

# The President's Malaria Initiative and Other U.S. Government Global Malaria Efforts

## Key Facts

- About half of the world's population is at risk of being infected with malaria. In 2016, there were approximately 216 million cases of malaria and 445,000 deaths from malaria worldwide. Sub-Saharan Africa is the hardest hit region in the world.
- Although progress has been made in increasing access to malaria prevention and treatment, many challenges, including drug and insecticide resistance, continue to complicate malaria control efforts in hard-hit areas.
- The U.S. government (U.S.) has been involved in global malaria activities since the 1950s and, today, is the largest donor to global malaria efforts.
- U.S. malaria efforts include bilateral activities primarily through the U.S. President's Malaria Initiative (PMI) that is overseen by the U.S. Global Malaria Coordinator, as well as through other U.S. activities; collectively, the U.S. reaches more than 30 countries bilaterally. U.S. support also includes multilateral contributions to the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund).
- U.S. funding for bilateral malaria control efforts and research activities was \$961 million in FY 2018, up from \$146 million in FY 2001.

## Global Situation<sup>1</sup>

Malaria is one of the world's most common and serious tropical diseases, with about half the world's population at risk of being infected with malaria. Although preventable and treatable, malaria causes significant morbidity and mortality, with the greatest numbers of cases and deaths in resource-poor regions and among young children.<sup>2</sup>

**Malaria:** an infectious disease caused by certain *Plasmodium* parasites, which are transmitted to humans by *Anopheles* mosquitoes. This mosquito thrives in warm, tropical, and subtropical climates. Infection with malaria parasites can cause common symptoms like fever, chills, and flu-like illness and lead to anemia, causing severe malaria disease and sometimes death. When the infected parasites clog small blood vessels in the brain, causing cerebral malaria, it can also be fatal.<sup>3</sup>

Strategies and efforts to address malaria have evolved over time, with global eradication efforts waning in the 1970s, resulting in rising rates.<sup>4</sup> More recently, in the late 1990s, malaria began to receive renewed attention, particularly after the 1998 creation of the Roll Back Malaria Partnership (RBM).<sup>5</sup> In 2000, all nations agreed to global malaria targets as part of Millennium Development Goal 6 (combat HIV/AIDS, malaria, and other diseases). Since then, expanded efforts by the U.S. government, other donor governments, multilateral institutions, and affected countries have helped to increase access to malaria prevention and treatment and reduce cases and deaths,<sup>6</sup> and there has been growing discussion of the possibility of finally eradicating the disease.<sup>7</sup>

Today global malaria activities are focused on sustaining and expanding efforts to control the disease. Still, gaps remain, and many challenges continue to complicate malaria control efforts in hard-hit areas.

## Morbidity and Mortality

Substantial scale-up of malaria interventions helped reduce the malaria case incidence and death rates by 18% and 32%, respectively, between 2010 and 2016. Still, the World Health Organization (WHO) estimates that there were approximately 216 million cases of malaria and 445,000 deaths, mostly among children under the age of five, in 2016 (see Table 1).

Table 1: Estimated Malaria Cases and Deaths by Region, 2016 <sup>8</sup>					
WHO Region <sup>9</sup>	# of Countries with Ongoing Malaria Transmission	Estimated Cases*		Estimated Deaths*	
		Number (in thousands, %)		Number (in thousands, %)	
<b>Global Total</b>	<b>91</b>	<b>216,000</b>	<b>100%</b>	<b>445</b>	<b>100%</b>
Africa	45	194,000	90%	407	91%
Americas	18	875	<1%	0.65	<1%
E. Mediterranean	8	4,300	2%	8.2	2%
Europe	1 <sup>10</sup>	0	0%	0	0%
South-East Asia	9	14,600	7%	27	6%
Western Pacific	10	1,600	<1%	3.3	<1%

NOTES: \* Represents WHO's "best estimate" for each indicator.

