over the sustainability of treatment programs and incited debate over the appropriate balance of funding between HIV/AIDS prevention and treatment. Growing rates of HIV/TB co-infection and drug-resistant TB strains have increased calls for escalating TB control efforts. Finally, growing resistance to anti-malaria drugs and insecticides threatens malaria control efforts,

leading to calls for more attention to reducing resistance and developing new anti-malaria commodities.

- **Cross-Cutting Issues:** Several cross-cutting issues are currently being debated, particularly in relation to increased efficiency and sustainability of HIV/AIDS, TB, and malaria programs under the GHI. These include
 - Health systems strengthening;
 - Country ownership in recipient countries;
 - Research and development;
 - Monitoring and evaluation; and
 - Engagement with multilateral organizations.

For details on particular characteristics of the HIV/AIDS, TB, and malaria epidemics and the U.S. response, see the following CRS reports, by Alexandra E. Kendall.

- CRS Report R41645, *U.S. Response to the Global Threat of HIV/AIDS: Basic Facts*
- CRS Report R41643, *U.S. Response to the Global Threat of Tuberculosis: Basic Facts*
- CRS Report R41644, *U.S. Response to the Global Threat of Malaria: Basic Facts*

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Introduction

Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), tuberculosis (TB), and malaria are three of the world's leading causes of morbidity and mortality. In 2009, 1.8 million people died from AIDS, 1.3 million died from TB, and 0.8 million died from malaria. Along with the direct health effects, HIV/AIDS, TB, and malaria have far-reaching socioeconomic consequences, posing what many analysts believe are threats to international development and security. Because of this, the United States has considered the fight against these three diseases to be important foreign policy priorities. In FY2010, of the \$9.3 billion the United States spent on global health programs, approximately 80% was on bilateral and multilateral HIV/AIDS, TB, and malaria combined, with bilateral HIV/AIDS programs accounting for 60% of all funding. The United States is currently the single largest donor for global HIV/AIDS and has played a key role in generating a robust international response to TB and malaria.¹

Despite growing international support for global health programs over the last decade and progress made in controlling HIV/AIDS, TB, and malaria in much of the world, significant obstacles remain in fighting the three diseases. In many countries, HIV infection rates are outpacing access to treatment, rates of drug resistance are increasing for TB and malaria, and health systems in resource-poor settings are under increasing pressure to address these diseases while struggling to provide basic health care.

Over the last few years, Congress has debated the U.S. strategy to confronting these diseases, with attention on how the United States can best support a long-term approach to these diseases that generates positive outcomes for global health in general. In response to these debates, implementing agencies have begun to make programmatic changes, and the Obama Administration has called for a revised U.S. approach to HIV/AIDS, TB, and malaria in the hopes of making related efforts more effective and efficient. This process has led to a broader discussion on how best to allocate global health funding, both within and between programs. The financial crisis and economic recession, and consequent calls to reduce the U.S. budget deficit, have heightened the urgency of reevaluating U.S. global health investments. This report highlights some of the current challenges posed by HIV/AIDS, TB, and malaria, as well as several cross-cutting policy issues that the 112th Congress may consider as it determines U.S. global health funding for these three diseases, including:

- Health Systems Strengthening;
- Country Ownership;
- Research and Development;
- Monitoring and Evaluation; and
- Bilateral vs. Multilateral Support.

¹ For more information on the HIV/AIDS, TB, and malaria epidemics, and the U.S. response to each disease, see CRS Report R41645, *U.S. Response to the Global Threat of HIV/AIDS: Basic Facts*, by Alexandra E. Kendall; CRS Report R41643, *U.S. Response to the Global Threat of Tuberculosis: Basic Facts*, by Alexandra E. Kendall; and CRS Report R41644, *U.S. Response to the Global Threat of Malaria: Basic Facts*, by Alexandra E. Kendall.

U.S. Policy Background

U.S. efforts to address HIV/AIDS, TB, and malaria have grown significantly over the last few decades, as successive Administrations and Congresses have increasingly recognized the severity and impact of these diseases.

Clinton Administration

An expansive U.S. government response to HIV/AIDS began under President Bill Clinton. In 1999, President Clinton launched the Leadership and Investment in Fighting an Epidemic (LIFE) Initiative to address HIV/AIDS in 14 African countries and India, marking the first interagency response to the epidemic. The following year, President Clinton signed into law the Global AIDS and Tuberculosis Relief Act of 2000 (P.L. 106-264), boosting funding for both HIV/AIDS and TB activities.

Bush Administration

The George W. Bush Administration greatly elevated the fight against HIV/AIDS, TB, and malaria in the U.S. foreign policy agenda. In 2001, President Bush contributed the “founding pledge” to the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), a public-private financing mechanism for the global response to HIV/AIDS, TB, and malaria.² Shortly thereafter, in 2002, President Bush launched the International Mother and Child HIV Prevention Initiative, supporting prevention of mother-to-child transmission (PMTCT) activities in 12 African and two Caribbean countries.

In 2003, the Bush Administration announced the establishment of the President’s Emergency Plan for AIDS Relief (PEPFAR), pledging \$15 billion over the course of five years to combat HIV/AIDS, TB, and malaria. This pledge represented the largest commitment ever by a single nation toward an international health issue, and established a new and central role for donor governments in the fight against HIV/AIDS. Of the \$15 billion, the President proposed spending \$9 billion on HIV/AIDS prevention, treatment, and care services in 15 focus countries.³ The President also proposed spending \$5 billion of the funds on existing bilateral HIV/AIDS, TB, and malaria programs in roughly 100 other countries and \$1 billion of the funds for U.S. contribution to the Global Fund.

The 108th Congress authorized the establishment of PEPFAR in May 2003 through the U.S. Leadership Against HIV/AIDS, TB, and Malaria Act of 2003 (Leadership Act, P.L. 108-25). The act authorized \$15 billion for U.S. efforts to combat global HIV/AIDS, TB, and malaria from FY2004 through FY2008, including \$1 billion for the Global Fund in FY2004. The act also authorized the creation of the Office of the Global AIDS Coordinator (OGAC) at the Department of State to oversee all U.S. global HIV/AIDS activities. Beyond increasing the scope of U.S.

² For more information on the Global Fund, see CRS Report R41363, *The Global Fund to Fight AIDS, Tuberculosis, and Malaria: U.S. Contributions and Issues for Congress*, by Tiaji Salaam-Blyther.

³ The original PEPFAR focus countries included Botswana, Cote d’Ivoire, Ethiopia, Guyana, Haiti, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia. Vietnam was added as a focus country in June 2004.

HIV/AIDS programs, the Leadership Act also shifted the focus of U.S. HIV/AIDS activities. In particular, while past U.S. global HIV/AIDS programs had primarily supported prevention activities, the Leadership Act set targets for extending anti-retroviral therapy (ART) and required that 55% of PEPFAR funds be spent on HIV/AIDS treatment.

Building on the success of PEPFAR in harnessing resources to combat a disease, President Bush announced the establishment of the President's Malaria Initiative (PMI) in 2005, which significantly increased U.S. funding for global malaria programs. PMI was a five-year, \$1.2 billion commitment to halve the number of malaria-related deaths in 15 sub-Saharan African countries⁴ by 2010 through the use of four proven techniques:

1. indoor residual spraying (IRS),
2. insecticide-treated bed nets (ITNs),
3. artemisinin-based combination therapies (ACTs) to treat malaria, and
4. intermittent preventative treatment for pregnant women (IPTp).

PMI represented a significant shift from past United States Agency for International Development (USAID) malaria programs. Until then, USAID's malaria programs provided primarily technical assistance. Under PMI, a minimum of 50% of the budget was devoted to the purchase and distribution of malaria-fighting commodities. The design of PMI also took into account some of the criticism levied against PEPFAR in its first two years, including the need to strengthen the alignment of programs with country priorities and better integrate programs into national health systems.

No analogous initiative was established for global TB. However, in 2007, the 110th Congress enacted the Consolidated Appropriations Act of 2008 (P.L. 110-161), which markedly increased funding for TB control efforts. The act provided unprecedented funding to expand USAID TB programs in high-burden countries. The act also recognized the growing threat of HIV/TB co-infection and directed OGAC to spend at least \$150 million of its funds for PEPFAR on joint HIV/TB activities.

In July 2008, the 110th Congress enacted the Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (Lantos-Hyde Act, P.L. 110-293), authorizing \$48 billion for bilateral and multilateral efforts to fight global HIV/AIDS, TB, and malaria from FY2009 through FY2013. Of the \$48 billion, \$4 billion was for bilateral TB programs, \$5 billion was for bilateral malaria programs, and \$2 billion was for U.S. contributions to the Global Fund in FY2009. The act also authorized the establishment of the Global Malaria Coordinator at USAID to oversee and coordinate all U.S. global malaria activities.

U.S. HIV/AIDS, TB, and malaria programs under the Bush Administration received strong bipartisan congressional support. At the same time, Congress and the global health community debated several aspects of PEPFAR, including:

⁴ The original 15 PMI focus countries were added over the course of three fiscal years. PMI began operations in Angola, Tanzania, and Uganda in FY2006, in Malawi, Mozambique, Rwanda, and Senegal in FY2007, and in Benin, Ethiopia, Ghana, Kenya, Liberia, Madagascar, Mali, and Zambia in FY2008. Nigeria and the Democratic Republic of the Congo were added as PMI focus countries in FY2011.

- the relationship between HIV/AIDS activities and other global health activities;
- the effectiveness of abstinence-only education,
- the integration of family planning into HIV/AIDS activities;
- the use of branded versus generic drugs;
- the role of recipient countries in setting assistance priorities; and
- the balance of funding between prevention, treatment, and care activities.

Many critics argued that PEPFAR was overly unilateral, relied too heavily on U.S.-based organizations, and did little to strengthen national health systems or country capacity to cope with the epidemic in the long run. The Lantos-Hyde Act was intended to respond to a number of these criticisms and support the transition of PEPFAR from an emergency plan to a sustainable, country-led program.⁵

Obama Administration

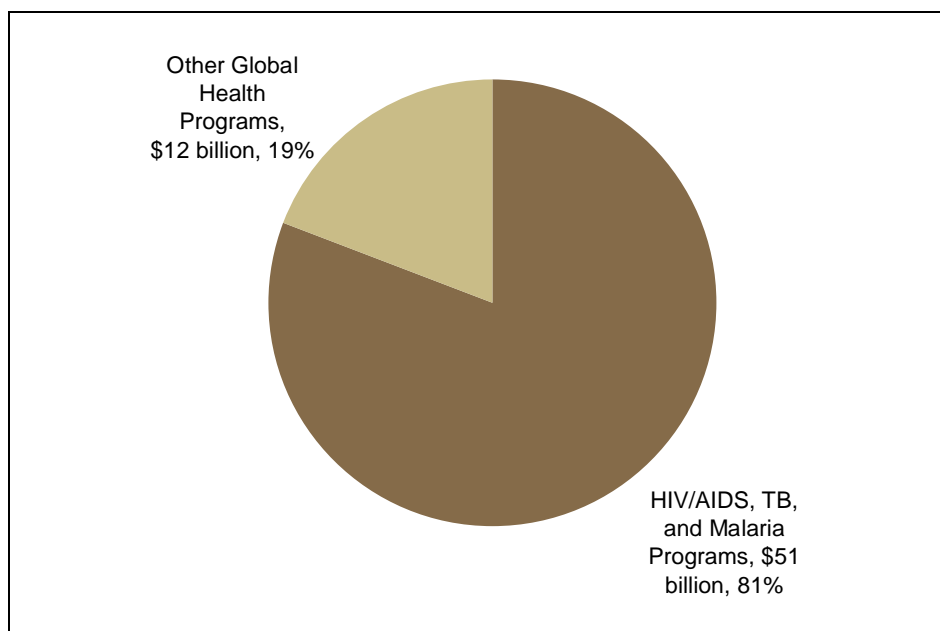
Partly in response to the above-mentioned debates, on May 5, 2009, President Barack Obama announced a six-year, \$63 billion Global Health Initiative (GHI). The GHI is a comprehensive U.S. global health strategy that brings together a number of existing global health funding streams and programs managed by USAID, the Centers for Disease Control (CDC), as well as HIV/AIDS programs managed by the State Department and the Department of Defense (DOD). The initiative calls for the coordination and integration of established HIV/AIDS, TB, and malaria programs with one another and with other, broader health activities to maximize effectiveness, efficiency, and sustainability of U.S. global health programs. It also encourages increased efforts to strengthen underlying health systems and support country ownership. Finally, the GHI supports woman- and girl-centered approaches to global health, recognizing that women and girls often suffer disproportionately from poor health.⁶

HIV/AIDS, TB, and malaria programs are core components of GHI. The Obama Administration proposes spending 81% of all GHI funding on the three diseases from FY2009 through FY2014 (**Figure 1**). Since 2009, implementing agencies have produced multi-year HIV/AIDS, TB, and malaria strategies, which each articulate goals and strategies to support an integrated, long-term, and country-led approach to global health, in accordance with the GHI principles (see the “HIV/AIDS, TB, and Malaria GHI Goals” section).

⁵ For an example of congressional discussion of these issues, see U.S. Congress, House Committee on Foreign Affairs, *PEPFAR Reauthorization: From Emergency to Sustainability*, 110th Cong., 1st sess., September 27, 2007, Serial No. 110-116 (Washington: GPO, 2007), <http://internationalrelations.house.gov/110/37971.pdf>.

⁶ *Implementation of the Global Health Initiative*, Consultation Document, USAID, http://www.usaid.gov/our_work/global_health/home/Publications/docs/ghi_consultation_document.pdf.

Figure 1. GHI Proposed Funding Distribution, FY2009-FY2014
(U.S. billions)



Source: CRS Analysis of GHI Consultation Document, *Implementation of the GHI*, February 2010.

Two years after the launch of the GHI, the Administration is beginning to release details about how the GHI principles are being implemented in the field. As of June 2010, eight countries, known as “GHI Plus” countries, have been chosen to receive additional resources and technical assistance to accelerate implementation of the GHI and to serve as “learning laboratories” for best practices (the GHI will ultimately be implemented in every country receiving health assistance). The “GHI Plus” countries are: Bangladesh, Ethiopia, Guatemala, Kenya, Mali, Malawi, Nepal, and Rwanda.

In March 2011, the Administration released the “United States Government Global Health Initiative Strategy Document” as well as GHI Country Strategies outlining high-level priority areas and targets for country programs.⁷ These multi-year strategies also serve as guidelines for new coordination efforts between PEPFAR, USAID, and CDC, as they aim to reduce duplication between programs, integrate services where appropriate, and better align programs with the priorities of partner governments. Several outside studies have documented early signs of progress toward a more cohesive and efficient approach to global health, including in relation to HIV/AIDS, TB, and malaria programs.⁸ Questions remain over whether this progress can be brought to scale and whether efforts to better integrate global health activities can be sustained without significant additional resources. Also, despite the Administration’s stated commitment to existing initiatives like PEPFAR and PMI, some experts have expressed concern that a new focus on coordination and integration could mean less support for disease-specific programs.

⁷ These resources are available at the Global Health Initiative website, <http://www.ghi.gov/>.

⁸ For example, see Center for Strategic and International Studies, *On the Ground with the Global Health Initiative: Examining Progress and Challenges in Kenya*, March 2011, <http://csis.org/publication/ground-global-health-initiative> and Kaiser Family Foundation, *The U.S. Global Health Initiative: A Country Analysis*, February 2011, <http://www.kff.org/globalhealth/8140.cfm>.

U.S. Funding Levels and Trends

Congress provides funds for HIV/AIDS, TB, and malaria assistance through several appropriations vehicles, including State and Foreign Operations; Labor, Health and Human Services, and Education; and the Department of Defense. Funds are appropriated to a number of U.S. agencies including the Department of State, USAID, CDC, and DOD. Congress also provides sufficient resources to the Office of AIDS Research at the National Institutes of Health (NIH) to support international HIV/AIDS research efforts. The agencies use the funds for bilateral HIV/AIDS, TB, and malaria programs and for contributions to multilateral organizations that address these diseases, including the Global Fund.

Since FY2001, U.S. funding in support of global HIV/AIDS, TB, and malaria programs has significantly increased. Funding for FY2011, as signed into law by the President on April 15, 2011, demonstrates continued Congressional commitment to global HIV/AIDS, TB, and malaria programs, although it does not support the increased funding for these programs included in the President's FY2011 budget request. Congress is currently debating funding for FY2012 and some Members of Congress have proposed cuts to global health programs, including HIV/AIDS, TB, and malaria programs, as a way to reduce the federal deficit. In contrast, the President's FY2012 budget request includes funding increases for U.S. activities targeting these diseases. For a snapshot of recent years, **Table 1** includes U.S. actual and proposed funding for global HIV/AIDS, TB, and malaria from FY2008 through FY2012. **Appendix C** includes all U.S. actual and proposed funding for global HIV/AIDS, TB, and malaria from FY2001 through FY2012.

