

GUATEMALA

Guatemala achieved the WHA 58.2 target for MDG 6C in 2008, and by 2014 had decreased malaria morbidity by 90.3% compared to 2000 (Figures 1 and 2). There was a reported reduction of 20.7% of cases from 2013. Two malaria-related deaths have been reported in the past 2 years.

Figure 2. Number of cases and deaths due to malaria in Guatemala, 2000-2014

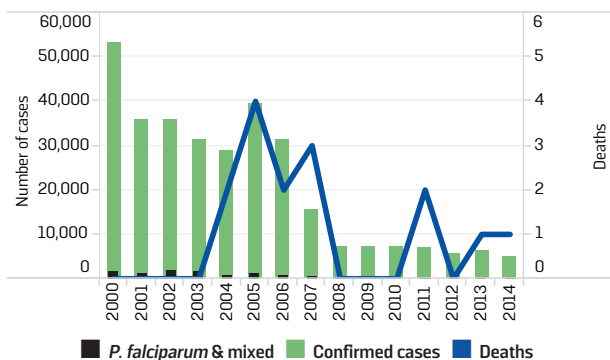
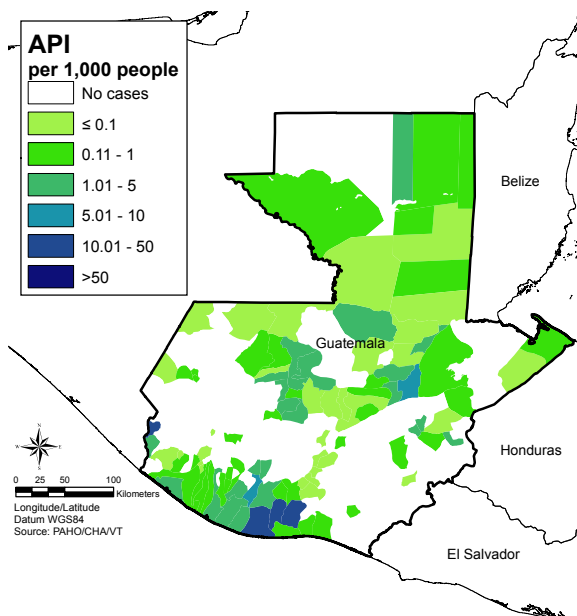


Figure 1. Malaria by Annual Parasite Index (API) at municipality level (ADM2), Guatemala 2014



The area along the Pacific coast has the highest incidence of malaria, particularly in the department of Escuintla. Two adjacent municipalities in Escuintla, La Gomera and Masagua, accounted for 48% of all cases in 2014 (Figure 3). The people residing in these municipalities mostly work in agricultural farms and sugar-cane plantations. In 2014, La Gomera was the municipality with the highest amount of cases in the Mesoamerican sub-region. The

precarious conditions in which migrant laborers from Guatemala and other Central American countries live in this department during harvest season are ideal for malaria transmission. El Salvador has reported imported cases infected in Escuintla that have led to outbreaks of malaria in that country in recent years.

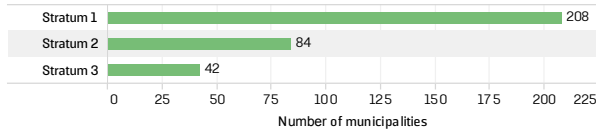
Figure 3. Municipalities with the highest number of malaria cases in Guatemala, 2012-2014

Municipality	Department	2012	2013	2014
La Gomera	Escuintla	1,231	1,739	1,700
Masagua	Escuintla	509	580	666
Panzos	Alta Verapaz	843	409	383
Cotzumalguapa*	Escuintla	472	459	284
Tiquisate	Escuintla	459	273	223
La Democracia	Escuintla	81	299	206
La Tinta**	Alta Verapaz	243	208	140
Chisec	Alta Verapaz	292	230	101
Senahu	Alta Verapaz	82	54	89
Retalhuleu	Retalhuleu	0	143	88

Legend:
■ Decrease
■ Increase

*Santa Lucia Cotzumalguapa
 **Santa Catalina La Tinta

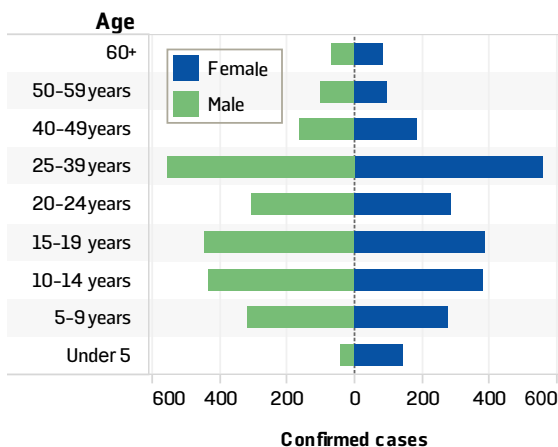
Figure 4. Number of municipalities (ADM2) by strata in Guatemala, 2012-2014



*Stratum 1: No autochthonous malaria case in 2012-2014;
 Stratum 2: < 1 case per 1000 inhabitants in 2012-2014;
 Stratum 3: > 1 case per 1000 inhabitants in 2012-2014.

The northern department of El Peten previously was highly endemic for malaria at the beginning of the millennium, but in 2014 only reported 2.3% (n=100) of all cases in the country. El Peten department is comprised of three health areas: Peten south-east (sur oriental), Peten north (norte), and Peten south-west (suroccidental). In 2014, the Peten south-east health area (encompassing 5 municipalities of the El Peten department) reported only one case originating within this health area, while the rest were all infected in other parts of the country. Alta Verapaz is a department with high poverty rates and a large community of the Q'eqchi' indigenous people, which reports many malaria cases. Guatemala has a constant migration of agricultural workers moving into and out of malaria endemic areas, which increases the rate of malaria importation into non-endemic areas. The quality of surveillance information is not adequate and does not cover all public and private health units. Thus, actual number of cases could be higher than reported.