## Challenges

### AFFECTED AREAS

Nearly half of the world's population is at risk of malaria.<sup>11</sup> Sub-Saharan Africa is the hardest hit region in the world, followed by South-East Asia. Many challenges continue to complicate malaria control efforts in countries with ongoing malaria transmission, including poverty, poor sanitation, weak health systems, limited disease surveillance capabilities, natural disasters, armed conflict, migration, climate change, and the presence of counterfeit and/or sub-standard antimalarial drugs.<sup>12</sup>

## DRUG & INSECTICIDE RESISTANCE

Multidrug-resistant malaria is now prevalent in Africa, Latin America, the Western Pacific, and South-East Asia, and while highly-effective artemisinin-based combination therapies (ACTs) have been introduced to treat drug-resistant strains, evidence suggests ACT resistance is occurring in parts of Asia.<sup>13</sup> Resistance to insecticides has emerged as a problem in Africa, Latin America, Eastern Mediterranean, South-East Asia, and the Western Pacific.<sup>14</sup>

## VULNERABLE/HIGH-RISK POPULATIONS

While anyone living in or visiting an endemic country may be at risk, approximately 1 billion people are at high risk of malaria infection, and certain groups, particularly pregnant women<sup>15</sup> and children, are more vulnerable. Making up 70% of all malaria deaths, children under five are especially at-risk of malaria infection, because they lack developed immune systems to protect against the disease.<sup>16</sup> Other high-risk groups include people living with HIV/AIDS, travelers, refugees, displaced persons, and migrant workers entering endemic areas.<sup>17</sup>

## Interventions

Malaria control efforts involve a combination of prevention and treatment strategies and tools, such as:

- insecticide-treated bed nets (ITN),
- indoor residual spraying (IRS) with insecticides,
- diagnosis and treatment with antimalarial drugs, particularly artemisinin-based combination therapies (ACTs),<sup>18</sup>
- intermittent preventive treatment in pregnancy (IPTp, a drug treatment for pregnant women that prevents complications from malaria for a woman and her unborn child),
- intermittent preventive treatment in infants (IPTi, a drug treatment aimed at reducing adverse effects of malaria in infancy), and
- seasonal malaria chemoprevention (SMC, a treatment course administered at monthly intervals to children aged 3 to 59 months during the high malaria transmission season).<sup>19</sup>

Although access to prevention and treatment services has grown over time, gaps remain.<sup>20</sup> Over the past decade, the number of ACT treatments procured by the public and private sectors has increased more than thirty-fold. Similarly, access to and use of ITNs has increased significantly but remains incomplete, and coverage of IPTp has been increasing but remains limited.<sup>21</sup> Additionally, while a malaria vaccine is not yet available, clinical trials are underway, and early results show promise.<sup>22</sup>

## Global Goals

Since the late 1990s, new initiatives and financing mechanisms have helped increase attention to malaria and contributed to efforts to achieve global goals; these include:

- **the Roll Back Malaria Partnership**, a global framework established in 1998 for coordinating malaria efforts among donor governments, major UN agencies, international organizations, and affected countries, among others; and
- **the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)**, an independent, international financing institution established in 2001 that provides grants to countries to address TB, HIV, and malaria (see the KFF [fact sheet](#) on the U.S. and the Global Fund).<sup>23</sup>

These and other efforts work toward achieving major global malaria goals that have been set through:

## SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Adopted in 2015, the Sustainable Development Goals (SDGs) aim to end the malaria epidemic by 2030 under SDG Goal 3, which is to “ensure healthy lives and promote well-being for all at all ages.”<sup>24</sup> The SDGs are the successor to the Millennium Development Goals (MDGs), which included a malaria target under MDG 6: to halt and begin to reverse the incidence of malaria by 2015.<sup>25</sup>

## GLOBAL TECHNICAL STRATEGY FOR MALARIA 2016-2030

Developed in close alignment with RBM and adopted by the World Health Assembly in 2015, the Global Technical Strategy for Malaria (GTS) includes the goals of:

- reducing malaria incidence and mortality rates by at least 90% by 2030,
- eliminating the disease in at least 35 new countries, and
- preventing the disease’s re-establishment in countries that are malaria free.

With these goals, the GTS sets out a vision for countries to accelerate progress towards malaria elimination, and globally, more countries are moving towards elimination. In 2016, of 91 malaria-endemic countries, 44 countries worldwide are reported to be nearing elimination.<sup>26</sup>

## The U.S. Government

Involved in global malaria activities since the 1950s, the U.S. government (U.S.) is the largest government donor to malaria efforts.<sup>27</sup>

## History

The U.S. government’s international response to malaria began in the 1950s through activities at the U.S. Centers for Disease Control and Prevention (CDC) and what is now the U.S. Agency for International Development (USAID); early efforts focused on technical assistance but also included some direct financial support for programs overseas.