Table 1. U.S. Funding for Global HIV/AIDS, TB, and Malaria: FY2008-FY2012
(current U.S. \$ millions)

Agency or Program ^a	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Request	FY2011 Appropriation (P.L. 112-10) ^b	FY2012 Request	%Change FY2010 Actual – FY2012 Request
USAID HIV/AIDS (GHCS) ^c	347.2	350.0	350.0	350.0	n/s	350.0	0.0%
USAID HIV/AIDS (Other Accounts) ^d	24.8	0.0	0.0	0.0	n/s	0.0	0.0%
State HIV/AIDS	4,116.4	4,559.0	4,609.0	4,800.0	4,595.0	4,641.9	0.7%
CDC HIV/AIDS	118.9	118.9	119.0	118.1	n/s	118.0	-0.8%
NIH Global AIDS Research	411.7	451.7	485.6	470.6	n/s	489.4	0.8%
DOD HIV/AIDS	8.0	8.0	10.0	n/s	n/s	n/s	n/a
FMF HIV/AIDS	1.0	0.0	0.0	0.0	n/s	0.0	0.0%

Agency or Program ^a	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Request	FY2011 Appropriation (P.L. 112-10) ^b	FY2012 Request	%Change FY2010 Actual – FY2012 Request
HIV/AIDS Subtotal	5,028.0	5,487.6	5,573.6	5,738.7	n/s	5,599.3	0.5%
USAID TB (GHCS)	148.0	162.5	225.0	230.0	n/s	236.0	4.9%
USAID TB (Other Accounts)	15.2	14.1	18.2	20.6	n/s	18.4	1.1%
TB Subtotal	163.2	176.6	243.2	250.6	n/s	254.4	4.6%
USAID Malaria (GHCS)	347.2	382.5	585.0	680.0	n/s	691.0	18.1%
USAID Malaria (Other Accounts)	2.4	2.5	0.0	0.0	n/s	0.0	n/s
CDC Malaria	8.7	9.4	9.4	9.2	n/s	9.2	-2.1%
Malaria Subtotal	358.3	394.4	594.4	689.2	n/s	700.2	17.8%
USAID Global Fund Contribution	0.0	100.0	0.0	0.0	0.0	0.0	0.0%
State Global Fund Contribution	545.5	600.0	750.0	700.0	750.0	1,000.0	33.3%
HHS Global Fund Contribution	294.8	300.0	300.0	300.0	300.0	300.0	0.0%
Global Fund Subtotal	840.3	1,000.0	1,050.0	1,000.0	1,050.0	1,300.0	23.8%
HIV/AIDS, TB, and Malaria Total	6,389.8	7,058.6	7,461.2	7,678.5	n/s	7,835.9	5.0%

Source: Compiled by CRS from appropriations legislation and congressional budget justifications.

Notes: n/s = not specified, n/a = not applicable.

- Centers for Disease Control and Prevention (CDC); National Institutes of Health (NIH); Department of Labor (DOL); Department of Defense (DOD); Department of Health and Human Services (HHS), United States Agency for International Development (USAID), Foreign Military Financing Account (FMF).
- These numbers do not include a 0.2% rescission made to all non-defense discretionary accounts, as stated in the Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10). It is unclear at this time whether the rescission will be applied evenly to all programs or just to account totals. Final are figures pending.

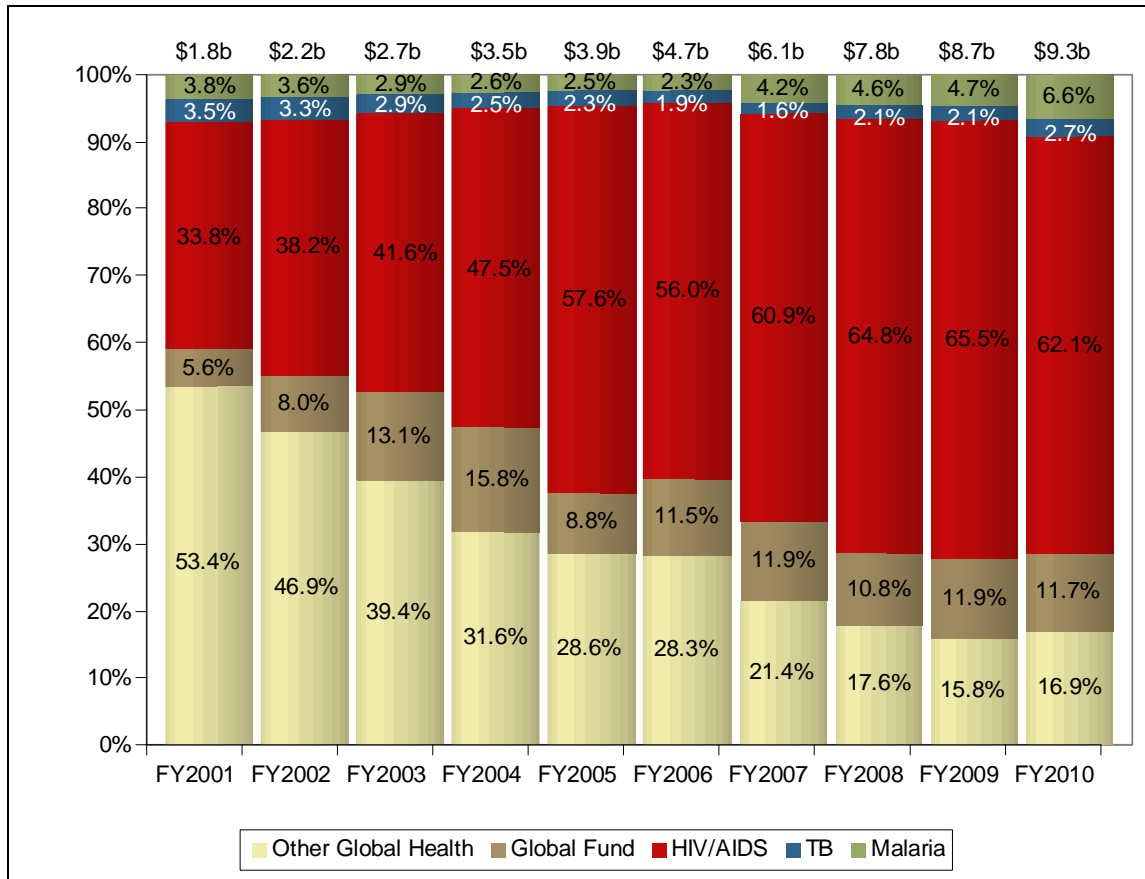
- c. Global Health and Child Survival Account (GHCS).
- d. This includes funding from the Development Assistance Account (DA), the Economic Support Fund Account (ESF), and the Assistance for Europe, Eurasia, and Central Asia Account (AEECA).

Trends in Funding for HIV/AIDS, TB, and Malaria: FY2001-FY2010

Over the last decade, Congress has demonstrated significant support for U.S. programs targeting global HIV/AIDS, TB, and malaria. In particular, the enactment of the Leadership Act and the Lantos-Hyde Act raised the profile of HIV/AIDS, TB, and malaria and authorized increases in U.S. investments for countering each disease. Congress has also held a number of hearings in recent years to evaluate U.S. HIV/AIDS, TB, and malaria programs and to debate various approaches to fighting the diseases. While congressional action (including legislation and hearings) has tended to group the three diseases together, the response to each has varied widely, with HIV/AIDS receiving considerably more funding and attention than either TB or malaria.

Funding for each of the diseases has increased drastically since FY2001. Since FY2001, funding for bilateral HIV/AIDS, TB, and malaria programs in constant dollars has increased by approximately 655%, 220%, and 614%, respectively. Despite the marked increases in funding, particularly for global HIV/AIDS and malaria, there are significant differences in the percentage of the global health budget that each disease receives. Since the establishment of PEPFAR, HIV/AIDS programs have accounted for close to or over 50% of the global health budget, while TB programs have received between approximately 1.6% and 3.5%, and malaria programs have received between approximately 2.3% and 6.4% of global health funding, depending on the year (**Figure 2**). The establishment of PMI in 2005 raised the profile of U.S. global malaria programs, increasing its share of the global health budget from 2.5% in FY2005 to 6.4% in FY2010. U.S. support for fighting global TB has trailed that of HIV/AIDS and malaria and, unlike the other two, global TB has no U.S. presidential initiative or designated U.S. coordinator. Health experts continue to debate the appropriate apportionment of funding for the three diseases, including questions over the relative impact of and costs of treatment for each disease.

Figure 2. Distribution of Funding for Global Health Programs, FY2001-FY2010

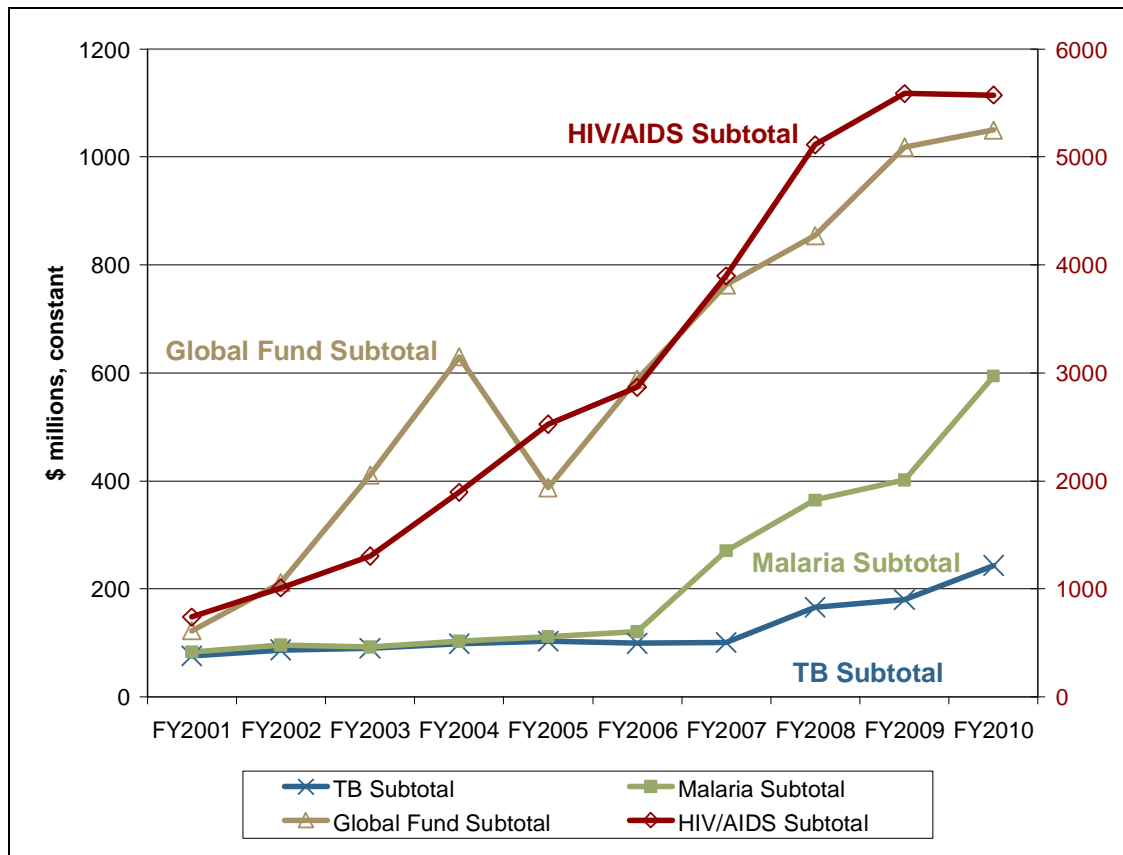


Source: Compiled by CRS from appropriations legislation and congressional budget justifications.

Notes: 'Other Global Health' includes programs targeting Maternal, Neonatal, and Child Health (MNCH), Family Planning/Reproductive Health (FP/RH), Neglected Tropical Diseases (NTDs), and other activities.

Although absolute funding for all three diseases has increased since FY2001, specific trends for each disease have differed (**Figure 3**). Funding for HIV/AIDS increased rapidly from FY2004 through FY2008, during the first phase of PEPFAR, and has largely leveled off since the initiative was reauthorized. Funding for malaria increased significantly following the establishment of PMI in FY2006 and has since seen further increases. Funding for TB increased most rapidly in FY2008 and FY2010.

Figure 3. U.S. Funding Trend Line for HIV/AIDS, TB, and Malaria FY2001-FY2010
(constant U.S. \$ millions)



Source: Compiled by CRS from congressional budget justifications and appropriations legislation.

Notes: This graph has a secondary axis (in red) to account for the significant differences in funding amounts for HIV/AIDS and funding amounts for TB, malaria, the Global Fund.

FY2011 Funding

On April 15, 2011, the President signed into law the Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10), making appropriations for the remainder of FY2011. The act included specific appropriations for State Department global HIV/AIDS programs and U.S. contributions to the Global Fund. The act did not specify funding amounts for TB and malaria programs, although it slightly increased USAID's total global health budget, which includes TB and malaria activities. The act also included a 0.2% rescission to all non-defense discretionary accounts. Not including the rescission, when compared to FY2010 levels, the FY2011 appropriation for State Department HIV/AIDS programs represents a 0.3% decrease, while funding for the Global Fund remained level. Given that HIV/AIDS funding tied to continuing lifelong treatment for people with HIV will likely be considered impervious, some analysts argue that the cuts made to State Department HIV/AIDS programs may affect prevention and care, as well as broader efforts in areas like health systems strengthening and country ownership.

While the Continuing Appropriations Act of 2011 largely maintains support for programs targeting the three diseases, its enactment occurred after prolonged Congressional debate over

discretionary spending levels, with some proposing cuts to global HIV/AIDS, TB, and malaria programs in FY2011. In January 2011, some Members suggested reducing nonsecurity spending for the remainder of FY2011 to FY2008 spending levels or less, including global health programs.⁹ In particular, on February 19, 2011, the House passed the Full Year Continuing Appropriations Act for FY2011 (H.R. 1), proposing significant reductions from the President's FY2011 budget request, including cuts to HIV/AIDS, TB, and malaria programs. H.R. 1 did not provide proposed funding levels for each specific global health program, although it did reduce funding to the State Department for HIV/AIDS by 7.8% and U.S. contributions to the Global Fund by 42.8% compared to FY2010 levels. Some Congressional Members argued that these cuts could lead to important savings, while HIV/AIDS, TB, and malaria advocates strongly criticized the bill, arguing that it would undermine essential programs with humanitarian, development, diplomatic, and security implications. Many of these advocates have applauded the significantly smaller reductions made in the Continuing Appropriations Act of 2011, when compared to those proposed in H.R. 1.

FY2012 Budget

On February 14, 2011, President Obama released the FY2012 budget request. When compared to FY2010 funding levels, the budget requests a 5.0% increase in funding for HIV/AIDS, TB, and malaria, including modest increases for HIV/AIDS (0.5%) and TB (4.6%), and more significant increases for malaria (17.8%) and U.S. contributions to the Global Fund (23.8%) (see **Table 1**). When compared to the FY2011 budget request, the FY2012 budget requests a 2.2% increase in funding for HIV/AIDS, TB, and malaria, largely due to requested increases in funding for malaria and U.S. contributions to the Global Fund.

Given the tight global economic climate, many health advocates applaud the Obama Administration's commitment to expanding global HIV/AIDS, TB, and malaria efforts. The shift in the balance of funding away from major increases in HIV/AIDS to other areas of health, including malaria, has been defended by some in the Administration and the global health community as a necessary move from an emergency response to HIV/AIDS to a more sustainable long-term approach to global health that more comprehensively addresses global mortality and morbidity. However, the relatively small increases in funding for HIV/AIDS and TB have been criticized by other advocates who regard the move as a sign of decreased commitment to fighting these diseases. These critics have argued that divestment in global HIV/AIDS and TB programs could reverse recent progress made, increase AIDS and TB mortality, and lead to decreasing levels of support from other donors.

The Lantos-Hyde Act authorized \$48 billion for global HIV/AIDS, TB, and malaria programs from FY2009 through FY2013, including contributions to the Global Fund. Current spending trends suggest those levels may not be met unless substantial increases are appropriated in FY2012 and FY2013.

⁹ There is some debate over whether foreign assistance, including support for global health programs, should be seen uniformly as non-security spending. The Obama Administration has included the State Department and USAID in its definition of "security"-related agencies. The House has excluded these agencies.

Progress in Combating HIV/AIDS, TB, and Malaria

In late 2010, the World Health Organization (WHO) and the Joint United Nations Program on HIV/AIDS (UNAIDS) released new estimates of the scale of the global HIV/AIDS, TB, and malaria epidemics. The separate reports on each disease highlighted significant progress being made in the fight against the diseases, much of which is attributable to the leadership and support of the United States. The reports, characterized below, also identified major obstacles that remain.

Progress in Global HIV/AIDS

The 2010 WHO/UNAIDS report on global HIV/AIDS noted advancements in combating the global HIV/AIDS epidemic, namely expanded access to several HIV/AIDS interventions, including HIV testing and counseling, anti-retroviral therapy, and drugs to prevent mother-to-child HIV transmission (PMTCT). Partly as a result of these interventions, both HIV-related mortality and incidence rates have declined.¹⁰ In 2009, HIV-related deaths were close to one-fifth lower than in 2004 and the rate of new HIV infections was approximately 25% lower than in 1996, the year that the HIV incidence rate is thought to have peaked. At the same time, WHO cited several ongoing challenges. HIV/AIDS is still without a cure or vaccine, and in 2009 alone, an estimated 2.6 million people were newly infected. New infections, combined with expanded access to ART for those already infected creates greater numbers of people requiring indefinite, lifelong treatment.¹¹

Progress in Global TB

According to the 2010 WHO report on global TB, by 2008, most countries in the world had adopted WHO's Stop TB Strategy (the international guidance for prevention and treatment of TB). The global adoption of WHO prevention and treatment standards has enabled more than 36 million people infected with TB to receive treatment and prevented up to 6 million deaths between 1995 and 2008.¹² Global incidence rates of TB infection are also declining, after having peaked in 2004. The WHO report highlighted some ongoing obstacles to TB control as well. The TB incidence rate, which measures the pace at which people acquire the disease, has declined by roughly 1% a year. Despite this decline, absolute numbers of new infections continue to rise. Progress in global TB control is also challenged by HIV/TB co-infection and new forms of drug resistant TB. Outdated tools for diagnosis and treatment, particularly in relation to HIV/TB co-infection and resistant forms of the disease, hamper further progress.¹³

¹⁰ Incidence measures the number of people who contract a disease within a given time period (usually one year). Prevalence measures the number of people living with a disease at a given time.