Figure 5. Malaria cases by age and sex in Guatemala, 2014



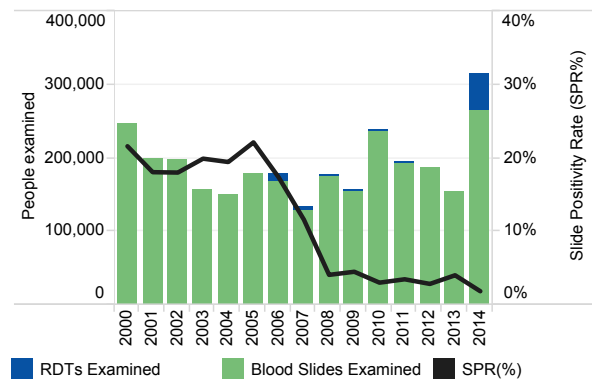
Anopheles albimanus, *An. pseudopunctipennis*, and *An. darlingi* are the principal malaria vectors in the country. Most malaria cases are due to *Plasmodium vivax*, though *P. falciparum* is present in the country, especially in Escuintla department. Although there have been cases of *P. malariae* diagnosed in the country in the past (48 cases in 2005), none have been officially reported highlighting the gaps in the surveillance system.

The most affected age group was that of 25-39 years old (Figure 5). This suggests that malaria is related to occupation and that perhaps those who spend more time outdoors are at a higher risk of malaria. Transmission is high during the dry season occurring from January to March.

Diagnosis and Treatment

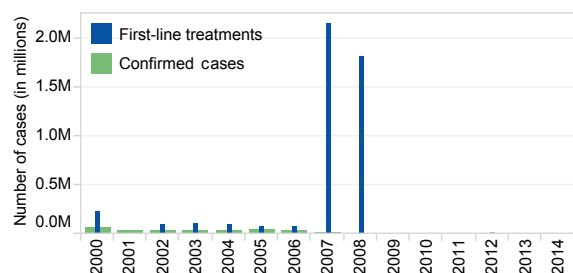
The number of blood slides and RDTs examined increased in 2014 (Figure 6). Though a record number of RDTs were used to detect disease in 2014, microscopy remains the principal method of diagnosis. RDTs were used in endemic areas to detect more cases, especially in rural areas. The SPR has continued to decrease in recent years (consistent with case reporting) and was 1.87% in 2014.

Figure 6. Blood slides examined, RDTs examined, and SPR in Guatemala, 2000-2014



Chloroquine and primaquine are used as a first-line treatment for both *P. falciparum* (3-day treatment) and *P. vivax* infections (14-day treatment). It is reported that in 2007 and 2008 nearly 2 million people received first-line treatment for malaria in each year (Figure 7). Recently, stock-outs of antimalarials has been reported by the country. The availability of antimalarials is of utmost importance for elimination of the disease.

Figure 7. Number of malaria cases and those treated with first-line treatment in Guatemala, 2000-2014

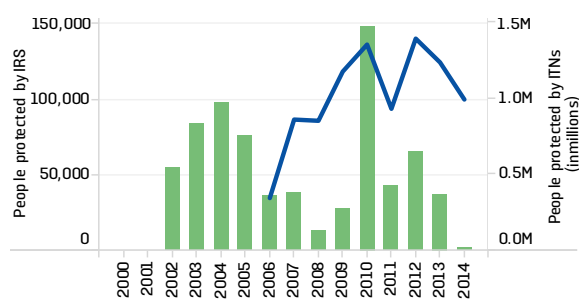


* First-line treatment data is unavailable for 2001, 2009, 2010, 2013, 2014.

Vector Control

Use of ITNs decreased from 2013, yet still protected nearly 1 million people (Figure 8). Protection by IRS decreased substantially in 2014 due to scarce resources. Instead the focus was on cleaning breeding sites and using ITNs. Intervention campaigns engage community members and train them on vector control methods.

Figure 8. People protected by IRS and by ITNs in Guatemala, 2000-2014



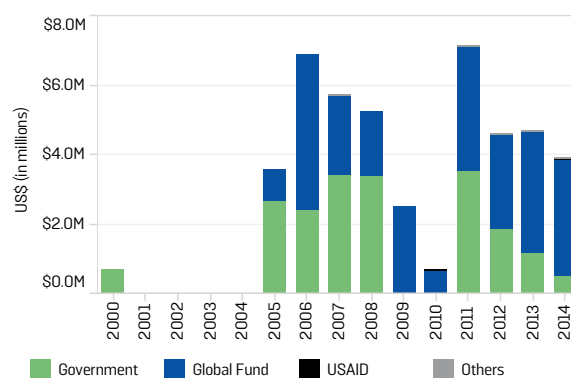
*Data is unavailable for years 2000 and 2001

■ People protected by IRS ■ People protected by ITNs

Funding

The government provides funding for the malaria budget (Figure 9). Information about governmental funding was unavailable for 2001-2004 and 2009-2010. The majority of funding from external sources is provided by the Global Fund. USAID has also contributed via the AMI/RAVREDA project. The EMMIE initiative began in 2014 and has provided additional resources. CHAI has also provided support as a technical partner in 2014. The private sector agricultural companies implement social responsibility policies as company employees and surrounding communities are directly affected by malaria.

Figure 9. Funding for malaria in Guatemala, 2000-2014



*Data unavailable for 2001-2004.