EL SALVADOR

There has been a 98.9% reduction in malaria cases in El Salvador since 2000 and the country has met the WHA 58.2 target for MDG 6C, a feat accomplished by 2002 (Figures 1 and 2). El Salvador is currently in the pre-elimination phase and has reported very few cases of malaria in recent years, many of them imported. In 2014, there were a total of 8 cases and no malaria-related deaths have been reported since 1998.

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

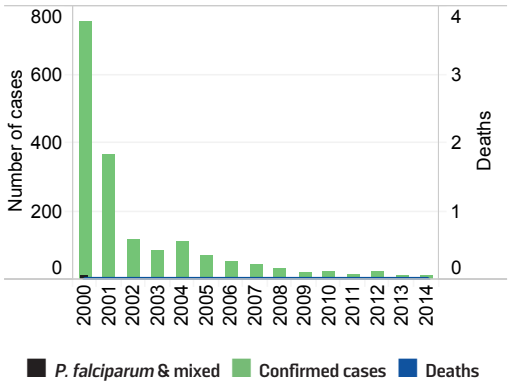
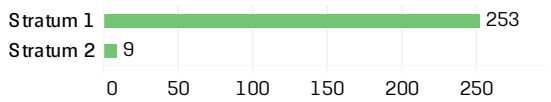


Table 1. Elimination profile of El Salvador, 2012-2014

	2012	2013	2014
Total Cases	21	7	8
Autochthonous Cases	14	6	6
Autochthonous - P.f.	0	0	0
Autochthonous - P.v.	14	6	6
Imported Cases	7	1	2
Imported - P.f.	3	0	0
Imported - P.v.	4	1	2
Active Foci	10	2	2

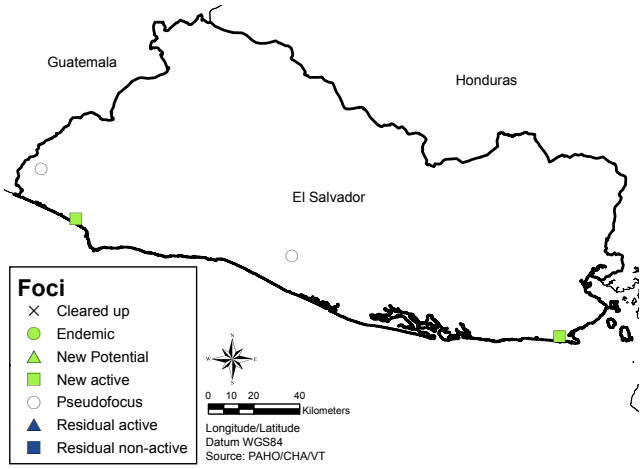
P.f.: ***Plasmodium falciparum***
P.v.: ***Plasmodium vivax***

Figure 3. Number of municipalities (ADM2) by strata in El Salvador, 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.

Figure 1. Malaria in El Salvador by foci, 2014



In the past few years, all of the reported autochthonous cases have been attributed to *P. vivax* infections and currently only transmission due to that species exists in the country (Table 1). The last reported autochthonous *P. falciparum* case in the country was reported in 1995. Between 2010 and 2014, 1 in every 3 cases has reportedly been imported (total 75 cases). Most imported *P. vivax* cases have come from neighboring Guatemala. Areas along the border, especially Ahuachapan department, are an area of high vulnerability. Many workers return with malaria infections acquired while working in farms and plantations during the harvest season in malaria endemic areas of Guatemala, especially the department of Escuintla. An imported case from Guatemala was detected in Acajutla municipality in the Sonsonate department, leading to an outbreak that further caused 5 autochthonous malaria cases in 2013.

On the other hand, all *P. falciparum* infections during 2010–2014 have reportedly been imported from African countries (n=4), Honduras (n=3), and Haiti (n=1).

In 2014, only four foci were reported, two newly active and another two pseudo foci. The two new active foci were the Metalio locality in Acajulta municipality, Sonsonate department, and '*Llano los platos*' locality in Conchagua municipality in La Union department on the southeastern coast of the country (Figure 1). In the latter, only one autochthonous case was detected, but no other imported or local transmission case could be found neither in the locality nor in surrounding areas to which this autochthonous case could be related. No cases were found in a 2012 prevalence study conducted in school children aged 8-10 years (n=152) from 5 municipalities of Ahuachapan (historically endemic area of the country) using PCR (30).

Anopheles albimanus is the main malaria vector species. Nine municipalities had less than 1 case per 1,000 inhabitants in all years during 2012–2014 (Figure 3). More cases have been reported in men than in women in the last 3 years, particularly in the economically productive age groups (Figure 4).

Diagnosis and Treatment

Microscopy has been the primary method of diagnosis in El Salvador (Figure 5); the country plans to use RDTs especially in points of entry for immigrants like airports, international border crossings and ports. In 2014, all 173 laboratories in the country were reported to have participated in a quality assurance program. However this was lower than the 211 laboratories reported the year prior.

Both *P. falciparum* and *P. vivax* infections are treated with chloroquine and primaquine as a first-line treatment. Presumptive treatment and treatment with chloroprimaquine (a combination of chloroquine and primaquine in a single tablet) were given prior to 2013 after which the treatment scheme changed (Figure 6). Treatment has since been only administered to positive cases, changed from combination pills to use of separate tablets of chloroquine and primaquine, and consequently the duration increased to 14 days of treatment with primaquine instead of 5 days. However implementation was still lacking in 2014 and some cases were treated presumptively at the time of taking a slide.