¹¹ UNAIDS, *Report on the Global AIDS Epidemic*, 2010, http://www.unaids.org/globalreport/Global_report.htm.

¹² Knut Lönnroth et al., "Tuberculosis Control and Elimination 2010–50: Cure, Care, and Social Development," *The Lancet*, vol. 375, no. 9728, (May 19, 2010), p. 1814–29.

¹³ WHO, *Global Tuberculosis Control*, 2010, http://whqlibdoc.who.int/publications/2010/9789241564069_eng.pdf.

Progress in Global Malaria

The 2010 WHO report on global malaria emphasized the effective scale-up of several malaria control interventions, including greater use of the latest malaria treatments, insecticide-treated bednets, indoor residual spraying, and drugs to reduce the transmission of malaria during pregnancy. Since 2000, 32 countries outside of Africa have experienced more than a 50% reduction in reported number of malaria cases and 11 African countries have experienced at least a 50% reduction in either confirmed malaria cases or malaria admissions and deaths. The decreases in each of these African countries are associated with intense malaria control activities. Despite this success, the report also noted obstacles in the fight against malaria. In particular, coverage rates of ITNs and IRS and access to ACTs remain low in many African countries, and increasing drug and insecticide resistance pose new challenges.¹⁴

Key Disease-Specific Issues

HIV/AIDS, TB, and malaria overlap geographically, share risk factors, and can worsen the symptoms of each other in instances of co-infection. Despite these common factors, each disease presents unique challenges, which Congress may consider as it debates the U.S. response to each disease. For more information on the particular characteristics of and U.S. response to each of the diseases, see CRS Report R41645, *U.S. Response to the Global Threat of HIV/AIDS: Basic Facts*, by Alexandra E. Kendall; CRS Report R41643, *U.S. Response to the Global Threat of Tuberculosis: Basic Facts*, by Alexandra E. Kendall; and CRS Report R41644, *U.S. Response to the Global Threat of Malaria: Basic Facts*, by Alexandra E. Kendall.

HIV/AIDS

Sustaining the successes achieved in fighting HIV/AIDS presents new policy challenges. While AIDS-related mortality and HIV incidence rates have declined, improved access to anti-retroviral therapy (ART) combined with continued new infections has led to growing numbers of people living with HIV/AIDS and requiring lifelong treatment. The new and long-term financial costs associated with expanded access to ART have increased concern over the sustainability of U.S. treatment programs and have led to new calls for attention to prevention.

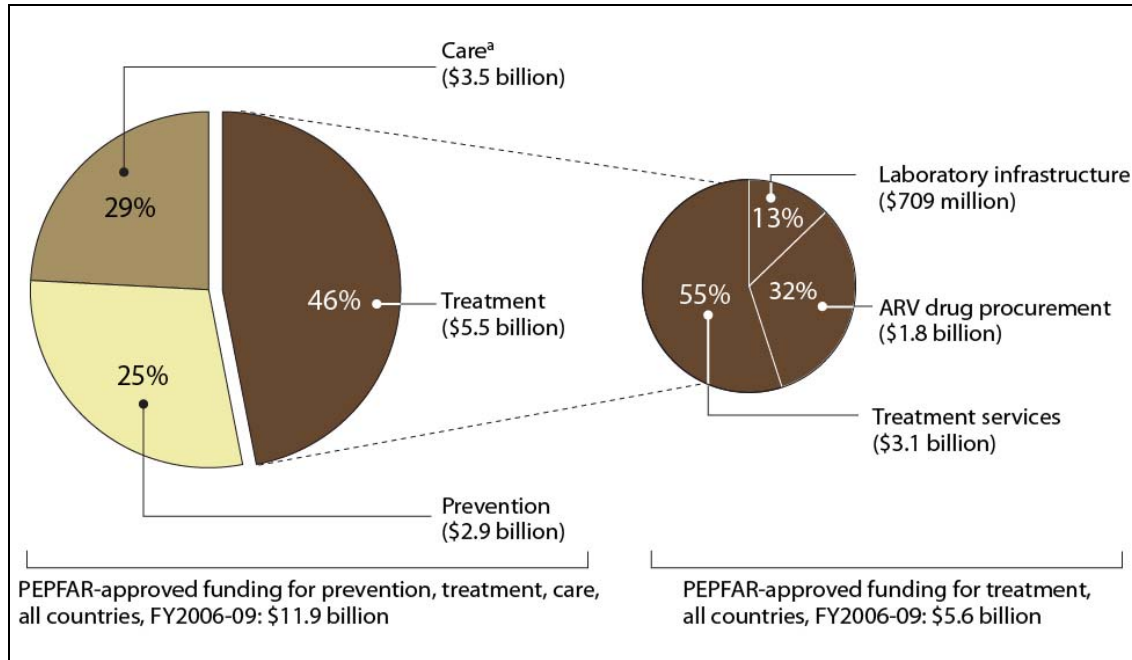
The expansion of ART to treat HIV/AIDS has significantly reduced AIDS-related mortality. Estimates suggest that between 1995 and 2009, close to 14.4 million life-years—a measure of the duration of life extended because of treatment—have been gained worldwide due to ART.¹⁵ Treatment has been a central component of PEPFAR programs. According to a 2010 Government Accountability Office (GAO) report, from FY2006-FY2009 the majority of PEPFAR funds were used to support treatment efforts (**Figure 4**). As of September 2010, PEPFAR was directly

¹⁴ WHO, *World Malaria Report*, 2010, http://wholibdoc.who.int/publications/2010/9789241564106_eng.pdf.

¹⁵ According to the author of this journal article, “life-years” is calculated through the comparison of two scenarios. In the first scenario, adults are provided ART as reported by countries between 1995 and 2009. In the second scenario, adults receive no ART at any point during the time period. The estimated annual number of life-years gained is the difference in the number of people alive in the same year for the two scenarios. The difference of life-years over time is cumulated to estimate the survival impact of ART over time. See, Mary Mahy et al., “Estimating the Impact of Antiretroviral Therapy: Regional and Global Estimates of Life-Years Gained Among Adults,” *Sexually Transmitted Infections*, vol. 86, no. Issue Supplemental 2 (October 2010).

supporting ART for over 3.2 million individuals in 30 countries—representing over half of the estimated 5.2 million people on treatment around the world.¹⁶ From FY2009-FY2013, the United States has committed to treating an additional four million people infected with HIV/AIDS.¹⁷

Figure 4. PEPFAR Funding for Prevention, Treatment, and Care FY2006-FY2009



Source: GAO, *Global Health: Trends in U.S. Spending for Global HIV/AIDS and Other Health Assistance in Fiscal Years 2001-2008*, Report to Congressional Committees, GAO-11-64, October 2010, p. 8.

Notes: This graph refers only to FY2006-FY2009; it does not correspond to all PEPFAR funding since its establishment in 2004.

a. For FY2006 and FY2007, PEPFAR care program figures included funding for all pediatric AIDS programs, including treatment. In FY2008 and FY2009, PEPFAR counted pediatric care toward overall care funding and pediatric treatment toward overall treatment funding.

In spite of the strides made in HIV treatment, the number of individuals newly infected with HIV exceeded the number of individuals placed on treatment by more than a 2 to 1 margin in 2009. At the end of that year, the 5.2 million people receiving treatment represented only 36% of those in need. In the absence of breakthroughs (such as a vaccine), the number of people newly infected with HIV and requiring treatment is projected to grow significantly in coming years.¹⁸ Expanding access to ART for new patients who will require lifelong treatment will increase long-term treatment costs.¹⁹ Compounding this challenge is the potential for increased rates of drug

¹⁶ Department of State, Office of the Spokesman, *World AIDS Day: U.S. Reports Encouraging Progress in Saving Lives Through Smart Investments*, December 1, 2010, <http://www.state.gov/r/pa/prs/ps/2010/12/152194.htm>.

¹⁷ The U.S. President's Emergency Plan for AIDS Relief: Five-Year Strategy, Annex: PEPFAR's Contributions to the Global Health Initiative, Office of the U.S. Global AIDS Coordinator, Department of State, December 2009, <http://www.pepfar.gov/documents/organization/133437.pdf>.

¹⁸ Moreover, in July 2010, WHO published new guidance on ART for individuals in low-resource countries, advising that treatment begin at an earlier stage of illness, thereby increasing the number of people eligible for treatment.

¹⁹ One model produced by *aids2031*, a UNAIDS-commissioned group of experts, estimated that total treatment costs would be between \$11 billion and \$18 billion per year in 2020. See, *Aids2031, Costs and Choices: Financing the* (continued...)

resistance and consequent need for second-line therapies, which cost 5 to 10 times more than first-line drugs.²⁰

These long-term treatment needs and costs have led some experts to argue that in the absence of rapidly scaled-up prevention efforts, U.S. treatment programs are unsustainable. Because ART is a lifelong treatment, some critics contend that funding for treatment is quickly becoming an “international entitlement” that the United States will not be able to reduce without serious consequence.²¹ These critics argue that any overall decrease in HIV/AIDS funding would necessitate reductions in funding for nontreatment activities, including prevention, thereby compounding the problem. Alternatively, some advocates argue that increased provision of ART is both a moral imperative and can have a beneficial long-term impact on the epidemic. These advocates point to the preventive implications of treatment—by lowering viral loads of infected people, treatment can lower transmission rates—and the fact that treatment has been shown to encourage HIV testing and counseling. Likewise, many argue that as commodity prices have declined, ART has become progressively more affordable.²² Both critics and advocates of expanded treatment agree that the United States should consider how to make more efficient use of available treatment resources, including issues related to earlier versus later initiation of treatment and the distribution of resources between first-line and second-line drugs.²³

In light of this challenge, a number of health experts call for a major shift in funding away from treatment and toward prevention activities. Globally, prevention activities account for 22% of HIV/AIDS spending in low- and middle-income countries by all sources.²⁴ According to UNAIDS, several areas of prevention have demonstrated clear success. Prevention of mother-to-child transmission (PMTCT) has led to reductions in children infected with HIV and male circumcision has led to reduced likelihood of uninfected men acquiring HIV from HIV-infected female partners.²⁵ At the same time, UNAIDS has argued that global prevention interventions are often not adequately directed at the populations most in need, including people who inject drugs, sex workers and their clients, and men who have sex with men (MSM).²⁶

In recent years, PEPFAR has placed new emphasis on prevention, and has committed to preventing more than 12 million new infections from FY2009-FY2013.²⁷ PEPFAR’s five-year strategy emphasizes scaling up prevention efforts through combined behavioral, biomedical, and structural interventions (efforts to address the social, political, and economic factors impacting

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Long-Term Fight Against AIDS, Results for Development Institute, Costs and Financing Working Group, 2010.

²⁰ Anil Soni and Rajat Gupta, “Bridging the Resource Gap: Improving Value for Money in HIV/AIDS Treatment,” *Health Affairs*, vol. 28, no. 6 (November 2009), pp. 1617-1628.

²¹ Mead Over, *The Global AIDS Transition*, Center for Global Development, May 2010 and Princeton N. Lyman and Stephen B. Wittels, “No Good Deed Goes Unpunished: The Unintended Consequences of Washington’s HIV/AIDS Programs,” *Foreign Affairs*, vol. 89, no. 4 (August 2010).

²² See “Letters to the Editor,” *Science*, vol. 330 (October 8, 2010).

²³ Institute of Medicine (IOM), *Preparing for the Future of HIV/AIDS in Africa: A Shared Responsibility*, November 29, 2010, <http://www.iom.edu/Reports/2010/Preparing-for-the-Future-of-HIV-AIDS-in-Africa-A-Shared-Responsibility.aspx>.

²⁴ UNAIDS, Report on the Global AIDS Epidemic, 2010, p. 63.

²⁵ UNAIDS, Report on the Global AIDS Epidemic, 2010.

²⁶ *Ibid.*

²⁷ The U.S. President’s Emergency Plan for AIDS Relief: Five-Year Strategy, Annex: PEPFAR’s Contributions to the Global Health Initiative.

vulnerability to HIV) tailored to the key drivers of individual country epidemics, and puts particular emphasis on PMTCT and male circumcision activities. Despite this commitment, many health experts call for increased U.S. support of HIV/AIDS prevention efforts in general, and efforts targeting high-risk groups in particular. Many experts also urge the United States to increase its support for new methods to measure and evaluate infection trends and prevention program impact, in order to effectively tailor prevention programs to specific country epidemics and better assess the efficacy of various prevention programs.

While many Members agree that prevention must be a priority of HIV/AIDS programs, there is less consensus over the appropriate balance of funding between treatment and prevention and which prevention activities should receive support.²⁸ Some in Congress express reservation at U.S. support for prevention activities that they feel could be seen as supporting sex work or that may be integrated with family planning and reproductive health services that could be connected to abortion provision.²⁹

Tuberculosis

Tuberculosis is the second leading cause of infectious disease mortality around the world, following HIV/AIDS, yet it receives less funding than either HIV/AIDS or malaria. Gains in global TB control are challenged by growing occurrences of HIV/TB co-infection and drug-resistance, as both strain already-dated tools used for TB diagnosis, treatment, and surveillance.

HIV/TB Co-infection

TB is the leading cause of death for people with HIV. Of the 9.4 million new cases of TB in 2009, an estimated 1.1 million were HIV-positive. WHO recommends three activities, known as the “Three I’s,” to address HIV/TB co-infection: the provision of a prophylaxis, known as Isoniazid Preventative Therapy (IPT), for HIV-positive people with latent TB; intensified case finding for active TB; and TB infection control for HIV-positive people. Some argue that WHO’s “Three I’s” have been unevenly applied and that the global response to co-infection has been slow and uncoordinated, leading to limited access to diagnostic, prevention, and treatment services.³⁰

U.S. HIV/TB collaborative activities are coordinated and led by PEPFAR. In FY2008, Congress directed OGAC to provide at least \$150 million for joint HIV/TB activities. As a result, PEPFAR has scaled up its HIV/TB activities in recent years, most notably with regards to HIV screening, testing, and counseling for TB patients.³¹ Nonetheless, PEPFAR’s FY2010 operational plan

²⁸ HIV prevention activities, particularly sex education, condom use, and interventions with sex workers, have been politically divisive in Congress. The Leadership Act recommended that 20% of HIV/AIDS funds be spent on prevention and required that 33% of prevention funds be spent on abstinence-until-marriage programs. A number of health experts argued that these spending directives limited PEPFAR’s ability to address local prevention needs. The Lantos-Hyde Act removed the spending stipulations, but mandated that OGAC report to Congress should “activities promoting abstinence, delay of sexual debut, monogamy, fidelity, and partner reduction” amount to less than 50% of spending on programs aimed at reducing sexual transmission of HIV in countries with generalized epidemics.

²⁹ For more information on this issue, see CRS Report RL33250, *International Family Planning Programs: Issues for Congress*, by Luisa Blanchfield, and CRS Report R41360, *Abortion and Family Planning-Related Provisions in U.S. Foreign Assistance Legislation and Policy*, by Luisa Blanchfield.

³⁰ Anthony D. Harries et al., “The HIV-associated Tuberculosis Epidemic—When Will We Act?,” *The Lancet*, vol. 375 (May 29, 2010), pp. 1906-19.

³¹ Advocacy to Control TB Internationally (ACTION), *Living With HIV, Dying of TB*, March 2009, (continued...)

explains that integrating HIV and TB services remains challenging, in part due to operational differences between HIV and TB programs and programming that developed separately. Advocates of increased attention to HIV/TB co-infection argue that implementation of WHO's "Three I's" should be mandated as a core element of PEPFAR programming in settings with high co-infection rates. Similarly, while PEPFAR sets annual targets for HIV/TB activities for each focus country, some call for the creation of aggregate targets for joint HIV/TB activities.

Drug-Resistant TB

The past two decades have seen the emergence of multi-drug resistant (MDR) TB³² and extensively drug resistant (XDR) TB.³³ Drug resistance primarily arises from poor treatment adherence or incorrect drug usage. In 2008, there were 440,000 cases of MDR-TB, and 58 countries had confirmed cases of XDR-TB.³⁴ Diagnosis and treatment of MDR/XDR-TB in low-resource countries has been limited,³⁵ due to shortages of sufficiently-equipped laboratories and poor surveillance systems. Treatment for drug-resistant TB is more time-intensive and costly than for basic TB and many resource-poor countries are ill-equipped to adhere to WHO guidance that MDR-TB patients be treated in separate facilities from those with HIV. In the absence of a scaled-up response, MDR- and XDR-TB are expected to result in increased TB-related mortality rates.

