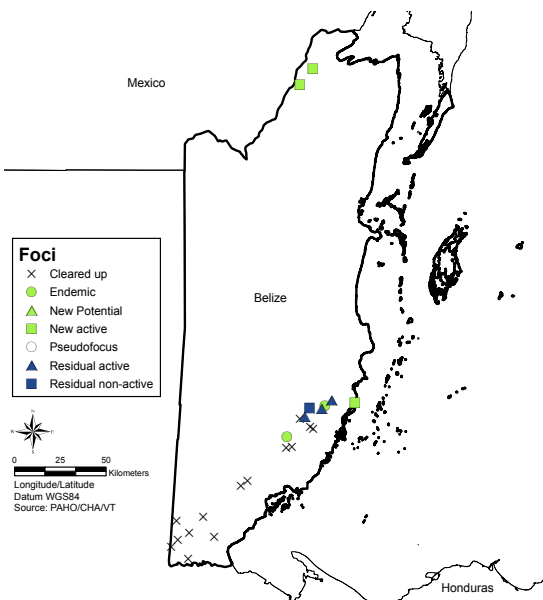


BELIZE

Belize has achieved almost 99% reduction in malaria since 2000, surpassing the WHA58.2 goal of 75% reduction of malaria by 2015 compared to the year 2000 and achieving the MDG6 goal of having halted by 2015 and reversing the incidence of malaria and other major diseases. Belize is currently in the pre-elimination phase and reported 19 cases in 2014, a decrease of 26.9% from the previous year (Figures 1-2). Only two malaria-related deaths have been reported during the period of 2000-2014.

Almost all transmission is limited to *P. vivax* infections presently, although there was an outbreak of *P. falciparum* in 2005. All malaria cases were investigated in 2014 and were found to be due to local transmission, except one which was a relapse case. Malaria continues to be concentrated in the southern district (ADM1) of Stann Creek where 12 cases were reported in 2014 in three foci - Trio, Santa Rosa, and Riversdale (Sagitun Farms) (Figure 1). In this area, malaria transmission risk is related to working in banana plantations and agricultural farms. Since 2009, malaria has now been limited to only 2 of the 8 localities that had malaria in that district.

Figure 1. Malaria in Belize by foci, 2014



Overall, malaria was reported from only 5 localities in 2014 compared to 50 in 2009. Malaria transmission was re-established in the northern districts of Corozal and Orange Walk in 2014, wherein 6 cases were reported from two foci - San Narciso and Nuevo San Juan. These districts border Mexico and movement of laborers and visitors to and from adjacent areas of that country which have ongoing transmission (Othon P. Blanco - Quintanaroo) are factors that increase the vulnerability in these districts.

Imported cases have been reported in previous years, mostly from Guatemala and Honduras. In 2014, more women were found to have had malaria infections, accounting for 57.9% of cases, though in the past men have been more affected (60.9% of cases in 2013, and 67.6% of cases in 2012) (Figure 3).

Analyzing information from 2000-2014, children between the ages of 5-9 years old were the most affected age group. However, in recent years (2013-2014) those in the 15-19 year old age group have had the highest incidence, highlighting that malaria is largely related to occupation in the remaining foci with transmission.

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

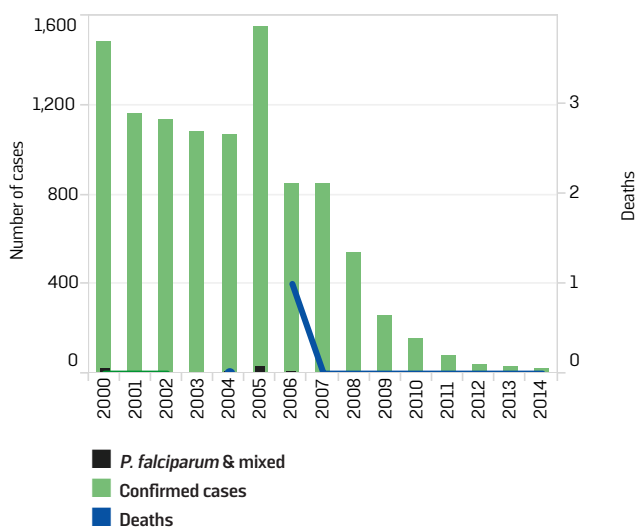
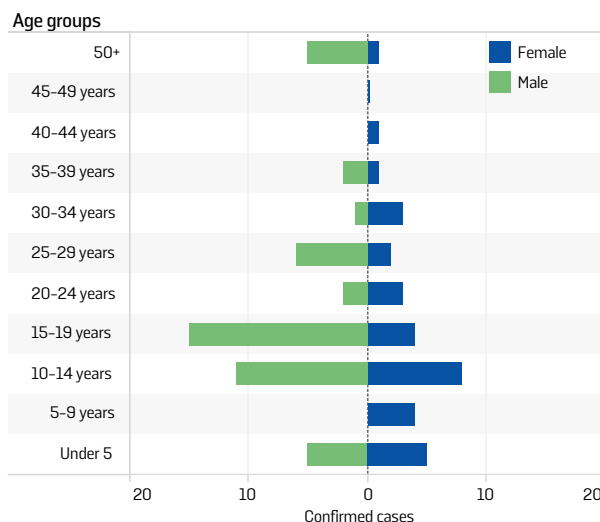


Table 1. Elimination profile of Belize, 2011–2014

	2011	2012	2013	2014
Total Cases	79	37	26	19
Cases Investigated	1	1	26	19
Autochthonous Cases	78	36	22	19
Autochthonous- P.f.	0	0	0	0
Autochthonous- P.v.	78	36	22	0
Imported Cases	1	1	4	0
Imported- P.f.	1	1	0	0
Imported- P.v.	0	0	4	0

*P. f.-*Plasmodium falciparum* *P. v.-*Plasmodium vivax*

Figure 3. Malaria cases by age and sex in Belize, 2012–2014



Diagnosis and Treatment

Belize does not use RDTs to diagnose malaria. The number of blood slides being examined has remained largely stable over the years (Figure 5). However, in 2014 almost half (48%) of the slides examined and 16% of confirmed cases were detected through active surveillance. Both these proportions have been increasing in the past 3 years, indicating an increase in the quality of surveillance as the country advances towards elimination.

