



MISSION REPORT

Joint ECDC/WHO mission related to local malaria transmission in Greece in 2011 Summary

September/October 2011

Introduction

Between 21 May and 5 December 2011, Greece reported 40 cases of *Plasmodium vivax* infection in persons without a travel history to an endemic country. The majority of these locally acquired cases ($n=34$) occurred in Evrotas, a 20 km² river delta area located in the district of Lakonia on the Peloponnese, southern Greece. Of these, 27 cases were detected among Greek citizens who reside in the area and seven among immigrants from non-endemic countries: five from Romania (two were diagnosed in Romania), one from Morocco, and one from Poland. The first locally acquired case in 2011 had onset of symptoms on 21 May, the last on 18 October. In addition, 23 cases of *P. vivax* infection were reported among migrant workers from malaria-endemic countries in the area of Evrotas. The majority of those originated from Pakistan ($n=21$) and two from Afghanistan. All the reported cases among immigrants (including the two cases diagnosed in Romania) were persons who worked in the agricultural area in Evrotas. Ten of the reported cases in Evrotas were detected after extensive active case finding had been initiated in the area. Three cases among migrants from endemic countries were asymptomatic contacts (household members) of previous malaria cases and were detected by PCR. The first imported case was detected in week 22 (23–29 May); the last imported case had onset of symptoms during week 44 (31 October–6 November) and was a Pakistani national who had recently arrived in Greece. Elsewhere in Greece, six cases of sporadic local transmission were reported in 2011 in the municipalities of Attiki ($n=2$), Evoia ($n=2$), Viotia ($n=1$) and Larissa ($n=1$).

Within the context of this outbreak, two support missions were carried out to assess the situation in Greece: the first mission (19–25 September 2011) was carried out by ECDC and the second mission (10–15 October 2011) was jointly conducted by ECDC, WHO and the Hellenic Centre of Disease Control and Prevention (KEELPNO) who together visited all the affected districts. The assessment teams reviewed the risks of potential re-establishment of malaria transmission in Greece, and proposed prevention measures in the specific areas concerned and across the country. The summarised findings of both missions are presented here.

Findings

Greece was historically malaria-endemic until national eradication programmes allowed the country to achieve malaria-free status in 1974. Imported malaria (contracted outside the country) continued to be reported, with a total of 1027 imported cases detected over the period 1982–2010.¹ Sporadic malaria cases without travel history were reported in 1999 and 2000. In 2009, six microscopically-confirmed locally acquired cases of *P. vivax* malaria were reported from Lakonia (Evrotas). In 2010, one locally acquired case was reported from Lakonia and two from Viotia. At the time of the second assessment mission, a total of 53 cases of malaria had been reported in Greece from 5 different districts, namely Lakonia ($n=47$), Attiki ($n=2$), Evoia ($n=2$), Viotia ($n=1$) and Larissa ($n=1$). Of these 53 cases, 19 cases were classified as imported, and 34 as locally acquired. Among the 19 imported malaria cases, 18 patients originated from Pakistan and one from Afghanistan. One asymptomatic case of imported *P.*

¹ Source: <http://data.euro.who.int/cisid/?TabID=278443> and MOHSS, Greece

vivax malaria was detected during the intensified surveillance operations by KEELPNO (active case detection). All imported cases occurred in migrants from endemic countries (mainly from Pakistan).

The epidemiological and entomological findings of these missions support the findings of the Greek authorities that in several parts of Greece the conditions continue to exist for renewed local transmission of *P. vivax* malaria, especially in agricultural areas with large seasonal migrant populations: (1) there are increased opportunities for parasite introduction from abroad; (2) the mosquito vector *Anopheles sacharovi* is present and there are breeding sites; (3) people are exposed to mosquito bites between dusk and dawn; and (4) ambient temperatures are favourable for onward transmission from May to October. The risk of renewed transmission in receptive areas will vary with the geographic origin and size of the seasonal migrant labour force, and the resulting importation of *Plasmodium* parasite. Localised high importation of *Plasmodium* combined with favourable conditions for onward transmission has resulted in the 2011 outbreak in Lakonia.

The current malaria situation in Greece presents a very limited risk of spread of *P. vivax* malaria to the rest of the European Union, compared with the risk of introduction to the EU through migrants and travellers returning from other malaria-affected countries worldwide.