The United States has begun to respond to the problem of mounting drug resistance, but there is not consensus over the extent to which U.S. programs should target these particular threats. Some argue that in the absence of increased investment for drug-resistant TB interventions, MDR- and XDR-TB could become the dominant strains of the disease. Others argue that basic TB control efforts reduce the potential for drug-resistant TB, and that a shift in resources to MDR- and XDR-TB activities could threaten gains made in controlling basic TB.³⁶ A particular area of concern for TB advocates is a divergence in U.S. targets for TB and MDR-TB control between the Lantos-Hyde Act and the 2010 U.S. TB Strategy. While the Lantos-Hyde Act recommends that by 2013 the United States support treatment of 4.5 million TB cases and at least 90,000 new MDR-TB cases, the 2010 U.S. TB Strategy states that by 2014 the United States will support treatment of 2.6 million TB cases and 57,200 new MDR-TB cases. Advocates have urged Congress to support the fulfillment of the original Lantos-Hyde goals.

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<http://c1280432.cdn.cloudfiles.rackspacecloud.com/ACTION-Report-Living-With-HIV,-Dying-of-TB-March-2009.pdf>.

³² MDR-TB is caused by bacteria that are resistant to at least two of the most effective anti-TB drugs. MDR-TB results from either primary infection with resistant bacteria or improper use of treatment.

³³ XDR-TB is caused by bacteria that are resistant to at least two of the most effective first-line treatments as well as any of the second-line anti-TB drugs.

³⁴ The latest estimates are for 2008, as published in March 2010 in WHO, Multidrug and Extensively Drug-Resistant TB (M/XDR-TB): 2010 Global Report on Surveillance and Response, 2010, p. 1.

³⁵ Of the estimated cases of MDR-TB in 2008, only 7% were officially diagnosed and reported to WHO and, in 2009, less than 3% of the estimated total number of MDR- and XDR-TB patients were receiving WHO-approved treatment. See, WHO, Multidrug and Extensively Drug-Resistant TB (M/XDR-TB), p. 2, 34.

³⁶ Lee B. Reichman, "Unsexy Tuberculosis," *The Lancet, Correspondence*, vol. 373 (January 3, 2009).

Malaria

Recent data suggests significant reductions in global malaria cases and deaths, due in part to anti-malaria efforts. However, new drug-resistant forms of malaria and insecticide-resistant mosquitoes threaten these gains. At the same time, the success in the control of global malaria to date has led policy makers to consider renewing efforts to eliminate and possibly even eradicate malaria, raising questions over the appropriate distribution of malaria funds.

Drug and Insecticide Resistance

Resistance to artemisinin-based malaria drugs—the most effective treatment currently available—has been identified in Asia, most prominently along the Thai-Cambodian border. Along with the challenge of drug resistance, a number of African countries have reported mosquito resistance to the insecticides used in Indoor Residual Spraying (IRS), and increasingly to the insecticide used in insecticide-treated bed nets (ITNs).³⁷ Factors leading to increased drug and insecticide resistance have included misdiagnosis of malaria, improper use of medications and insecticides, use of counterfeit malaria drugs, and lack of resistance surveillance.

Drug and insecticide resistance pose clear threats to U.S. malaria efforts, which support the use of artemisinin-based combination therapies to treat malaria, IRS, and ITNs. The United States has taken a number of steps to respond to drug and insecticide resistance. For example, the United States is working with WHO to monitor insecticide resistance and assist countries with the judicious use of insecticides, promoting a regular rotation of insecticides from different classes to reduce resistance to IRS, and supporting surveillance networks and drug resistance monitoring systems in Southeast Asia and the Americas.³⁸ Some experts call for an expanded commitment to reducing drug and insecticide resistance, particularly with regard to support for better surveillance systems. Others call for U.S. efforts to preemptively monitor for drug resistance in Africa.

Control, Elimination, and Eradication

In October 2007, the Bill and Melinda Gates Foundation issued a call for a renewed global commitment to the eradication of malaria.³⁹ Malaria eradication had been widely abandoned as a viable option in 1969, after a WHO-sponsored eradication campaign failed to gain traction in much of sub-Saharan Africa. Since the Gates announcement, key global health actors have compared and debated the merits and practicality of malaria control, elimination, and eradication efforts. The three levels of anti-malaria efforts can be classified as:

- **Malaria control:** reduction of the malaria disease burden to a level at which it no longer poses a major public health problem, with adequate surveillance and monitoring to address ongoing and emergent cases.

³⁷ Armel Djènontin, Joseph Chabi, and Thierry Baldet, et al., “Managing Insecticide Resistance in Malaria Vectors by Combining,” *Malaria Journal*, vol. 8 (October 20, 2009), p. 233.

³⁸ President’s Malaria Initiative, *Lantos-Hyde United States Government Malaria Strategy: 2009-2014*, April 25, 2010, http://www.fightingmalaria.gov/resources/reports/usg_strategy2009-2014.pdf.

³⁹ Bill and Melinda Gates Foundation, *Malaria Forum*, October 17, 2007.

- **Malaria elimination:** interruption of local mosquito-to-human malaria transmission, and reduction to zero of new human cases in defined geographic areas, with continued measures to prevent reestablishment of transmission.
- **Malaria eradication:** permanent reduction to zero of worldwide malaria incidence, requiring no further public health action.⁴⁰

WHO has categorized countries into the following malaria stages: control, pre-elimination, elimination, prevention of reintroduction, and malaria free (**Figure 5**). The United States and its WHO partners have endorsed the long-term goal of universal malaria eradication and are increasingly supporting elimination activities in eligible countries.⁴¹ While the majority of PMI activities are focused in countries in the “control” stage, PMI has begun to support pre-elimination activities, such as intensified case detection and surveillance, in several specific areas within Zanzibar, Rwanda, and Senegal.⁴² At the same time, PMI embraces the goal of malaria elimination in the Greater Mekong Region and the Amazon Basin by 2020, primarily through support for improved surveillance and monitoring systems.

Despite the widespread enthusiasm for eradication as a long-term objective, many health experts contend this goal is not feasible with existing malaria prevention and treatment tools, and will require new medications, prevention strategies, and a vaccine.⁴³ Many experts argue that malaria elimination presents a more realistic option, although some posit that a shift toward elimination activities may pose new challenges as well. For instance, some argue that over-emphasizing and investing in elimination activities in areas with fewer cases of malaria could divert funds away from basic malaria control in high burden countries.⁴⁴ Others argue that mass treatment in support of malaria elimination without the appropriate monitoring and surveillance capacity could lead to drug resistance. Finally, some warn that even if elimination is achieved, governments and donors must ensure that disease surveillance systems are in place to detect a resurgence of the disease.⁴⁵

⁴⁰ WHO, *World Malaria Report*, 2010, p. 6.

⁴¹ President’s Malaria Initiative, *Lantos-Hyde United States Government Malaria Strategy: 2009-2014*, p. 5, 10.

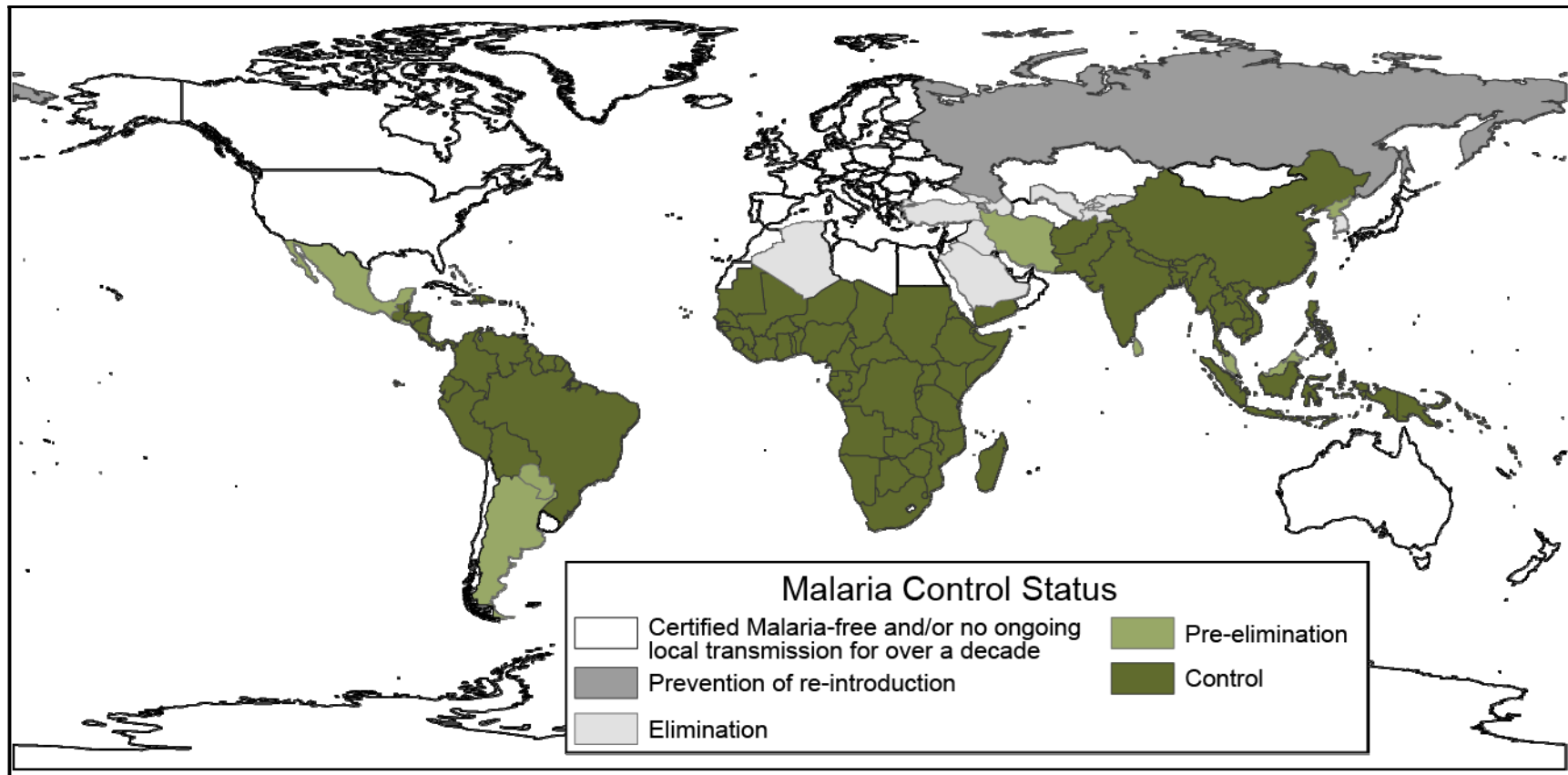
⁴² Personal correspondence with PMI Senior Policy Advisor.

⁴³ Leslie Roberts and Martin Enserink, “Did They Really Say ... Eradication?,” *Science*, vol. 318 (2007), pp. 1544-5 and Marcel Tanner and Don de Savigny, *Malaria Eradication Back on the Table*, WHO, Bulletin of the WHO, 2007, p. 82.

⁴⁴ J. Lines, A. Schapire, and T. Smith, “Tackling Malaria Today,” *British Medical Journal*, vol. 337 (2008), pp. 435-437.

⁴⁵ Richard Feachem, “Shrinking the Malaria Map: Progress and Prospects,” *The Lancet*, October 29, 2010.

Figure 5. Phases of Malaria Control Efforts, 2008



Source: WHO, *World Malaria Report*, 2009, p. 46

Key Cross-Cutting Issues

Along with the challenges specific to HIV/AIDS, TB, and malaria, a number of issues extend to all three diseases. This section looks at the following issues as they relate to all three of the diseases:

- health systems strengthening, including health worker shortages;
- country ownership;
- research and development;
- monitoring and evaluation; and
- bilateral versus multilateral support.

Health Systems Strengthening (HSS)

In recent years, weak health systems, including limited availability of health facilities, equipment, laboratories, and personnel, have been a critical obstacle to scaling up HIV/AIDS, TB, and malaria interventions. For example, shortages of ART have been reported in a number of African countries due to inadequate forecasting and information sharing systems.⁴⁶ Also, by 2009, only a handful of the 22 high-burden TB countries had met the WHO recommendation of having at least one laboratory per five million people capable of culturing samples, the most definitive method for detecting TB.⁴⁷ USAID documents also cite inadequate clinical management and unavailability of drugs as common causes of fatality among hospitalized malaria patients.⁴⁸ These concerns have led many in the global health community to assert that health systems strengthening (HSS) must be considered an essential ingredient of a long-term approach to HIV/AIDS, TB, and malaria. HSS is one of the GHI target areas and has been integrated as a key goal in the U.S. HIV/AIDS, TB, and malaria strategies (**Appendix B**). At the same time, there is a lack of clarity over what HSS means and how it can be put into practice.

While there is widespread recognition of the need for stronger health systems, no international consensus exists on the operational definition of HSS. The clearest direction comes from WHO, which maintains that six “building blocks” are critical for a health system: service delivery, health workforce, health information systems, access to essential medicines, financing, and leadership/governance.⁴⁹ The GHI consultation document cites the following goals in the U.S. approach to HSS:

- Improve financial strategies that reduce financial barriers to health care (for example, increase government and/or private sector funding for health services);

⁴⁶ IOM, *Preparing for the Future of HIV/AIDS in Africa: A Shared Responsibility*.

⁴⁷ IOM, *Addressing the Threat of Drug-Resistant Tuberculosis: A Realistic Assessment of the Challenge*, Forum on Drug Discovery, Development, and Translation, Workshop Summary, 2009.

⁴⁸ USAID, *Global Health Initiative and the President’s Malaria Initiative: Build sustainability through health systems strengthening*, 2009, <http://www.fightingmalaria.gov/about/ghi/build.html>.

⁴⁹ WHO, *Health Systems Topics*, <http://www.who.int/healthsystems/topics/en/>.

- Decrease disparities in health outcomes by providing essential health services, such as skilled birth attendance and voluntary family planning;
- Increase the number of trained health workers and community workers and ensure their appropriate use throughout the country; and
- Improve the health management, information, and pharmaceutical systems to reduce stock-outs.⁵⁰

Despite identifying these components for HSS, the Administration has not yet identified specific indicators for meeting these goals and HSS is the only GHI focus area without benchmarks. Further, the GHI consultation document states that specific HSS targets will vary according to country-specific needs, demographics, epidemiology, and structural conditions (such as the socioeconomic and political environment). GHI agencies including the Department of State, USAID, and CDC are working on producing indicators for HSS; however, as of February 2011 these have not been released. While some applaud the plan to align HSS activities with individual country needs, others argue that in the absence of more precise targets and ways to measure impact, the concept of HSS has the potential to be more rhetoric than reality.⁵¹

PEPFAR, PMI, and USAID TB programs have been integrated into national health systems to varying degrees. Since its establishment, PEPFAR has been progressively integrated into national health systems, but it has also supported the establishment of many stand-alone systems and has funded a number of activities through international nongovernmental organizations (NGOs), rather than local networks (including government, private, faith-based, and NGO groups). For example, PEPFAR has supported country health information systems for some of its programs, but has also set up some of its own information systems to collect data. Similarly, while PEPFAR has used some national distribution systems for AIDS treatment, it has also financed its own supply chain systems to procure antiretrovirals in a number of countries.⁵²

Given that PMI was established after PEPFAR, it was able to learn a number of lessons from PEPFAR's first few years in operation, including its relationship to the broad functioning of national health systems. As a result, PMI activities have historically been better integrated than PEPFAR into established clinics and laboratories. PMI services have also been frequently combined with other maternal and child health care services. Like PMI, USAID's TB programs have largely been integrated into general health services. USAID's TB programs are often implemented by local groups and USAID works closely with WHO TB initiatives to support the implementation of WHO's strategy for detection and treatment of TB known as "directly observed treatment, short-course for TB" (or DOTS), which emphasizes involvement of national governments in TB control.

Over the past several years, debate about the impact of single disease initiatives on health systems has intensified. Some have argued that U.S. single disease initiatives, particularly PEPFAR, have had a detrimental impact on national health systems. For example, some critics argue that such initiatives have led to duplicative planning, operations, and monitoring systems that have often

⁵⁰ *Implementation of the Global Health Initiative*, USAID, p. 13.

⁵¹ Bruno Marchal, Anna Cavalli, and Guy Kegels, "Global Health Actors Claim To Support Health System Strengthening—Is This Reality or Rhetoric?," *PLoS Med*, vol. 6, no. 4 (2009).