Since the early 2000s, the U.S. has assigned a heightened priority to and provided greater funding for bilateral and multilateral malaria efforts. In 2003, the *U.S. Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act of 2003* (the legislation that created PEPFAR, the expanded U.S. government response to global AIDS) authorized five years of funding for bilateral malaria efforts and the Global Fund. In 2005,

the U.S. launched the President's Malaria Initiative (PMI), a five-year effort to address malaria in 15 hard-hit African countries, which has since been extended and expanded. In 2008, the *Lantos-Hyde U.S. Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008* (which reauthorized PEPFAR) authorized another five years of funding and codified the position of the U.S. Global Malaria Coordinator.<sup>28</sup> More recently, in 2015, the U.S. released the *President's Malaria Initiative Strategy 2015-2020*, which outlines its goals as well as its approach to achieving them by 2020.

## Organization and Goals

### PRESIDENT'S MALARIA INITIATIVE (PMI)<sup>29</sup>

Launched in 2005, the President's Malaria Initiative (PMI) is an interagency initiative to address global malaria that is led by the U.S. Agency for International Development (USAID) and implemented in partnership with CDC. It is overseen by the U.S. Global Malaria Coordinator, who is appointed by the President and reports to the USAID Administrator, and an Interagency Advisory Group made up of representatives from USAID, CDC, the Department of Defense (DoD), the State Department, the National Security Council, and the Office of Management and Budget. USAID serves as the lead implementing agency for U.S. global malaria efforts, primarily through PMI, with other agencies also carrying out malaria activities. Collectively, U.S. bilateral activities reach more than 30 countries.

#### Goals

In 2015, the U.S. released the *President's Malaria Initiative Strategy 2015-2020*; its goals include:

- reducing malaria mortality by one-third from 2015 levels in PMI-supported countries,
- achieving a greater than 80% reduction from PMI's original 2000 baseline levels,
- reducing malaria morbidity in PMI-supported countries by 40% from 2015 levels, and
- assisting at least five PMI-supported countries to meet the World Health Organization criteria for national or sub-national pre-elimination.

The strategy also states that these efforts contribute to longer term goals, such as elimination of malaria in a growing number of countries and global eradication by 2040-2050.<sup>30</sup>

#### Key Activities

USAID and CDC's PMI activities focus on expanding access to and the use of four key malaria control interventions:

- insecticide-treated bed nets (ITNs),
- indoor residual spraying (IRS) with insecticides,
- intermittent preventive treatment in pregnancy (IPTp),<sup>31</sup> and
- diagnosis of malaria and treatment with artemisinin-based combination therapies (ACTs).

They also include a range of malaria control activities, including technical assistance to affected countries, monitoring and evaluation, supply chain management, and commodity procurement (since the

start of PMI, U.S. support for commodities, such as ITNs, insecticides, and antimalarial drugs, like ACTs, has increased significantly<sup>32</sup>). Additionally, PMI supports activities in the following areas: behavior change communication, health systems strengthening, monitoring and evaluation, and operational research.

USAID also supports regional efforts in Latin America and the Caribbean to monitor antimalarial drug resistance, understand the changing nature of malaria in the region, and strengthen data-based decision-making in their malaria control programs through its Amazon Malaria Initiative.<sup>33</sup> CDC provides technical assistance to these regional efforts and has also been designated as the WHO Collaborating Center for Prevention and Control of Malaria.<sup>34</sup>

Additionally, the National Institutes of Health (NIH) and DoD are involved in malaria research and development (R&D). NIH is the lead agency for U.S. malaria R&D efforts (including its International Centers of Excellence for Malaria Research program, which established a global network of malaria research centers in 2010 to support research activities in malaria-endemic countries).<sup>35</sup> DoD also supports extensive R&D efforts as well as worldwide malaria disease surveillance, and technical assistance and capacity building with local partners.<sup>36</sup>