It is important to continue closely monitoring the situation in areas of the European Union at risk for re-establishment of local malaria transmission and to increase awareness among clinicians. This will ensure that suspected malaria cases are rapidly identified and reported to the respective authorities, giving rise to an appropriate public health response.

The risk of re-establishment of malaria transmission in Greece poses a threat to Objective 3 of the Roll Back Malaria Partnership's Global Malaria Action Plan (RBM/GMAP) to 'Eliminate malaria by end 2015 in 10 new countries (since 2008) and in the WHO Europe Region'ⁱⁱ.

Recommendations and future steps in Greece

In the short term, in Evrotas, Lakonia, early, reliable diagnosis of malaria among all population groups and prompt and adequate supervised treatment with chloroquine and primaquine (14 days) is an immediate priority for public health authorities. The purpose is to manage patients appropriately, define the extent of the problem and reduce possibilities for onward transmission. In addition, on-the-spot training sessions on disease management and prevention for clinicians from the public and private sector are recommended, in order to continue raising their awareness and promote the immediate notification and management of cases.

The development of an integrated preparedness and response plan for malaria covering epidemiological surveillance, clinical management, laboratory diagnosis, entomological monitoring, vector control, relevant operational research, communication and coordination is necessary in the longer term. Such a plan could include additional longer terms recommendations:

- 1 Establish mechanisms to predict, if possible, and detect at early onset as well as rapidly respond to malaria and other vector-borne diseases:** Basic preparedness and built-in rapid response capabilities should be in place in malaria-prone areas to cope with possible emergency situations.
- 2 Enhance malaria surveillance:** Strengthen epidemiological services, case notification and information systems, with an operational research component, capable of planning, monitoring and evaluating anti-malaria interventions.
- 3 Raise awareness on malaria prevention:** Continue raising awareness of the clinical signs and correct management of malaria cases to ensure physicians from the public and private sector are familiar with the disease and able to recognise and treat it promptly. Reinforce immediate case notification and investigation, as well as investigation around the case plus response for every identified malaria case, paying particular attention to febrile illness among minority population groups who may be most at risk of malaria infection.
- 4 Improve laboratory diagnosis:** Offer refresher training, revise standard operating procedures and include the National Reference Laboratory in an international External Quality Assurance programme.
- 5 Entomology:** Collate existing information and collect new data on malaria vector behaviour. This is urgently needed to enable more targeted control measures, reducing the risk of renewed transmission in 2012 and beyond. An integrated malaria vector control action plan adapted to the ecological settings is needed. The action plan should draw attention to the coordination of actors, to independent assessment and evaluation of the vector control operations, and to the use of evidence-based vector control interventions in line with WHO recommendations.
- 6 Migrant worker health:** Continue improving access to healthcare for migrant workers; for malaria as well as for other infectious diseases. Addressing ways to better communicate with migrant worker communities about public health issues would be beneficial.
- 7 Inter-sectoral collaboration:** Consider the coordination between the different public and private stakeholders and actors (such as Ministries of Health, Interior, Agriculture and Environment, local authorities

ⁱⁱ Roll Back Malaria. Refined/Updated GMAP Objectives, Targets, Milestones and Priorities Beyond 2011. Available from <http://www.rollbackmalaria.org/gmap/gmap2011update.pdf>

and the private sector). Co-ordination with other preparedness and response plans for vector-borne diseases like West Nile fever would be of value.

Long-term recommendations at international level

- 1** It would be useful to assess whether similar ecological settings, taking into account all aspects of the transmission chain, are present in other EU countries. Such an assessment is in progress in Greece and supported by ECDC. The early identification of areas at potential risk would enable the implementation of specific awareness action.
- 2** It would be appropriate to revise the EU directive for blood safetyⁱⁱⁱ: the deferral criterion is amongst others based on visiting 'endemic areas' which is difficult to implement in the new malaria context in the EU both for countries experiencing outbreaks as well as for countries with persons visiting these countries.
- 3** ECDC and WHO in close collaboration may facilitate inter-country laboratory cooperation for Greece; support the surveillance of disease vectors and risk areas; and provide technical guidance and assistance on planning, implementing and evaluating malaria control and preventive measures, including case management and laboratory quality assurance and facilitating inter-country cooperation on issues of direct relevance to malaria and other vector-borne diseases.

ⁱⁱⁱ Commission Directive 2004/33/EC of 22 March 2004 implementing Directive 2002/98/EC of the European Parliament and of the Council as regards certain technical requirements for blood and blood components. OJ L 91, 30.3.2004, p. 25–39.