⁵² Nandini Oomman, Michael Bernstein, and Steven Rosenzweig, *Seizing the Opportunity on AIDS and Health Systems*, Center for Global Development, August 4, 2008, <http://www.cgdev.org/content/publications/detail/16459/>.

bypassed existing public institutions, doing little to strengthen country capacity.⁵³ Likewise, some maintain that single disease programs have usurped resources and personnel out of general health services, leading to reduced care in other health areas.⁵⁴ On the other hand, some argue that single disease initiatives have had a positive impact on broader systems. Advocates point to the role of HIV/AIDS, TB, and malaria funding in increased training of health care workers and improvements in health supply chain mechanisms, equipment, information systems, and health facilities.⁵⁵ Some experts further argue that the implied dichotomy between single disease programs and systems strengthening is a false one, and that support for one should not preclude support for the other.⁵⁶

Health Worker Shortages

A particular challenge for health systems strengthening (HSS) is the shortage of health care workers in countries confronting HIV/AIDS, TB, and malaria. According to WHO, only five out of the 49 low-income countries meet its minimum recommendation of 2.3 doctors, nurses, and midwives per 1,000 people.⁵⁷ Sub-Saharan Africa, home to the majority of HIV/AIDS, malaria, and HIV/TB co-infection cases, boasts only 1.3% of the world's health workforce.⁵⁸ Shortage of health workers limits the number of HIV/AIDS, TB, and malaria patients that can receive testing, counseling, treatment, and care. Health worker shortages lessen the likelihood of proper diagnosis and supervision once a patient is receiving medication, increasing the potential for poor adherence and eventual drug resistance. The reasons for the limited workforce are myriad, but experts point to factors such as "brain drain"; chronic underinvestment in health workforces, including frozen recruitment and salaries; and work environments with few supplies and limited support.⁵⁹ Resource-poor countries with the highest disease burdens also suffer from widespread lack of educational and training opportunities.

In light of these challenges, U.S. HIV/AIDS, TB, and malaria programs have supported a range of efforts to build health worker capacity. Between FY2004 and FY2009, PEPFAR supported 5.2 million training and retraining encounters for health care workers.⁶⁰ These efforts have largely addressed health worker shortages through HIV/AIDS-specific training for existing health workers and "task-shifting" through which less technical tasks are transferred to others, including community health workers. In FY2009, USAID-funded programs provided training to an

⁵³ Roger England, "The Dangers of Disease Specific Aid Programmes," *British Medical Journal*, vol. 335, no. 565 (2007).

⁵⁴ Bunnan Men et al., "Key Issues Relating to Decentralisation at the Provincial Level of Health Management in Cambodia," *International Journal of Health Planning and Management*, vol. 20, no. 1 (January-March 2005), pp. 3-19.

⁵⁵ Jessica E. Price et al., "Integrating HIV Clinical Services into Primary Health Care in Rwanda: a Measure of Quantitative Effects," *AIDS Care*, vol. 21, no. 5 (2009), p. 608-614, and David Walton et al., "Integrated HIV Prevention and Care Strengthens Primary Health Care: Lessons from Rural Haiti," *Journal of Public Health Policy*, vol. 25, no. 2 (2004), pp. 137-158.

⁵⁶ Marco Vitoria, Reuben Granich, and Charles Gilks, et al., "The Global Fight Against HIV/AIDS, Tuberculosis, and Malaria: Current Status and Future Perspectives," *American Society for Clinical Pathology*, vol. 131 (2009), pp. 844-848.

⁵⁷ WHO web page on health workforces, *Achieving the Health Related MDGs: It Takes A Workforce!*, http://www.who.int/hrh/workforce_mdgs/en/index.html.

⁵⁸ Institute of Medicine, *Preparing for the Future of HIV/AIDS in Africa: A Shared Responsibility*.

⁵⁹ Ibid.

⁶⁰ OGAC, *Celebrating Life: The U.S. President's Emergency Plan for AIDS Relief, Fifth Annual Report to Congress*, 2009, p. 25.

estimated 63,000 health care workers in DOTS and other TB interventions.⁶¹ These efforts have included pre-service and in-service training on TB to health care professionals and training of community health workers. According to the U.S. TB Strategy, support is provided to health-related academic institutions in partner countries to ensure that TB is a standard component of health worker curriculum. Also in FY2009, PMI reported the training of 41,273 health workers on ACTs, 2,800 on malaria laboratory diagnosis, and 14,000 on prevention and treatment of malaria in pregnant women.⁶² PMI programs sponsor malaria-specific trainings for health workers, particularly those working in maternal and child health, and for community health workers.

As with the general question of health systems strengthening, there has been debate over the impact of single disease initiatives, particularly PEPFAR, on the health workforce capacity. Critics argue that PEPFAR's role in workforce development has primarily benefited HIV/AIDS programs, with little impact on broader health systems. Moreover, observers maintain that in some countries compensation to health workers through PEPFAR programs has drawn staff away from other public health needs.⁶³ Several experts also assert that the short-term contractual agreements that PEPFAR programs often used to hire health workers can cause disruptions in treatment and care. Finally some argue that the use of short-term contacts and "task-shifting" do not address the underlying constraints on creating a stable workforce.

In response to concerns about health worker shortages, the Lantos-Hyde Act recommends that PEPFAR support the training and retention of more than 140,000 new health workers by 2013. The act also specifies that these health workers should be trained to deliver primary health care rather than HIV/AIDS-specific skills. The GHI consultation document includes the goal of training 140,000 new workers through HIV/AIDS programs, but extends the time period to 2014. To meet this goal, PEPFAR launched the Medical Education Partnership Initiative (MEPI) and the Nursing Education Partnership Initiative (NEPI), which provides support through grants to foreign institutions in African countries to expand or enhance models of medical education.

Advocates applaud the new attention to health workers, although many argue that the United States should adopt a much higher goal for training new health workers if it is to adequately confront shortages. Some also argue that while the Lantos-Hyde goal of training new workers was directed specifically to PEPFAR programs, increased efforts by malaria and TB programs are also necessary, with the ultimate goal to train workers in broad-based primary health care skills. To this end, some experts argue that the United States should employ performance incentives for a variety of health service responsibilities, rather than just disease-specific ones. Some experts also urge the United States to increase steps to reduce the attrition and migration of health workers from resource-poor countries, such as through health workforce strategic planning, health workforce needs analysis, increases in health worker remuneration, and improvement to workplace policies.⁶⁴

⁶¹ USAID, *Building Partnerships to Control Tuberculosis, Fiscal Year 2009 Report to Congress*, October 2010, pdf.usaid.gov/pdf_docs/PDACQ888.pdf.

⁶² PMI, *Sustaining Momentum Against Malaria: Saving Lives in Africa, Fourth Annual Report*, April 2010, http://pmi.gov/resources/reports/pmi_annual_execsum10.pdf.

⁶³ Oomman, Bernstein, and Rozenzweig, *Seizing the Opportunity on AIDS and Health Systems*, p. 6.

⁶⁴ Paula O'Brien and Lawrence O. Gostin, "Health Worker Shortages and Inequalities: The Reform of United States Policy," *Global Health Governance*, vol. 2, no. 2 (Spring 2009).

Country Ownership

In recent years, the international community, including the United States, has placed growing emphasis on “country ownership” of HIV/AIDS, TB, and malaria programs. Country ownership refers to strengthening the capacity of recipient governments and local civil society to develop and manage their own health programs, including the ability to develop health plans, forecast monetary and infrastructural needs, and ensure financial support of programs. Congress has demonstrated its support for country ownership through several mechanisms, including the Lantos-Hyde Act, which called on the Administration to better harmonize U.S. HIV/AIDS, TB, and malaria efforts with the national health strategies of recipient countries. The Administration also includes country ownership among its seven GHI goals. Despite this, a number of concerns have been raised over the feasibility of this goal, including whether countries will be willing and able to progressively “own” U.S.-supported HIV/AIDS, TB, and malaria programs.

The Lantos-Hyde Act authorized PEPFAR programs to develop strategic agreements with national governments to promote host government commitment to and ownership of HIV/AIDS programs. Since enactment, PEPFAR has implemented “Partnership Frameworks” with a number of countries. Partnership Frameworks are nonbinding five-year joint strategic planning documents that outline the goals, objectives, and commitments of the U.S. and recipient government. Over the five years, the United States is expected to shift increasing portions of aid from direct service provision to technical assistance, with the goal of the recipient government assuming primary responsibility for the management and funding of the programs to the fullest extent possible. Since 2009, the United States has signed 21 PEPFAR partnership framework agreements.

Unlike PEPFAR, PMI and USAID TB programs do not include a formal process of establishing agreements with recipient countries. Nevertheless, U.S. malaria and TB efforts have historically been better aligned with recipient country national plans than PEPFAR. According to PMI documents, malaria needs assessments and planning visits are carried out in conjunction with National Malaria Control Programs (NMCPs). Annual PMI Malaria Operational Plans directly support national malaria control strategies and PMI program targets are typically aligned with those of the host country. Likewise, U.S. TB support is generally provided to fill financing gaps identified in recipient country National Tuberculosis Plans (NTPs).

There is widespread support within the international community for countries assuming greater control over efforts to fight the three diseases. At the same time, a number of questions about the realization of this goal remain, particularly in relationship to HIV/AIDS. Some experts question whether recipient countries are in fact ready and willing to assume greater responsibility when few African countries spend 15% of their national budgets on health care, as they committed to do at the 2001 Abuja Summit.⁶⁵ Alternatively, some analysts doubt Congress will prefer to have recipient countries manage the substantial resources aimed at addressing these diseases, given the possibility that funds may not be spent as efficiently or effectively as possible, along with the potential for misuse of funds by government officials. The legally nonbinding nature of Partnership Frameworks has also led some to question how effective they are in practice.

⁶⁵ In April 2001, African Union (AU) Heads of States met in Abuja, Nigeria, for the “African Summit on HIV/AIDS, Tuberculosis, and Other Related Infectious Diseases.” At the summit, African leaders signed the “Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases,” pledging to allocate at least 15% of their annual government budgets to their health sectors. This pledge was reiterated in May 2006 at a “Special Summit of the African Union on HIV and AIDS, Tuberculosis and Malaria,” in Abuja, Nigeria.

A September 2010 Institute of Medicine (IOM) report focused on PEPFAR's country ownership efforts and found that activities were generally aligned with national HIV/AIDS strategies and helped to achieve national goals; however, the study raised a number of operational challenges to effective in-country management and control of global health programs.⁶⁶ Challenges included:

- Weak in-country capacity, including in technical expertise;
- Significant U.S. funding for HIV/AIDS, TB, and malaria programs for international contractors and private organizations rather than recipient governments;
- Indicators used by the United States to evaluate HIV/AIDS, TB, and malaria program performance often differed from those used by host countries; and
- Limitations in PEPFAR's willingness to share information about its programs and funding with recipient governments.

Research and Development (R&D)

Research and development (R&D) of diagnostic, preventative, and treatment tools is a key component of any long-term response to HIV/AIDS, TB, and malaria. Currently, these diseases are the top three targets of funding for global health R&D and, together, account for close to three-quarters of all investments in global health R&D. In 2008, of all global funds spent on global health R&D, 34.9% went to HIV/AIDS, 15.1% to TB, and 18.3% to malaria. (Table 2).⁶⁷ The United States is the largest government donor for these efforts. Within the U.S. government, NIH leads a range of basic and clinical research activities on global HIV/AIDS, TB, and malaria, while CDC, USAID, and DOD each conduct field research related to these diseases. As the United States reforms its HIV/AIDS, TB, and malaria programs to better support sustainable approaches to health, spending levels for R&D and the areas of R&D priority are up for debate.

Table 2. HIV/AIDS, TB, and Malaria Research and Development Funding, FY2008
(current U.S. \$ millions)

Disease	Total Global Funding	% of all R&D Investments	U.S. Funding ^a	U.S. Funding as % of Global Funding
HIV/AIDS	1,164.9	39.4%	736.1	63.2%
Tuberculosis	541.7	15.1%	128.2	28.2%
Malaria	445.9	18.3%	143.5	26.2%
All Diseases	2,956.0	n/a	1,258.3	42.6%

Source: The George Institute for International Health, *Neglected Disease Research & Development: New Times, New Trends*, December 2009.

a. This includes funding from NIH, USAID, CDC, and DOD.

⁶⁶ U.S. Government Accountability Office (GAO), President's Emergency Plan for AIDS Relief: Efforts to Align Programs with Partner Countries' HIV/AIDS Strategies and Promote Partner Country Ownership, 10-836, September 2010, <http://www.gao.gov/new.items/d10836.pdf>.

⁶⁷ The George Institute for International Health, *Neglected Disease Research & Development: New Times, New Trends*, December 2009, http://www.ghtcoalition.org/files/gfinder_dec2009.pdf.

Existing R&D investments in HIV/AIDS, TB, and malaria have led to some progress in the tools available to combat the three diseases, such as the development of simpler HIV/AIDS drug regimens and long-lasting insecticide-treated bed nets (LLINs) for malaria control. There have also been several important recent R&D accomplishments. Results from a 2010 study in South Africa, funded in part by the United States, showed that a microbicide gel was 39% effective in reducing a woman's risk of contracting HIV during sex.⁶⁸ Also a 2010 trial demonstrated that HIV treatment used as prophylaxis reduced the risk of HIV infection by 44% in men who have sex with men.⁶⁹ In December 2010, WHO endorsed the rollout of a new rapid diagnostic test for TB and MDR-TB, funded in part by NIH. The test provides a diagnosis within 100 minutes, while existing tests can take as much as three months to produce results.⁷⁰ Finally, while no vaccine for malaria exists, research has been promising. There are currently over a dozen vaccine candidates in clinical development and one, produced by GlaxoSmithKline, is in clinical trial. If these are successful, the vaccine could be available as early as 2014.⁷¹

In many cases; however, the impact of these advances have been compromised by outdated or inadequate technologies. Despite progress made in AIDS treatment, even the most recent forms of ART include potentially severe side effects and many of the newer drugs, particularly second- and third-line therapies, are prohibitively expensive for many developing countries. Likewise, available HIV/AIDS treatment requires increased nutritional intake, which is often challenging for poor individuals and families. Many of the current TB diagnosis and treatment tools were developed decades ago and have had uneven success. The most common method of TB diagnosis, sputum smear microscopy, is labor intensive and does not consistently detect TB. Also, current treatment regimens require people with active TB to take medicines for a period lasting six to twelve months and to be monitored during their entire treatment cycle. The emergence of drug-resistant forms of TB and malaria highlight the need for even more advanced diagnostic and treatment tools, appropriate for resource-poor environments. Treatment of MDR- and XDR-TB is considerably more expensive than basic TB treatment and can take up to two years, including significant time spent in a hospital with special facilities. Growing malaria drug and insecticide resistance threaten the success of the most effective available methods to control the disease.

Many health experts believe that U.S. funding for HIV/AIDS, TB, and malaria research and development lags behind what is needed. In particular, experts point to the need for increased R&D related to basic TB diagnostics and treatment, new drugs to tackle TB and malaria drug resistance, and an AIDS vaccine. Some argue that the long-term nature of R&D complicates efforts to raise financial support for the work, and the low incomes in the most affected countries provide little incentive for private companies to invest in expensive research. In recent years, the international community has taken some innovative steps to address this challenge. For example, in the absence of viable commercial markets for some health technologies for developing countries, a number of new nonprofit ventures, known as Product Development Partnerships (PDPs), have begun to support research and the development of drugs, vaccines, microbicides,

⁶⁸ Quarraisha Abdool Karim, Salim S. Abdool Karim, and Janet A. Frochlich, "Effectiveness and Safety of Tenofovir Gel, an Antiretroviral Microbicide, for the Prevention of HIV Infection in Women," *Science*, vol. 329, no. 5996 (September 3, 2010), pp. 1168-1174.

⁶⁹ Robert M. Grant et al., "Preexposure Chemoprophylaxis for HIV Prevention in Men Who Have Sex With Men," *New England Journal of Medicine*, November 23, 2010.

⁷⁰ WHO, *WHO Endorses New Rapid Tuberculosis Test*, New Release, December 8, 2010, http://www.who.int/mediacentre/news/releases/2010/tb_test_20101208/en/.

⁷¹ Rebecca Voelker, "As Trials Advance for a Malaria Vaccine, Policy Makers Urged to Plan for Its Use," *JAMA*, vol. 304, no. 21 (2010), p. 2348.

and diagnostics. PDPs working on HIV/AIDS, TB, and malaria includes groups like the International AIDS Vaccine Initiative, the TB Alliance, and the Medicines for Malaria Venture. Similarly, in 2008, WHO supported the establishment of the African Network for Drugs and Diagnostics Innovation (ANDI), an initiative that aims to build Africa-based research capacity to respond to diseases on the continent. The United States is one of the largest public financiers for these efforts, but many experts advocate increased support of innovative approaches to R&D.

Many also argue that the United States should significantly increase its support for what is known as operations, or implementation, research. Operations research is the study of how technology is used in the field, and aims to identify factors that affect service delivery and impact implementation or scale-up of interventions. Advocates applaud the support for operational research in the GHI consultation document and argue that it should be seen as necessary for improving prevention and treatment outcomes and for addressing strategies in support of more sustainable HIV/AIDS, TB, and malaria programs.⁷²

Monitoring and Evaluation (M&E)

In recent years calls have increased within the global health community for more monitoring and evaluation (M&E) to track health activities, determine progress in meeting targets, and evaluate the activities' impact on health outcomes. M&E is a key component of the GHI and is emphasized in the United States' HIV, TB, and malaria strategies (**Appendix B**). The United States has recognized the need to make its HIV/AIDS, TB, and malaria programs increasingly results-based, yet these efforts remain nascent and experts have expressed a number of concerns over how to meet these goals for each of the diseases.