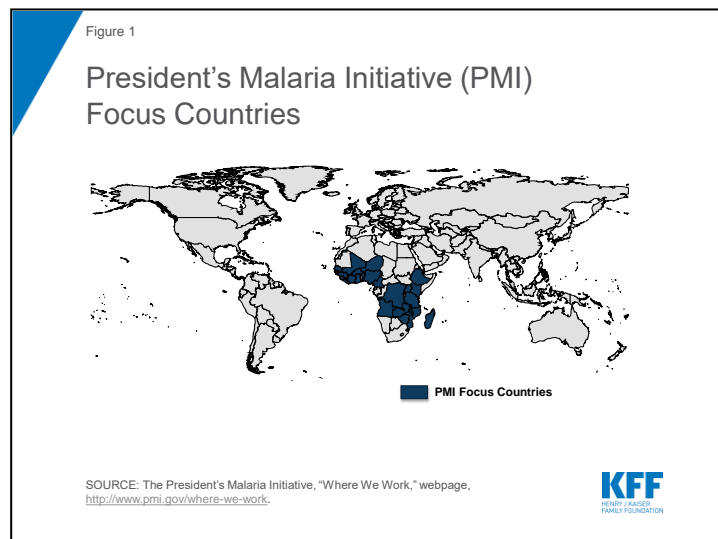
### Countries Reached

PMI spans 24 sub-Saharan African “focus countries” (see Figure 1) (gradually scaled up from three countries in FY 2006), as well as countries in Southeast Asia under the PMI Greater Mekong Subregion regional initiative.<sup>37</sup> Focus countries are selected based on the following criteria:<sup>38</sup>

- high malaria burden,
- alignment of National Malaria Control Plan (NMCP) with WHO standards,
- country capacity to implement national control policies,
- willingness to partner with the US in fighting malaria, and
- involvement of other international donors (e.g., Global Fund; World Bank).

Both USAID and CDC station staff in each PMI focus country.

Beyond PMI, the Amazon Malaria Initiative spans several countries in Latin America and the Caribbean, and other U.S. activities may reach more countries. For example, CDC and USAID carry out activities in additional countries in sub-Saharan Africa, Latin America, and Asia.<sup>39</sup>



## MULTILATERAL EFFORTS

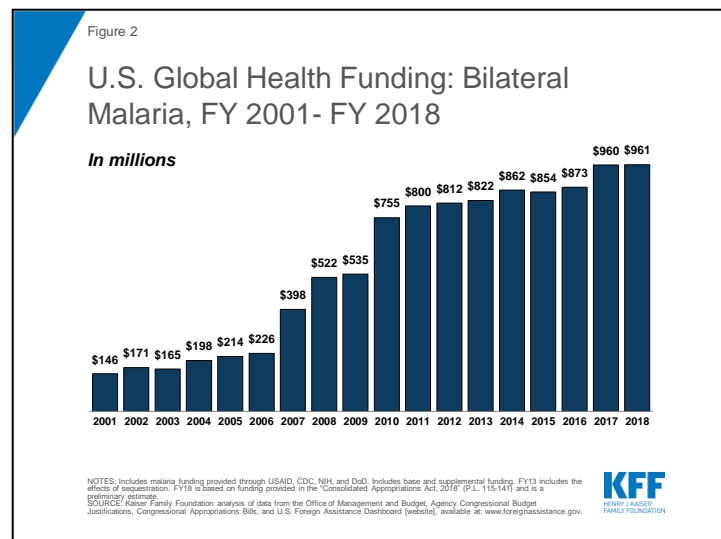
The U.S. partners with international institutions and supports global malaria funding mechanisms. Key partners include the World Health Organization, the Roll Back Malaria Partnership, and the World Bank. Additionally, the U.S. government is the largest donor to the Global Fund, which has committed over \$10 billion in funding for malaria programs worldwide.<sup>40</sup>

## Funding<sup>41</sup>

U.S. bilateral funding for malaria, which includes support for PMI as well as other malaria control efforts and research activities, has increased from \$146 million in FY 2001 to \$961 million in FY 2018 (see Figure 2).

Most U.S. funding for malaria is provided through the Global Health Programs account at USAID with additional funding provided through NIH, CDC, and DoD.

The majority of U.S. malaria funding is directed to PMI focus countries, with additional funding directed to other bilateral and regional malaria efforts as well as malaria research activities.