Both *P. falciparum* and *P. vivax* infections are treated with chloroquine and primaquine as a first-line treatment. Access to diagnosis and treatment for all patients was not timely in 2013 and 2014 as all patients were given treatment more than 72 hours after onset of symptoms. Recollection of blood slides taken by voluntary collaborators and community health workers is done every 7 days and a 1-day presumptive treatment with chloroquine is given to all suspected cases at that level owing to the delay in diagnostic results. Presumptive

Figure 4. Blood slides examined and SPR in Belize, 2000–2014

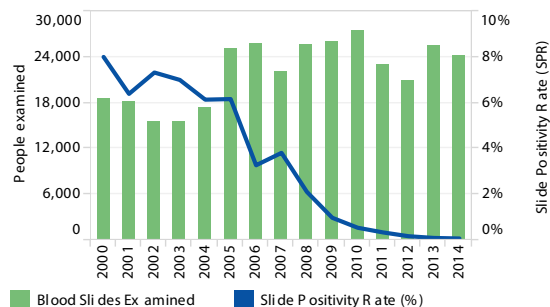
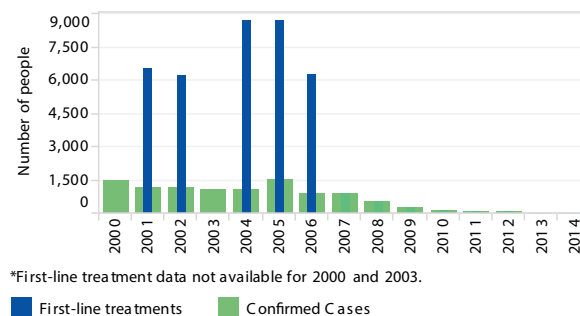


Figure 5. Number of malaria cases and those treated with first-line treatment in Belize, 2000–2014



*First-line treatment data not available for 2000 and 2003.

treatment should be stopped and efforts made to decrease the time period between taking a slide and its diagnosis using RDTs if warranted.

Vector Control

Over the years, IRS usage has decreased and currently protects about 21,000 people; a 78.8% decrease from 10 years ago (Figure 6). This is primarily due to the decrease in malaria and the number of foci with active transmission during the period from almost 50 in 2009 to only 5 in 2014. Insecticide-treated nets are used concurrently with IRS for vector control, especially given to plantation workers. An estimated 9,600 people were protected by nets in 2014. Insecticide susceptibility surveillance has not been routinely conducted. The last study conducted in 2007 by Uniformed Services

University of the Health Sciences found possible resistance to permethrin and confirmed resistance to organophosphates and organochlorines in *Anopheles albimanus* in the north of the country (19). *An. albimanus* is the main malaria vector in the country while *An. darlingi* predominates during the transition between the wet and dry season in the southern districts (20).

Funding

The government has provided most of the funding for malaria contributing about US\$270,000 in 2014 (Figure 7). Funding has continued to increase since 2007. Additional support has been provided annually by USAID through the AMI/RAVREDA project since 2010. In 2014, the Global Fund also provided start-up funds via the EMMIE project. Although not specifically accounted for, a European Union project focused on integrated vector control also benefited malaria prevention in the past few years.

Figure 6. Time between first symptom and initiation of treatment in Belize, 2012-2014

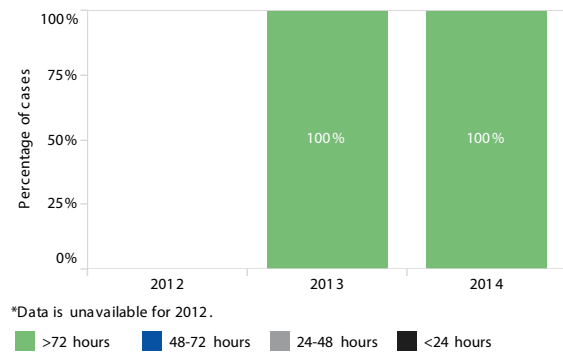


Figure 7. People protected by IRS and by ITNs in Belize, 2000-2014

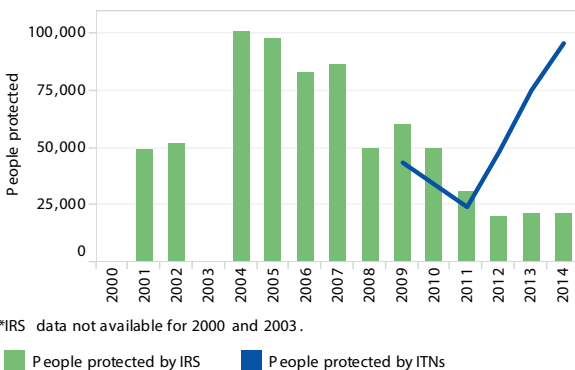


Figure 8. Funding for malaria in Belize, 2000-2014