While a systematic, quantitative evaluation of PEPFAR's impact has not yet been published, the Lantos-Hyde Act mandated a comprehensive assessment of U.S. HIV/AIDS programs and their impact on health, to be submitted to Congress in 2012. Thus far, Congress has required several targeted evaluations from GAO and IOM. Most recently, in 2007, IOM conducted a short-term evaluation of PEPFAR, focusing largely on its ability to meet its outlined targets for delivery of prevention, treatment and care services in its focus countries.⁷³ GAO also released a report in September 2010 analyzing efforts to align PEPFAR programs with partner countries' HIV/AIDS strategies.⁷⁴ Neither the IOM nor the GAO evaluation included assessments of PEPFAR programs in relation to long-term health-related outcomes such as HIV incidence, prevalence, or mortality.⁷⁵ Congress has not mandated a systematic review of either PMI or USAID TB programs beyond annual reports that include progress on meeting predetermined targets. The U.S. malaria strategy indicates that a large external evaluation will be conducted and published in 2015 that assesses progress on all U.S. malaria activities undertaken through 2014.

The United States is taking steps to strengthen its ability to effectively monitor and evaluate its HIV/AIDS, TB, and malaria programs. In support of better M&E, PEPFAR has expanded its

⁷² *Implementation of the Global Health Initiative*, Consultation Document, USAID, p. 8.

⁷³ Institute of Medicine, *PEPFAR Implementation: Progress and Promise*, March 30, 2007, <http://www.iom.edu/Reports/2007/PEPFAR-Implementation-Progress-and-Promise.aspx>.

⁷⁴ GAO, President's Emergency Plan for AIDS Relief: Efforts to Align Programs with Partner Countries' HIV/AIDS Strategies and Promote Partner Country Ownership.

⁷⁵ Eran Bendavid and Jayanta Bhattacharya, "PEPFAR in Africa: An Evaluation of Outcomes," *Annals of Internal Medicine* (April 6, 2009), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2892894/>.

tracking of outcomes and impacts of its programs in the short- and long-term. In 2009, PEPFAR released its “Next Generation Indicators” (NGI), providing new indicators to track the impact of PEPFAR activities. Through this effort, PEPFAR has attempted to better align its indicators with those already used by many host nations and other international donors and to minimize PEPFAR-specific reporting, allowing country teams more flexibility to design M&E plans in line with national governments. NGI also includes new indicators related to program and population coverage as well as program quality. This marks a shift from past practices, in which M&E focused largely on program outputs, such as number of individuals on treatment.

The President’s Malaria Initiative states that it is working closely with the Roll Back Malaria Monitoring and the Evaluation Reference Group to standardize data collection and use internationally accepted indicators of progress, and will assist recipient governments in conducting nationwide household surveys to measure changes in child mortality and malaria prevalence. Likewise, in support of TB-related M&E, USAID works with the WHO Global TB Monitoring and Surveillance project, the WHO body charged with leading TB M&E activities, to standardize TB control indicators. USAID TB programs also include efforts to bolster national M&E systems to track TB infection and mortality rates as a key component of DOTS.

Despite these steps to strengthen U.S. capacity for M&E activities, a number of challenges remain. M&E requires collection of a variety of data from multiple sources, including household surveys, birth and death registration, census, and national surveillance systems. Resource-poor countries often have limited ability to produce data that is timely, standardized, and of a high enough quality to use for routine tracking and assessment of health programs. Malaria M&E efforts are particularly challenged because many resource-poor countries have weak health information systems necessary to track childhood health and many people infected with malaria, especially children, do not seek treatment in official health facilities. Similarly, gaps in TB coverage, treatment, and case detection impede effective and comprehensive M&E. Drug-resistant forms of TB pose new challenges to M&E efforts, as many resource-poor countries do not have the capacity to test for second-line drug resistance. Efforts to monitor and evaluate HIV/TB co-infection rates and activities are also precluded by limited information sharing between distinct TB and HIV programs.

U.S. M&E efforts are also challenged by the interaction in the field between U.S. global health programs and those of other donors, including the Global Fund and a range of private and NGO actors, which make it difficult to evaluate the outcomes of any one program. Finally, given the number of factors that influence the functioning and capacity of health systems and national governments, effective ways to measure the progress and impact of activities related to issues such as health systems strengthening and country ownership remain contentious. Indeed, PEPFAR has yet to develop specific indicators for measuring the effectiveness of activities related to HSS, country ownership, and HIV prevention.

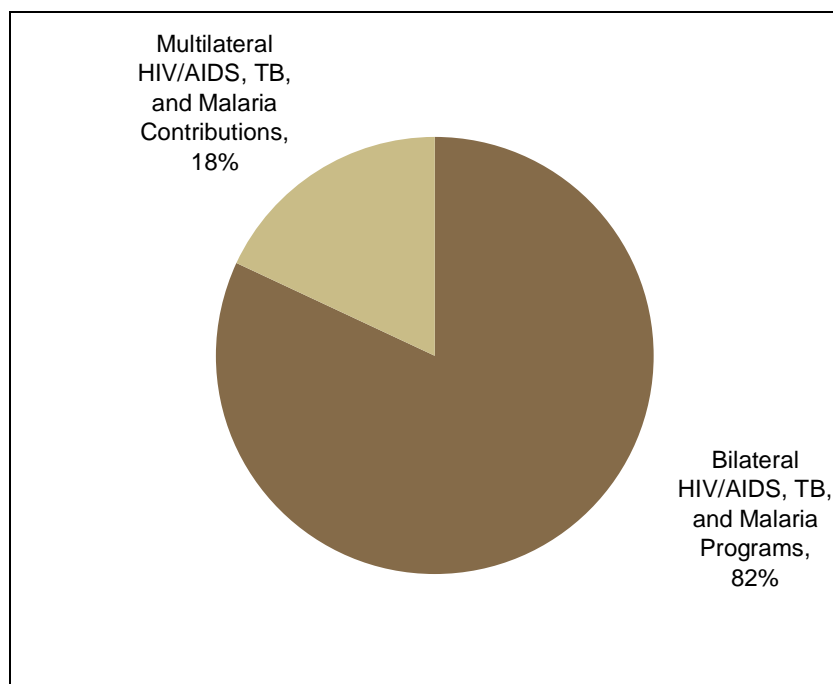
Many have called for the United States to mandate regular and comprehensive M&E of its HIV/AIDS, TB, and malaria programs and increase support for in-country capacity to collect and assess health data. Some have also called on the United States to improve its data transparency and its dissemination of results to international and local partners. Experts have encouraged the alignment of health indicators used by the United States (through programs like PEPFAR and PMI) and those used by multilateral organizations and national governments. Some also urge the United States to support the use of national information systems for M&E as a way to strengthen these systems and increase country ownership of M&E. At the same time, other observers caution

that additional measurement and reporting requirements have the potential to overburden already strained countries and programs and may reduce the time and money available for programs.

Bilateral vs. Multilateral Support

The United States supports global HIV/AIDS, TB, and malaria efforts through bilateral programs as well as partnerships with and contributions to multilateral organizations. Over the last decade, Members of Congress have debated the appropriate balance between funding bilateral and multilateral aid. This debate frequently focuses on the extent to which the United States should support the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), a multilateral public-private partnership established in 2002 to provide financial support for global responses to the three diseases.⁷⁶ The Global Fund estimates that through 2009 it has provided approximately 20% of all funding for global HIV/AIDS, 63% of all funding for global TB, and 57% of all funding for global malaria.⁷⁷ Donors to the Global Fund include a number of governments as well as private and multilateral organizations. The United States is the single largest donor to the Global Fund, though U.S. bilateral spending on HIV/AIDS, TB, and malaria far outweighs contributions to the Global Fund and other multilateral groups (**Figure 6**).

Figure 6. U.S. Bilateral and Multilateral HIV/AIDS, TB, and Malaria Funding, FY2012



Source: Compiled by CRS from appropriations legislation and congressional budget justifications.

⁷⁶ For more information on the Global Fund, see CRS Report R41363, *The Global Fund to Fight AIDS, Tuberculosis, and Malaria: U.S. Contributions and Issues for Congress*, by Tiaji Salaam-Blyther.

⁷⁷ The Global Fund to Fight AIDS, Tuberculosis, and Malaria, *The Global Fund 2010 Innovation and Impact*, March 2010, http://www.theglobalfund.org/documents/replenishment/2010/Global_Fund_2010_Innovation_and_Impact_en.pdf.

Notes: Multilateral Contributions include funding for the Global Fund, the International AIDS Vaccine Initiative (IAVI), UNAIDS, international microbicide research, and the Global TB Drug Facility. Contributions to the Global Fund make up the vast majority of investments in multilateral efforts. The United States also contributes to a range of other multilateral global health organizations, such as WHO, UNICEF, and the Global Alliance for Vaccines and Immunizations (GAVI), through non-HIV/AIDS, TB, or malaria specific appropriations.

The Obama Administration has indicated support for increased engagement with multilateral organizations, including the Global Fund. In October 2010, the President pledged \$4 billion to the Global Fund over the course of three fiscal years—the first multi-year pledge to the Global Fund from the United States. The President’s FY2012 budget requested \$1.3 billion in funding for the Global Fund, an increase over both FY2010 and FY2011 levels. The Administration has also emphasized nonfinancial ways in which the United States can support multilateral organizations, including better coordination in-country with multilateral organizations, increased technical assistance to multilaterally funded field programs, and demonstrated leadership in shaping the policies of multilateral organizations (for instance, as a member of the Global Fund Board).

A number of experts contend that the U.S. fight against the three diseases would be better waged through increased support to multilateral organizations. Specifically, advocates argue that multilaterals cede greater control of the programs to recipient countries, which supports the goal of country ownership. Some also argue that multilateral programs have more flexibility than bilateral programs, allowing them to better respond to locally defined needs. Likewise, some assert that funds are more effectively spent through multilateral mechanisms because donors can pool their resources and achieve economy of scale. Also, multilateral groups are capable of extending multi-year support. Some argue that this is particularly useful when addressing diseases that require long-term funding, like HIV/AIDS. Finally, some contend that U.S. engagement in multilateral organizations offers the United States opportunities to demonstrate its leadership in global health and encourage other countries to share in the global fight against the three diseases.

Advocates of limited support for multilateral organizations argue that bilateral assistance increases the United States’ ability to target health assistance to specific countries and determine funding priorities. In addition, others assert that bilateral assistance allows for better oversight of the use of funds by recipient governments and organizations. Some experts also contend that bilateral assistance is easier to track and measure than multilateral assistance, allowing for more effective monitoring and evaluation. Ongoing concerns about the capacity of multilateral groups like the Global Fund to detect and respond to corrupt practices propel this debate.

Looking Forward

The 112th Congress will likely exercise oversight of and debate the appropriate funding amounts for global HIV/AIDS, TB, and malaria programs and priority areas within these programs. Discussions may focus on a number of critical disease-specific and cross-cutting issues, measurement of the effectiveness of the U.S. response, and tradeoffs the United States might consider as it sets priorities. As Congress reflects on these challenges, several overarching issues may also be considered:

- **Ways to assess impact and efficiency of global HIV/AIDS, TB, and malaria programs:** As Congress debates funding the fight against these three diseases, it will likely consider which methods to use in determining the distribution of finite resources. The United States might face decisions over whether it should invest in the lowest-cost interventions, such as anti-malaria bednets, versus the higher-

cost interventions that high-burden countries may be unable to afford, such as AIDS treatment. Similarly, the United States might consider whether it should support programs tackling the high-mortality issues, such as drug-resistant TB, or the more widespread and commonplace issues, such as malaria infection. The United States may also consider how it should balance its funding between high-impact activities, such as treatment programs, with dramatic results and areas like prevention and health systems strengthening, which may yield few immediate results but which could result in significant long-term progress.

- **Role of the United States in the global fight against HIV/AIDS, TB, and malaria:** The United States is a central leader in combating HIV/AIDS, TB, and malaria. Some Members of Congress have targeted global health funding for cuts as a way to reduce the U.S. deficit. Many supporters of these cuts have argued that the United States has played an overly generous role in combating issues like global HIV/AIDS, TB, and malaria, especially since these investments do not necessarily have direct implications for the wellbeing of U.S. citizens.

Alternatively, many supporters argue that U.S. leadership in the fight against these diseases remains critical. Many of these advocates assert that given the prominence of the United States, any U.S. divestment could have significant negative consequences for some of the most vulnerable people in resource-poor countries. Some also point out that while the United States has been a key donor for HIV/AIDS, TB, and malaria, several European countries give more for these diseases as a share of their country's GDP.

Many advocates and critics of expanding U.S. global health assistance call for other countries, including a number of European countries, as well as emerging economies like China, India, Brazil, and Saudi Arabia, to begin playing a larger role in combating global HIV/AIDS, TB, and malaria. Advocates argue that increased efforts among other donors could help achieve the United Nations (U.N.) Millennium Development (MDG) goal "to combat HIV/AIDS, malaria, and other diseases," a goal which to which all U.N. member states have committed.⁷⁸ At the same time, there is disagreement over whether continued U.S. leadership is necessary for motivating this kind of engagement.

- **HIV/AIDS, TB, and malaria assistance, economic development, and security:** Congressional consideration of U.S. HIV/AIDS, TB, and malaria programs may be affected by debate over their role in the broader U.S. foreign policy agenda. HIV/AIDS, TB, and malaria have undeniable humanitarian consequences. At the same time, many argue that these diseases also have important implications for economic development and security. Development experts argue that disease can threaten political and economic stability in fragile areas of the world, undermining U.S. interests abroad. Health experts believe that U.S. citizens are threatened by the spread of the infectious diseases across borders. Furthermore, foreign policy experts contend that global health efforts like PEPFAR have become critical diplomatic tools (often referred to as medical diplomacy) and have bolstered the image of the United States abroad, especially in sub-Saharan Africa. Alternatively, others caution against overly emphasizing

⁷⁸ For more information on the Millennium Development Goals see the United Nations Millennium Development Goals website at <http://www.un.org/millenniumgoals/aids.shtml>.

the security and diplomatic implications of HIV/AIDS, TB, and malaria, and warn that doing so could lead to allocation of funding according to U.S. interests rather than human need.

Appendix A. Acronyms and Abbreviations

ACT	Artemisinin-Combination Therapy
AIDS	Acquired Immunodeficiency Syndrome
ART	Anti-Retroviral Therapy
CDC	Centers for Disease Control and Prevention
DOD	Department of Defense
DOTS	Directly Observed Treatment Short Course
FDC	Fixed Dose Combination
FP	Family Planning
GAO	Government Accountability Office
GHI	Global Health Initiative
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HHS	U.S. Department of Health and Human Services
HIV	Human Immunodeficiency Virus
HSS	Health Systems Strengthening
IOM	Institute of Medicine
IPT	Isoniazid Preventive Therapy
IPTp	Intermittent Preventive Treatment of Malaria During Pregnancy
ITNs	Insecticide-Treated Bednets
IRS	Indoor Residual Spraying
Lantos-Hyde Act	Tom Lantos and Henry Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (P.L. 110-293)
Leadership Act	U.S. Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act of 2003 (P.L. 108-25)
LIFE Initiative	Leadership and Investment in Fighting an Epidemic Initiative
LLINs	Long-Lasting Insecticidal Nets
M&E	Monitoring and Evaluation
MDR-TB	Multidrug-resistant Tuberculosis
MEPI	Medical Education Partnership Initiative
MNCH	Maternal, Newborn, and Child health
MSM	Men who Have Sex with Men
NEPI	Nursing Education Partnership Initiative
NIH	National Institutes of Health
NMCP	National Malaria Control Program
NTD	Neglected Tropical Disease
NTP	National Tuberculosis Plan
OGAC	Office of the Global AIDS Coordinator, Department of State
PEPFAR	President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative

PMTCT	Prevention of Mother-to-Child Transmission
R&D	Research and Development
RH	Reproductive Health
TB	Tuberculosis
U.N.	United Nations
UNAIDS	Joint United Nations Program on HIV/AIDS
USAID	U.S. Agency for International Development
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant Tuberculosis

Appendix B. HIV/AIDS, TB, and Malaria GHI Goals

PEPFAR Strategy Targets

GHI set a number of goals to be reached from FY2010 through FY2014. GHI goals and projected targets for PEPFAR are:⁷⁹

- provide direct support for more than four million people on treatment;
- support the prevention of more than 12 million new HIV infections;
- ensure that every partner country with a generalized HIV epidemic has both 80% coverage of testing for pregnant women at the national level, and 85% coverage of antiretroviral drug prophylaxis and treatment as indicated, of women found to be HIV-infected;
- double the number of at-risk babies born HIV-free, from a baseline of 240,000 babies of HIV-positive mothers born HIV-negative during the first five years of PEPFAR;
- provide direct support for care for more than 12 million people, including five million orphans and vulnerable children;
- support training and retention of more than 140,000 new health care workers to strengthen health systems; and
- ensure that in each country with major PEPFAR investment, the partner government leads efforts to evaluate and define needs and roles in the national response.

U.S. TB Strategy Targets

GHI goals and projected targets for U.S. TB programs are:⁸⁰

- to contribute to a 50% reduction in TB deaths and disease burden from the 1990 baseline;
- to sustain or exceed the detection of at least 70% of sputum smear-positive cases of TB and successfully treat at least 85% of cases detected in countries with established USG tuberculosis programs;
- to successfully treat 2.6 million new sputum smear-positive TB patients under DOTS programs by 2014, primarily through support for need services, commodities, health workers, and training, and additional treatment through coordinated multilateral efforts; and

⁷⁹ The U.S. President's Emergency Plan for AIDS Relief: Five-Year Strategy, Annex: PEPFAR's Contributions to the Global Health Initiative, Office of the U.S. Global AIDS Coordinator, Department of State, December 2009, <http://www.pepfar.gov/documents/organization/133437.pdf>.