## Key Issues for the U.S.

Over the past decade, U.S. global malaria control efforts and funding have expanded, as have those of others. As global efforts work toward achieving malaria elimination in a growing number of countries, key issues and challenges for PMI and other U.S. malaria efforts going forward include:

- sustaining and enhancing malaria control efforts in the context of weak health systems;
- tackling drug and insecticide resistance;
- addressing the availability of substandard and counterfeit antimalarial treatments;
- supporting research and development efforts to advance new drugs and insecticides as well as further an effective malaria vaccine;
- continuing to expand access to malaria commodities, among other tools and approaches, in the current restrained fiscal environment; and
- coordinating malaria efforts with other U.S. global health efforts, particularly maternal and child health (MCH) activities, as well as those of other donors (including the Global Fund). See the KFF [fact sheet](#) on the U.S. and global MCH.



- <sup>1</sup> WHO, *World Malaria Report 2017*, 2017.
- <sup>2</sup> WHO, *World Malaria Report 2017*, 2017.
- <sup>3</sup> CDC Malaria website, <http://www.cdc.gov/malaria/about/index.html>.
- <sup>4</sup> CDC, "The History of Malaria, an Ancient Disease," webpage, <http://www.cdc.gov/malaria/about/history/>; M. Tanner, D. de Savigny, "Malaria Eradication Back on the Table," *Bulletin of WHO*, Vol. 86, No. 2, 2008.
- <sup>5</sup> Launched by the World Health Organization, the United Nations Children's Fund, the United Nations Development Programme, and the World Bank as "an effort to provide a coordinated global response to the disease." RBM, "About RBM," webpage, <http://www.rollbackmalaria.org/about-rbm>.
- <sup>6</sup> WHO, *World Malaria Report 2017*, 2017.
- <sup>7</sup> M. Tanner, D. de Savigny, "Malaria Eradication Back on the Table," *Bulletin of WHO*, Vol. 86, No. 2, 2008; WHO, *World Malaria Report 2017*, 2017.
- <sup>8</sup> WHO, *World Malaria Report 2017*, 2017; KFF analysis of data therein.
- <sup>9</sup> For definition of WHO regions, see WHO, "About WHO: WHO Regional Offices," webpage, <http://www.who.int/about/regions/en/>.
- <sup>10</sup> None of the countries in the WHO European region reported indigenous cases in 2016, but Tajikistan has not yet had 3 consecutive years of zero indigenous cases and is therefore classified as malaria-endemic.
- <sup>11</sup> WHO, "Malaria fact sheet," webpage, <http://www.who.int/mediacentre/factsheets/fs094/en/>.
- <sup>12</sup> WHO, *World Malaria Report 2017*, 2017; CDC, Malaria, webpage, [www.cdc.gov/malaria/](http://www.cdc.gov/malaria/); M. Tanner and D. de Savigny, "Malaria Eradication Back on the Table," *Bulletin of WHO*, Vol. 86, No. 2, 2008; RBM, *The Global Malaria Action Plan*, 2008; K. Senior, "Climate Change and Infectious Disease: A Dangerous Liaison?", *The Lancet*. Vol. 8, No. 2, 2008; CDC, "Counterfeit and Substandard Antimalarial Drugs," webpage, [http://www.cdc.gov/malaria/malaria\\_worldwide/reduction/counterfeit.html](http://www.cdc.gov/malaria/malaria_worldwide/reduction/counterfeit.html).
- <sup>13</sup> WHO: *World Malaria Report 2017*, 2017; *Global Plan for Artemisinin Resistance Containment (GPARC)*, 2011; *Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion: Regional Framework for Action 2013-2015*, April 2013. WHO, *Update on Artemisinin and ACT Resistance*, April 2017.
- <sup>14</sup> WHO, *World Malaria Report 2017*, 2017.
- <sup>15</sup> WHO, *World Malaria Report 2017*, 2017; WHO, "Malaria in pregnant women," webpage, [http://www.who.int/malaria/areas/high\\_risk\\_groups/pregnancy/en/index.html](http://www.who.int/malaria/areas/high_risk_groups/pregnancy/en/index.html).
- <sup>16</sup> WHO, "Malaria fact sheet," webpage, <http://www.who.int/mediacentre/factsheets/fs094/en/>.
- <sup>17</sup> WHO, "Malaria: High-risk groups," webpage, [http://www.who.int/malaria/areas/high\\_risk\\_groups/en/](http://www.who.int/malaria/areas/high_risk_groups/en/).
- <sup>18</sup> For a detailed description of WHO's recommendations on the use of drugs to prevent malaria in high-risk groups, please see WHO's *Guidelines for the Treatment of Malaria*. WHO, *Guidelines for the Treatment of Malaria*, April 2015.
- <sup>19</sup> IPTi should not be administered in areas where SMC is implemented. WHO, *Malaria Prevention Works: let's close the gap*, April 2017.
- <sup>20</sup> WHO, *Malaria Prevention Works: let's close the gap*, April 2017.
- <sup>21</sup> WHO, *World Malaria Report 2017*, 2017.
- <sup>22</sup> PATH Malaria Vaccine Initiative, "RTS,S," webpage, <http://www.malariavaccine.org/malaria-and-vaccines/first-generation-vaccine/rtss>.
- <sup>23</sup> Roll Back Malaria website, <http://www.rollbackmalaria.org/>; Global Fund website, <http://theglobalfund.org/en/>.
- <sup>24</sup> UN, *Transforming our world: the 2030 Agenda for Sustainable Development*, 2015.
- <sup>25</sup> UN, "Official List of MDG Indicators," webpage, <http://unstats.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>.
- <sup>26</sup> Countries that were malaria endemic in 2000 and reported fewer than 10,000 malaria cases are said to be "nearing elimination." WHO, *World Malaria Report 2017*, 2017.
- <sup>27</sup> KFF: [Global Financing for Malaria: Trends & Future Status](#), 2014; [Mapping the Donor Landscape in Global Health: Malaria](#), 2013; *World Malaria Report 2017*, 2017.
- <sup>28</sup> U.S. Congress, *Public Law 108-25*, May 27, 2003; U.S. Congress, *Public Law 110-293*, July 30, 2008.
- <sup>29</sup> PMI website, <http://www.pmi.gov/>; USAID, "The President's Malaria Initiative," fact sheet, February 2016; PMI, *The President's Malaria Initiative: Eleventh Annual Report to Congress*, April 2017; PMI, *FY 2016 Greater Mekong Subregion Malaria Operational Plan*, 2016; CDC, "President's Malaria Initiative," webpage, [http://www.cdc.gov/malaria/malaria\\_worldwide/cdc\\_activities/pmi.html](http://www.cdc.gov/malaria/malaria_worldwide/cdc_activities/pmi.html).