Figure 5. Blood slides examined and SPR in El Salvador, 2000–2014

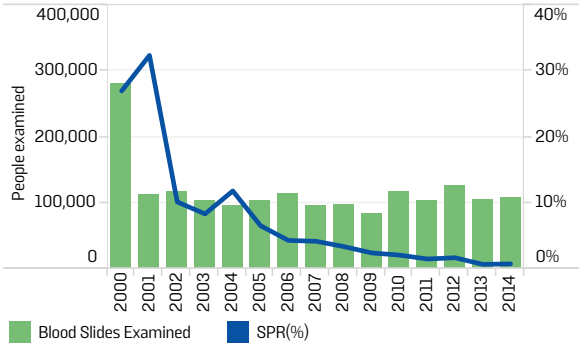
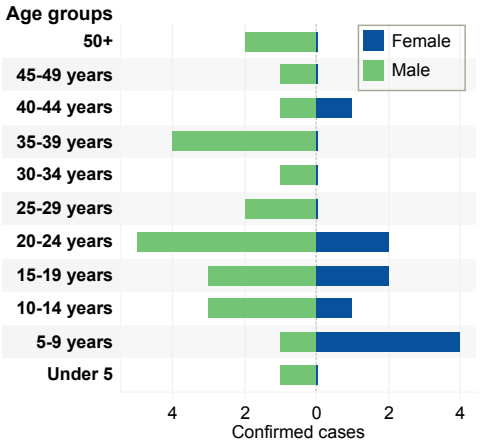


Figure 4. Malaria cases by age and sex in El Salvador, 2012–2014

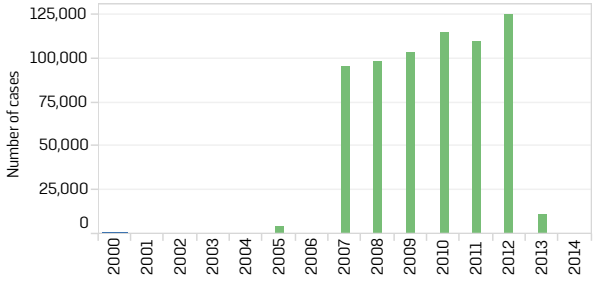


Owing to very few cases, access to diagnosis and treatment has waned within the past year and in 2014 all cases received treatment in more than 72 hours after onset of symptoms (Figure 7). In the previous year, all cases had received treatment in less than 72 hours, with the majority receiving it in 24–48 hours.

Vector Control

Use of IRS has decreased since 2007 and currently protects about 6,400 people (Figure 8). Two to three cycles of IRS are conducted per year in communities/areas that are to be protected with pyrethroid insecticides ensuring protection throughout the year. In 2013, 10,000 ITNs were reported distributed in the country; however, around 5,000 of them were actually distributed in 2014. No insecticide resistance surveillance information is available from the country for *Anopheles*.

Figure 6. Number of malaria cases and those treated with first-line treatment in El Salvador, 2000–2014



*Data for first-line treatment was unavailable for 2000.

First-line treatments Confirmed Cases

Funding

Though autochthonous cases have decreased tremendously, the government continues to provide an estimated average of US$3 million for malaria prevention and elimination (Figure 9). However, this is an estimate as the vector control program is an integrated one and thus contributing to other vector diseases such as dengue, Chagas, and chikungunya. PAHO/WHO has continuously provided technical support and financial resources for specific activities throughout 2000-2014. In 2014, the country also became part of a the Global Fund-financed EMMIE project and start-up funding of US$200,000 was available; however, it could not be used due to administrative difficulties and will be used in subsequent years.

Figure 7. Time between first symptom and initiation of treatment in El Salvador, 2010 - 2014

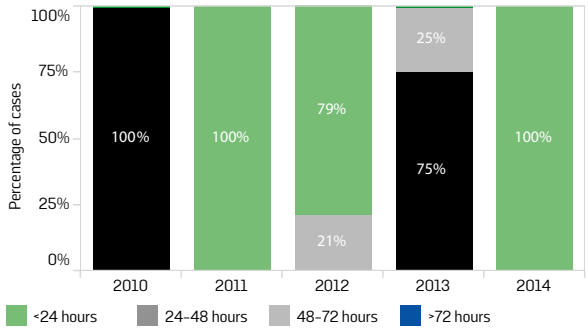


Figure 8. People protected by IRS and by ITNs in El Salvador, 2000-2014

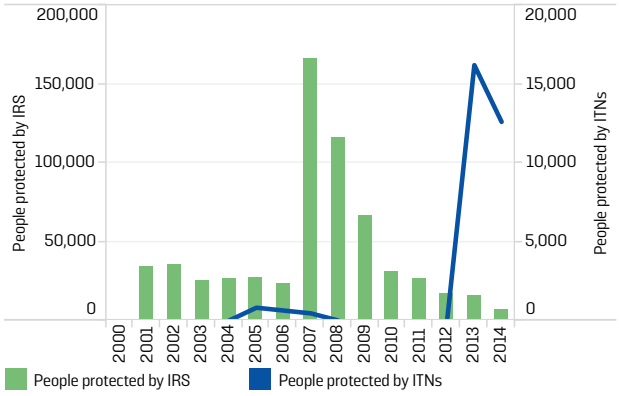


Figure 9. Funding for malaria in El Salvador, 2000-2014