⁸⁰ USAID, et al., *Lantos-Hyde United States Government Tuberculosis Strategy, 2009-2014*, March 24, 2010, http://www.usaid.gov/our_work/global_health/id/tuberculosis/publications/usg-tb_strategy2010.pdf.

- to diagnose and initiate treatment of at least 57,2000 new MDR-TB cases by 2014 and providing additional treatment through coordinated multilateral efforts.

U.S. Malaria Strategy Targets

GHI goals and projected targets for U.S. malaria programs are:⁸¹

- to achieve Africa-wide impact, by halving the burden of malaria (morbidity and mortality) in 70% of at-risk populations in sub-Saharan Africa (approximately 450 million people), thereby removing malaria as a major public health problem and promoting economic growth and development throughout the region;
- to limit the spread of anti-malaria multi-drug resistance in Southeast Asia and the Americas;
- to increase emphasis on strategic integration of malaria prevention and treatment activities with maternal and child health, HIV/AIDS, neglected tropical diseases, and tuberculosis programs, and on multilateral collaboration to achieve internationally accepted goals;
- to intensify present efforts to strengthen health systems and strengthen the capacity of host-country workforces to ensure sustainability;
- to assist host countries to revise and update their National Malaria Control Strategies and Plans to reflect the declining burden of malaria, and link programming of U.S. malaria control resources to those host country strategies; and
- to ensure a woman-centered approach for malaria prevention and treatment activities at both the community and health facility levels, since women are the primary caretakers of young children in most families and are in the best position to help promote health behaviors related to malaria.

⁸¹ USAID, *Lantos-Hyde United States Government Malaria Strategy, 2009-2014*, April 25, 2010, http://www.fightingmalaria.gov/resources/reports/usg_strategy2009-2014.pdf.

Appendix C. HIV/AIDS, TB, and Malaria Funding

Table C-1 presents an overview of U.S. funding for global HIV/AIDS, TB, and malaria efforts. The table does not include global health spending that does not correlate to specific congressional appropriations. For instance, CDC does not receive appropriations for global TB programs specifically, but spends a portion of its overall TB budget on international programs. Along with CDC global TB spending, the table does not include data for NIH and DOD malaria research.

Table C-2 presents the total amounts of U.S. funding for global HIV/AIDS, TB, and malaria efforts in constant dollars.

Table C-1. FY2001-FY2012 Global HIV/AIDS, TB, and Malaria Funding, by Agency and Program
(current U.S. \$ millions)

Agency/Program ^a	FY2001 Actual	FY2002 Actual	FY2003 Actual	FY2004 Actual	FY2005 Actual	FY2006 Actual	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Request	FY2011 Approps. (P.L. 112-10) ^b	FY2012 Request
USAID HIV/AIDS (CSH/GHCS)	305.0	395.0	587.7	513.5	347.2	346.5	325.0	347.2	350.0	350.0	350.0	n/s	350.0
USAID HIV/AIDS Other ^c	13.0	29.0	35.8	42.0	37.5	27.3	20.9	24.8	0.0	0.0	0.0	n/s	0.0
State HIV/AIDS (GHA/GHCS)	n/a	n/a	n/a	488.1	1373.9	1777.1	2869.0	4116.4	4559.0	4609.0	4800.0	4595.0	4641.9
CDC HIV/AIDS	104.5	168.7	182.6	266.9	123.8	122.6	121.0	118.9	118.9	119.0	118.1	n/s	118.0
NIH AIDS Research	160.1	218.2	278.5	317.2	369.5	373.0	361.7	411.7	451.7	485.6	470.6	n/s	489.4
DOL HIV/AIDS	10.0	10.0	9.9	9.9	2.0	0.0	0.0	0.0	0.0	0.0	0.0	n/s	0.0
DOD HIV/AIDS	10.0	14.0	7.0	4.3	7.5	5.2	0.0	8.0	8.0	10.0	n/s	n/s	n/s
FMF HIV/AIDS	0.0	0.0	2.0	1.5	2.0	2.0	1.6	1.0	n/s	n/s	n/s	n/s	n/s
HIV/AIDS Subtotal	602.6	834.9	1103.5	1643.4	2263.4	2653.7	3699.2	5028.0	5487.6	5573.6	5738.7	n/s	5599.3
USAID TB (CSH/GHCS)	50.0	60.0	64.2	74.7	79.4	79.2	80.8	148.0	162.5	225.0	230.0	n/s	236.0
USAID TB Other	12.0	12.0	12.4	10.4	12.6	12.3	14.1	15.2	14.1	18.2	20.6	n/s	18.4
TB Subtotal^d	62.0	72.0	76.6	85.1	92.0	91.5	94.9	163.2	176.6	243.2	250.6	n/s	254.4
USAID Malaria (CSH/GHCS)	55.0	66.0	65.4	79.9	90.8	102.0	248.0	347.2	382.5	585.0	680.0	n/s	691.0
USAID Malaria Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.5	n/s	n/s	n/s	n/s
CDC Malaria	13.0	13.0	12.6	9.2	9.1	9.0	8.9	8.7	9.4	9.4	9.2	n/s	9.2
Malaria Subtotal	68.0	79.0	78.0	89.1	99.9	111.0	256.9	358.3	394.4	594.4	689.2	n/s	700.2
State Global Fund	0.0	0.0	0.0	0.0	0.0	198.0	377.5	545.5	600.0	750.0	700.0	750.5	1000.0
USAID Global Fund	100.0	50.0	248.4	397.6	248.0	247.5	247.5	0.0	100.0	0.0	0.0	0.0	0.0

HHS Global Fund	0.0	125.0	99.0	149.0	99.2	99.0	99.0	294.8	300.0	300.0	300.0	300.0	300.0
Global Fund Subtotal	100.0	175.0	347.4	546.6	347.2	544.5	724.0	840.3	1000.0	1050.0	1000.0	1050.0	1300.0
HIV/AIDS, TB, Malaria Total	832.6	1160.9	1605.5	2364.2	2802.5	3400.7	4775.0	6389.8	7058.6	7461.2	7678.5	n/s	7853.9

Source: Compiled by CRS from appropriations legislation and interviews with U.S. officials.

Note: n/s means not specified. n/a means not applicable.

- Foreign Military Financing (FMF) account; Centers for Disease Control and Prevention (CDC); National Institutes of Health (NIH); Department of Labor (DOL); Department of Defense (DOD); Department of Health and Human Services (HHS), Child Survival and Health (CSH), Global Health and Child Survival (GHCS), Global HIV/AIDS Initiative (GHAI).
- These numbers do not include a 0.2% rescission made to all non-defense discretionary accounts, as stated in the Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10). It is unclear at this time whether the rescission will be applied evenly to all programs or just to account totals. Final figures are pending.
- This includes funding from the Development Assistance Account (DA), the Economic Support Fund Account (ESF), and the Assistance for Europe, Eurasia, and Central Asia Account (AEECA).
- CDC does not receive appropriations for global TB programs specifically. Instead it spends portions of its TB budget on international programs.

Table C-2. FY2001-FY2012 Global HIV/AIDS, TB, and Malaria Funding Totals in Constant Dollars
(constant U.S. \$ millions)

Disease/Program Totals	FY2001 Actual	FY2002 Actual	FY2003 Actual	FY2004 Actual	FY2005 Actual	FY2006 Actual	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Request	FY2011 Appropriation (P.L. 112-10)	FY2012 Request
HIV/AIDS	754.8	1031.8	1334.6	1937.9	2584.1	2932.1	3987.3	5229.1	5715.9	5700.4	5869.3	n/s	5599.3
TB	77.7	89.0	92.6	100.3	105.0	101.1	102.3	169.6	183.9	248.7	256.3	n/s	254.4
Malaria	85.2	97.6	94.3	105.1	114.1	122.8	276.9	372.6	410.8	607.9	704.9	n/s	700.2
Global Fund	125.3	216.3	420.2	644.5	396.4	601.6	780.4	873.9	1041.6	1073.9	1022.8	1050.0	1300.0
HIV/AIDS, TB, Malaria Total	1042.9	1434.7	1941.7	2787.9	3199.6	3757.6	5146.9	6645.2	7352.3	7631.0	7853.2	n/s	7853.9

Source: Compiled by CRS from appropriations legislation and interviews with U.S. officials.

Notes: n/s means not specified. Calculations into constant dollars are made using the FY2011 estimate total non-defense deflator, from the U.S. Government Printing Office, "Budget of the United States Government:: Historical Tables Fiscal Year 2012," available at <http://www.gpoaccess.gov/usbudget/fy12/hist.html>.

Appendix D. HIV/AIDS, Tuberculosis, and Malaria Program Maps

Two maps are shown for each disease. The first displays U.S. bilateral funding levels across countries. The second highlights U.S. countries receiving assistance in relation to global prevalence estimates for each disease.

HIV/AIDS

Figure D-1 shows U.S. bilateral HIV/AIDS funding levels across countries in FY2009. **Figure D-2** highlights U.S. countries receiving assistance in relation to global HIV prevalence estimates in 2009.

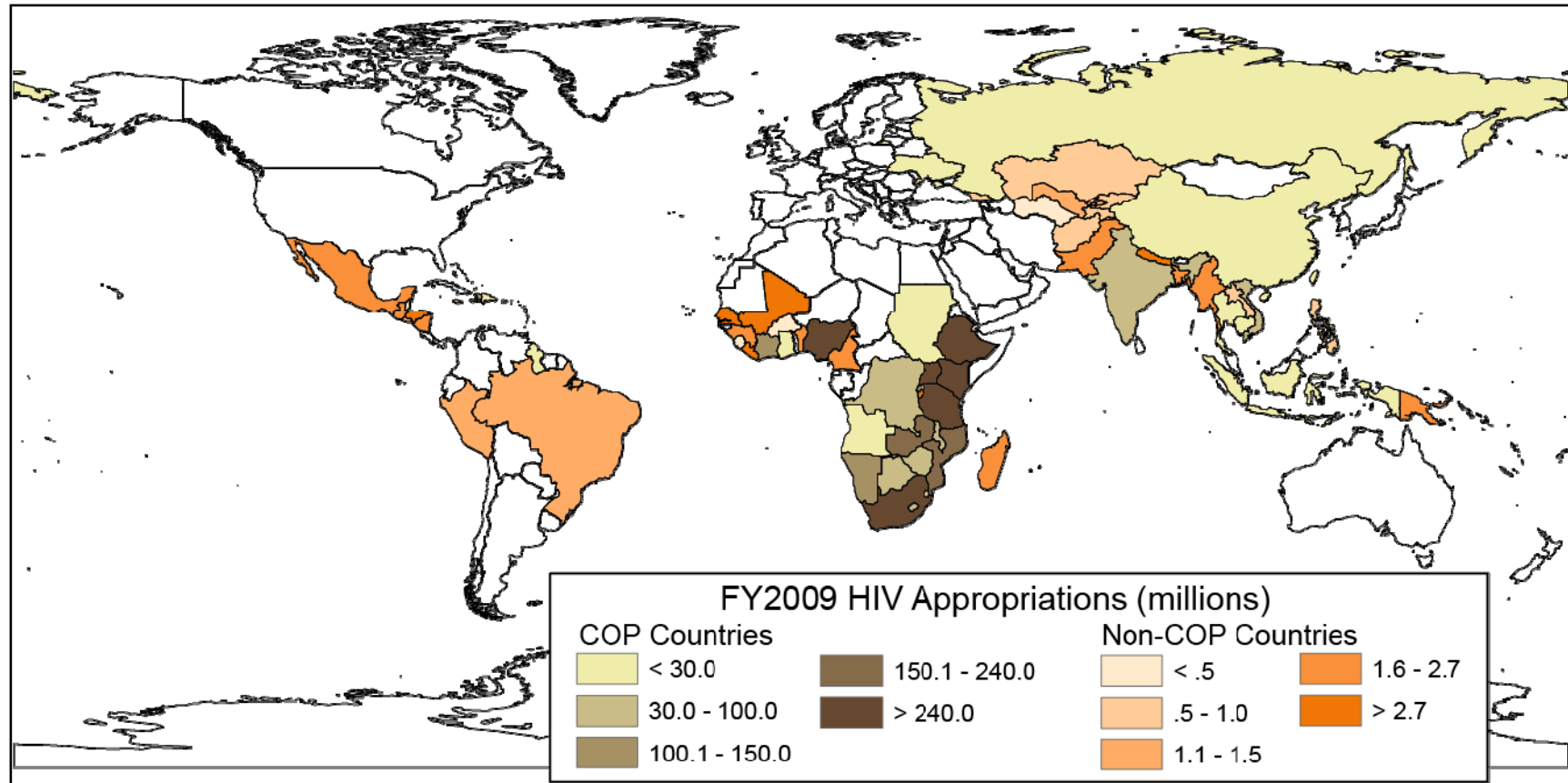
Tuberculosis

Figure D-3 shows U.S. bilateral TB funding levels across countries in FY2009. **Figure D-4** highlights U.S. countries receiving assistance in relation to global TB prevalence estimates in 2009.

Malaria

Figure D-5 shows U.S. bilateral malaria funding levels across countries in FY2009. **Figure D-6** highlights U.S. countries receiving assistance in relation to global malaria prevalence estimates in 2009.

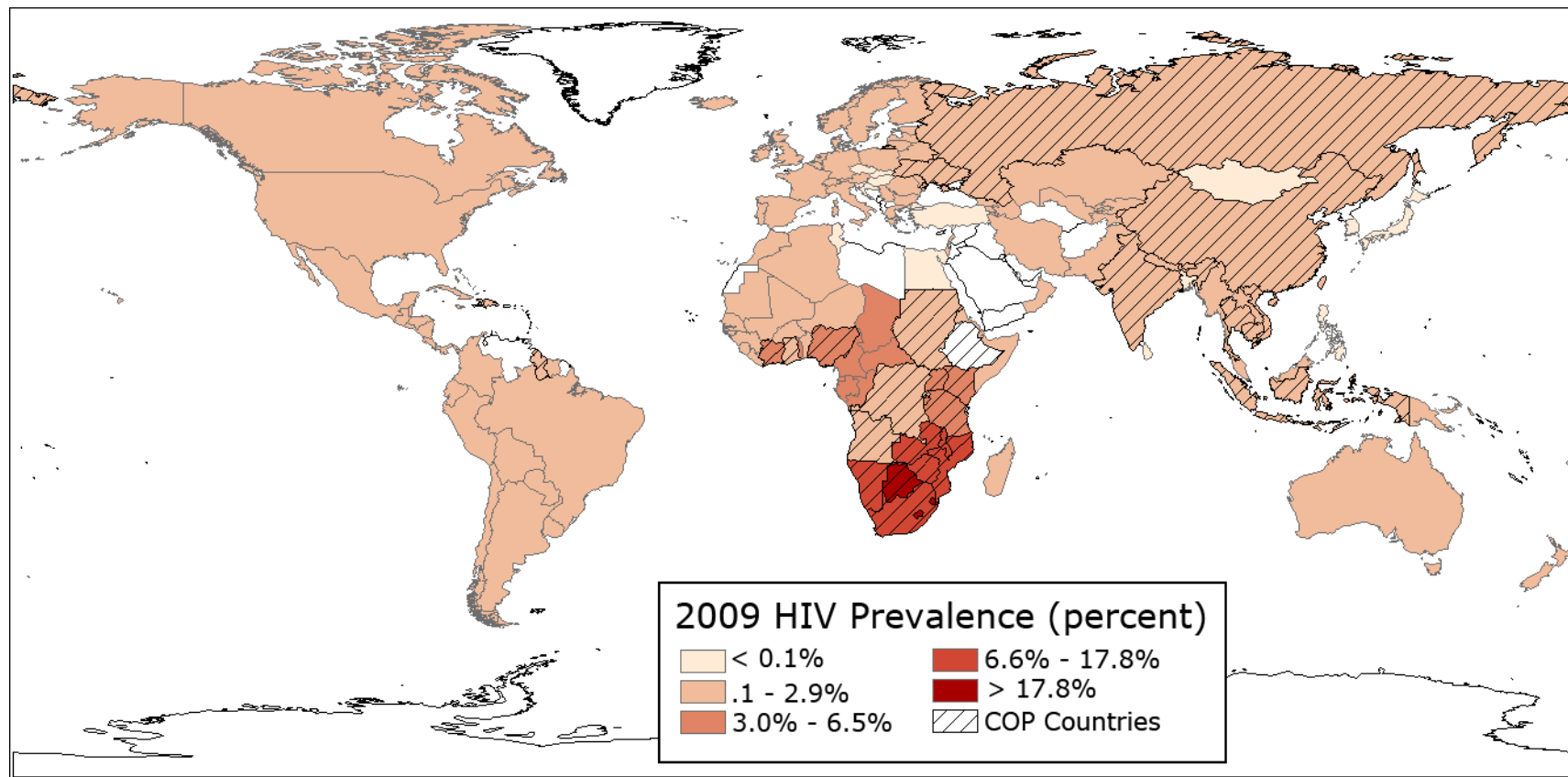
Figure D-1. U.S. Bilateral HIV/AIDS Funding, by Country, FY2009
(current U.S. \$ millions)



Source: Compiled by CRS from appropriations legislation and foreignassistance.gov.