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- <sup>30</sup> U.S. Government (US), *President's Malaria Initiative Strategy 2015-2020*, 2015.
- <sup>31</sup> Other preventive treatments include IPTi and SMC in countries where those treatments are relevant. To date, no country, except Sierra Leone, has prioritized IPTi for PMI support in their NMCPs. PMI, *President's Malaria Initiative Technical Guidance*, February 2018.
- <sup>32</sup> PMI, "Malaria Operational Plans," webpage, <http://www.pmi.gov/resource-library/mops>.
- <sup>33</sup> USAID, "Malaria: Countries," webpage, <https://www.usaid.gov/what-we-do/global-health/malaria/countries>.
- <sup>34</sup> CDC, "CDC and Malaria," fact sheet, April 2017; CDC, "Malaria Worldwide," December 2017.
- <sup>35</sup> NIAID: "NIAID Role in Malaria Research," webpage, <https://www.niaid.nih.gov/research/role>; "International Centers of Excellence for Malaria Research (ICEMR)," webpage, <https://www.niaid.nih.gov/research/excellence-malaria-research>.
- <sup>36</sup> KFF, [The Department of Defense and Global Health: Infectious Disease Efforts](#), 2013.
- <sup>37</sup> In September 2017, PMI announced the addition of five new focus countries, bringing the number of PMI programs to 24 in sub-Saharan Africa. PMI. *Press release: PMI Launches and Expands in West and Central Africa*, September 2017.
- <sup>38</sup> PMI. *2011 PMI Fifth Annual Report*, April 2011.
- <sup>39</sup> CDC, "CDC and Malaria," fact sheet, March 2016; CDC, "CDC's Global Activities: PMI," accessed Jan. 2017.
- <sup>40</sup> Global Fund: "Grant Portfolio," accessed April 2018, <http://portfolio.theglobalfund.org/en/Home/Index>.
- <sup>41</sup> KFF analysis of data from the Office of Management and Budget, Agency Congressional Budget Justifications, Congressional Appropriations Bills, and the U.S. Foreign Assistance Dashboard website, [www.foreignassistance.gov](http://www.foreignassistance.gov).