Notes: COP countries refer to PEPFAR countries with "Country Operational Plans." COPs document U.S. annual investments and HIV/AIDS program targets, and serve as the basis for approval of annual U.S. bilateral HIV/AIDS funding to each country. A number of countries receiving smaller amounts of PEPFAR assistance are not required to submit COPs.

Figure D-2. HIV Prevalence Rates and PEPFAR COP Countries, 2009

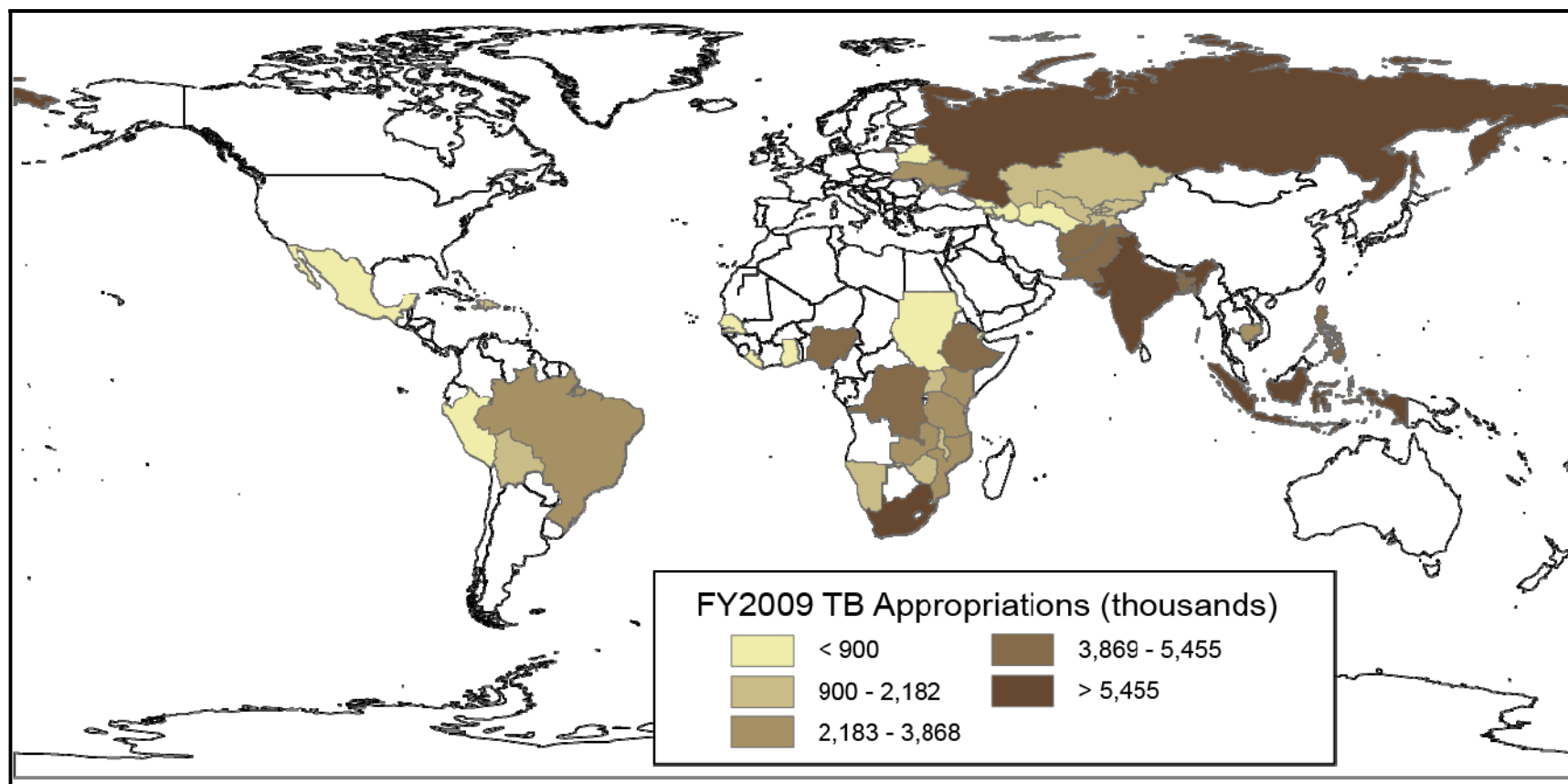


Source: Compiled by CRS from UNAIDS, *Report on the Global AIDS Epidemic*, 2010, http://www.unaids.org/globalreport/Global_report.htm, appropriations legislation, and foreignassistance.gov.

Notes: HIV prevalence measures the rate of infection among adults aged 5-49 in each country in 2009. COP countries refer to PEPFAR countries with “Country Operational Plans.” COPs document U.S. annual investments and HIV/AIDS program targets, and serve as the basis for approval of annual U.S. bilateral HIV/AIDS funding to each country.

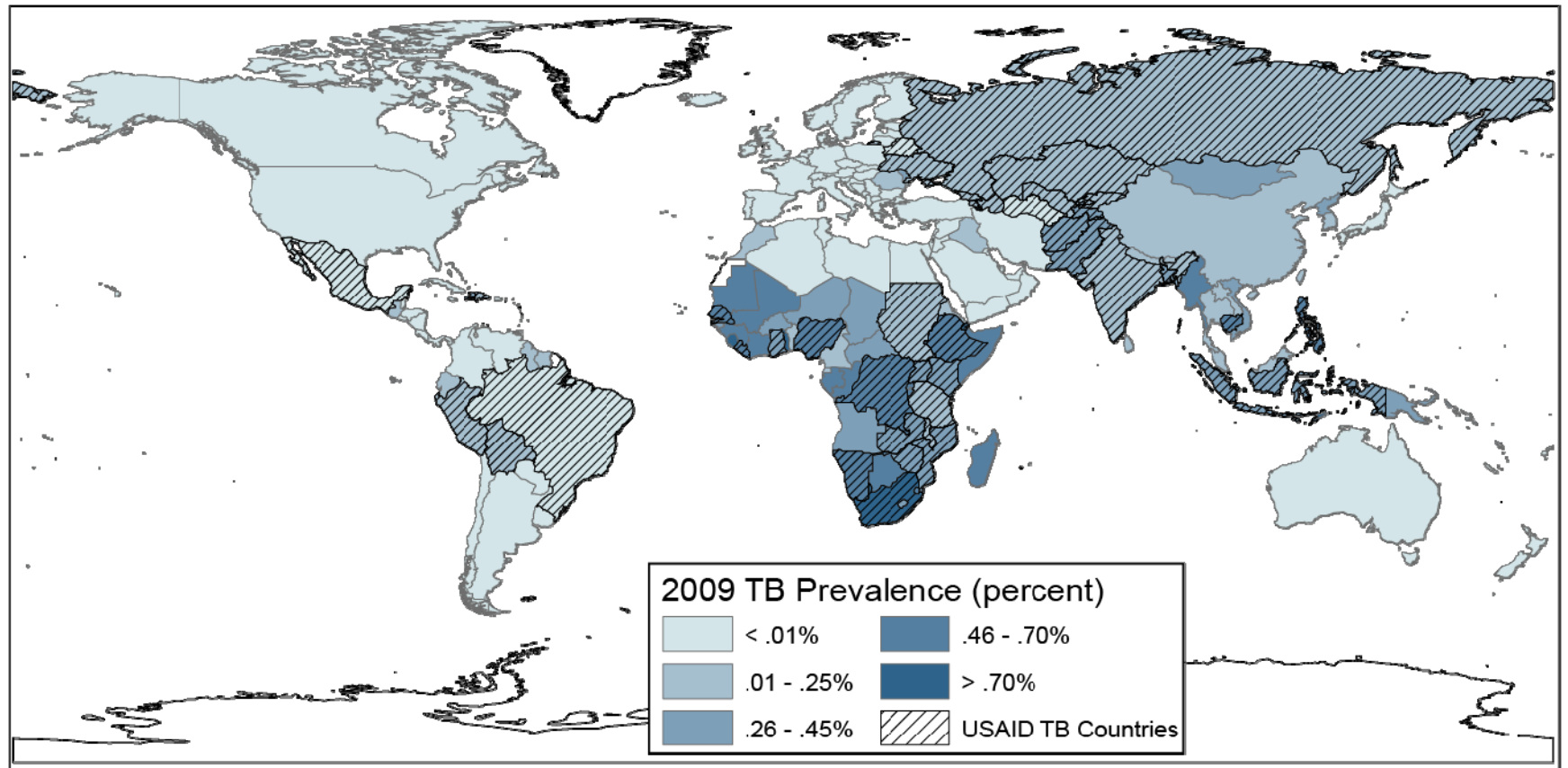
Figure D-3. U.S. Bilateral TB Funding, by Country, FY2009

(current U.S. \$ millions)



Source: Compiled by CRS from appropriations legislation and foreignassistance.gov.

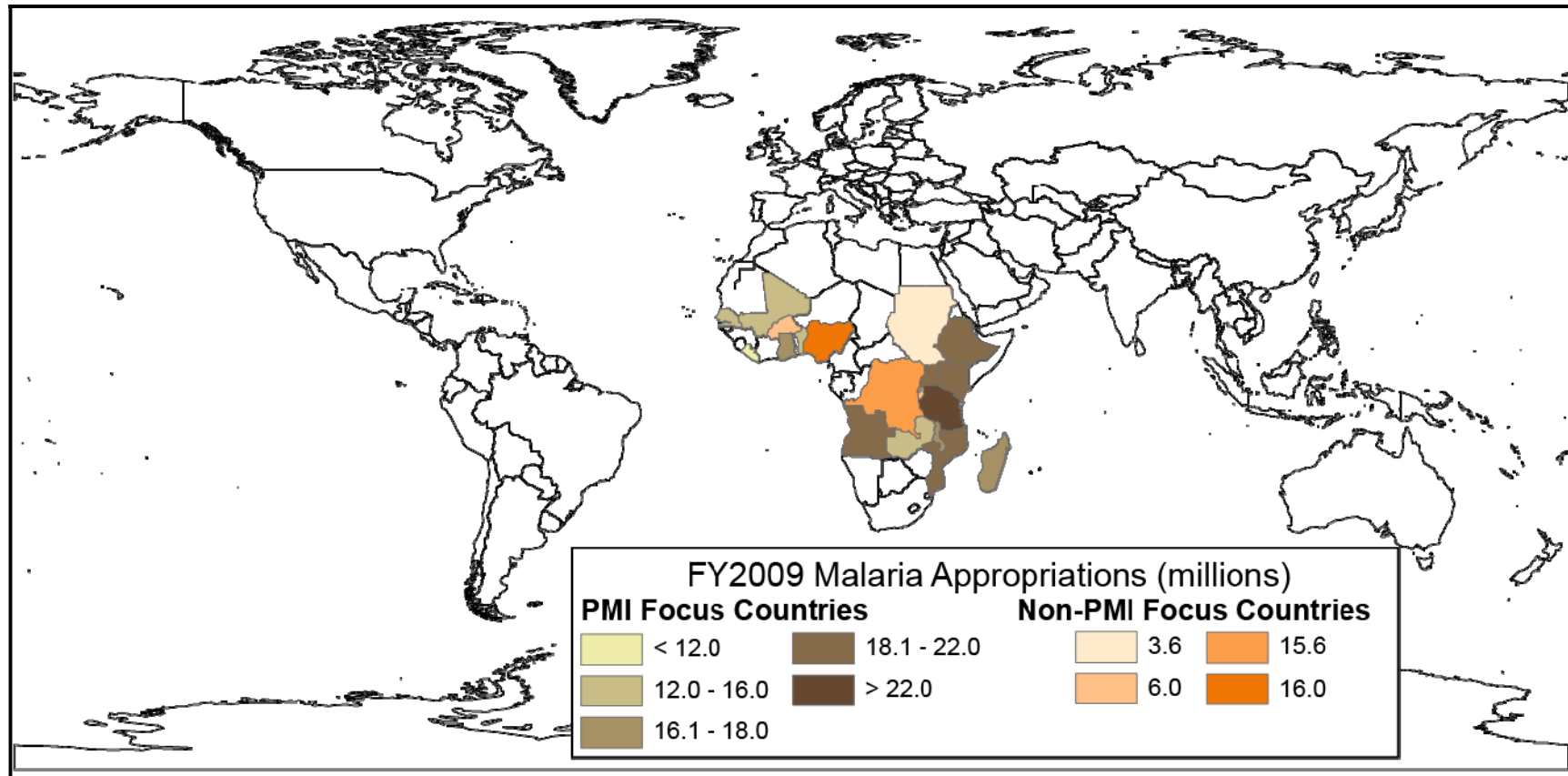
Figure D-4. TB Prevalence Rates and USAID TB Countries, 2009



Source: Compiled by CRS from WHO, *Global Tuberculosis Control*, 2010, http://whqlibdoc.who.int/publications/2010/9789241564069_eng.pdf, appropriations legislation, and foreignassistance.gov.

Notes: TB prevalence measures the rate of infection in each country in 2009.

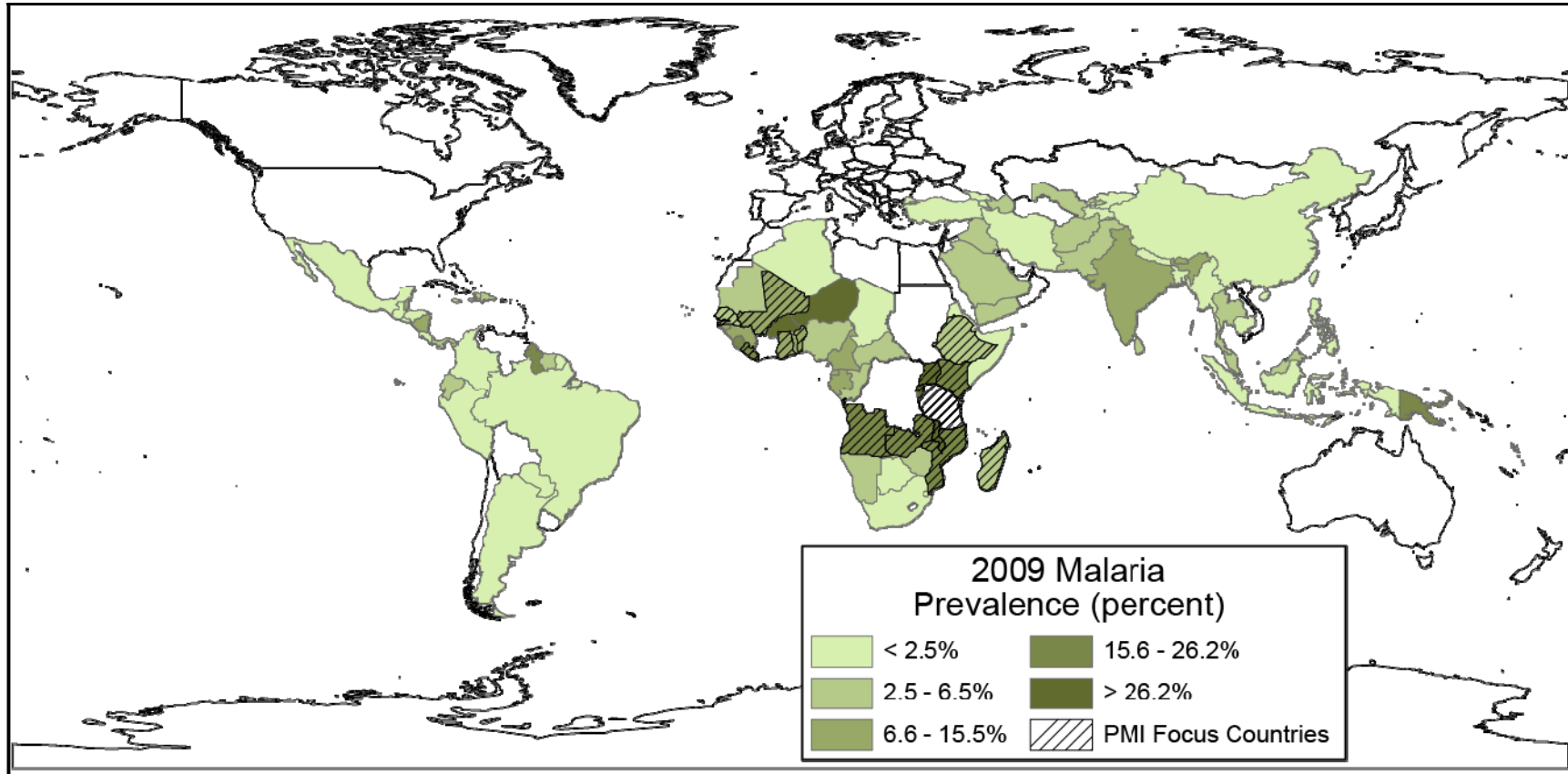
Figure D-5. U.S. Bilateral Malaria Funding, by Country, FY2009
(current U.S. \$ millions)



Source: Compiled by CRS from appropriations legislation and foreignassistance.gov.

Notes: In FY2009, PMI had 15 focus countries. Several other countries were receiving bilateral malaria assistance, but were not considered PMI focus countries.

Figure D-6. Malaria Prevalence Rates and PMI Focus Countries, 2009



Source: Compiled by CRS from WHO, *World Malaria Report*, 2010, http://wholibdoc.who.int/publications/2010/9789241564106_eng.pdf, appropriations legislation, and foreignassistance.gov.

Notes: Malaria prevalence measures the rate of infection in each country in 2009.

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