

## RAPID RISK ASSESSMENT

# Update on autochthonous dengue cases in Madeira, Portugal

20 November 2012

### Main conclusions and recommendations

This is the first sustained transmission of dengue in the European Union since the 1920s. Autochthonous transmission is likely to continue until the end of the year when mosquito density will probably decrease.

The epidemiological situation does not imply any trade or travel restriction beyond the disinfestations currently being implemented.

As the influenza transmission season will commence around the end of the year, concomitant actions for monitoring dengue and influenza are being launched in Madeira.

Aircraft disinfection and control of vector mosquitoes at ports and airports in Madeira should be continued.

National and regional (Madeira) public health authorities in Portugal have implemented appropriate control measures and the risk of transmitting dengue through blood or other substances of human origin in Madeira is currently mitigated. For visitors returning from Madeira, deferral should be considered by Member States, in accordance with section 2.3, Annex III of the [Commission Directive 2004/33/EC of 22 March 2004](#).

Residents and travellers visiting the island of Madeira are strongly advised to take individual [protective measures](#) to avoid mosquito bites. Dengue is transmitted by a daytime mosquito and consequently protective measures must be applied throughout the day.

Travellers experiencing febrile symptoms with severe headache, retro-orbital pain, myalgia, arthralgia and maculo-papular rash within 21 days of visiting Madeira are advised to seek medical advice. ECDC is gathering information on confirmed cases reported by EU/EEA Member States.

Neighbouring geographical areas (e.g. the Canary Islands) and other EU Member States need to assess the risk of *Aedes* mosquito populations becoming established and dengue being introduced. Surveillance activities need to be implemented on the basis of such a risk assessment.

### Source and date of decision

An [ECDC rapid risk assessment](#), published on 10 October 2012, concluded that this was the first documented outbreak of dengue in the Autonomous Region of Madeira (RAM). The *Aedes aegypti* mosquito, the most effective vector for dengue virus, has been present on Madeira since at least 2005. Although the introduction of the virus to the island is not an unexpected event, given the dramatic expansion of endemic dengue transmission globally over the last 20–30 years and the high number of visitors to Madeira, the outbreak is large and constitutes a significant public health event.

In light of the significant increase in the number of reported cases since the publication of the previous rapid risk assessment, and the technical assistance being provided by ECDC to the health authorities in Madeira in their efforts to control the outbreak, an ECDC internal decision was taken on 12 November 2012 to produce an update of the rapid risk assessment.

## Consulted experts

### Initial rapid risk assessment

ECDC internal response team: Dragoslav Domanovic, Romit Jain, Lara Payne, Jas Mantero, Laurence Marrama, Emmanuel Robesyn, Herve Zeller, Denis Coulombier.

Portuguese team: Francisco George, Graça Freitas, Ana Nunes, Ana Clara Silva, Maurício Melim, Ana Leça, Kamal Mansinho, Paula Vasconcelos, Cristina Abreu Santos, Isabel Marinho Falcão.

WHO: Jukka Pukkila (EURO), Mikhail Ejov (EURO), Raman Velayudhan (HQ).

External experts: Paulo Almeida, Carla Sousa, Maria João Alves (INSA).

### Updated rapid risk assessment

ECDC internal response team: Tarik Derrough, Herve Zeller, Josep Jansa, Bertrand Sudre, Joana Gomes Dias, Benedetto Simone, Denis Coulombier.

Portuguese team: Francisco George, Graça Freitas, Ana Nunes, Ana Clara Silva, Maurício Melim, Ana Leça, Kamal Mansinho, Paula Vasconcelos, Cristina Abreu Santos, Isabel Marinho Falcão, Cesaltina Ramos.

## Link to the previous risk assessment and epidemiological update

The initial rapid risk assessment was published on ECDC's website on 10 October 2012. An epidemiological update was published on the website on 8 November 2012 when additional cases were reported. For information on disease background and mosquito vectors please refer to the initial risk assessment.

## Updated event background information

The outbreak of dengue in the Autonomous Region of Madeira has evolved rapidly since its onset on 3 October 2012 (official date on which the epidemic was declared by the Portuguese health authorities) when two dengue infections were confirmed in patients residing in Madeira.

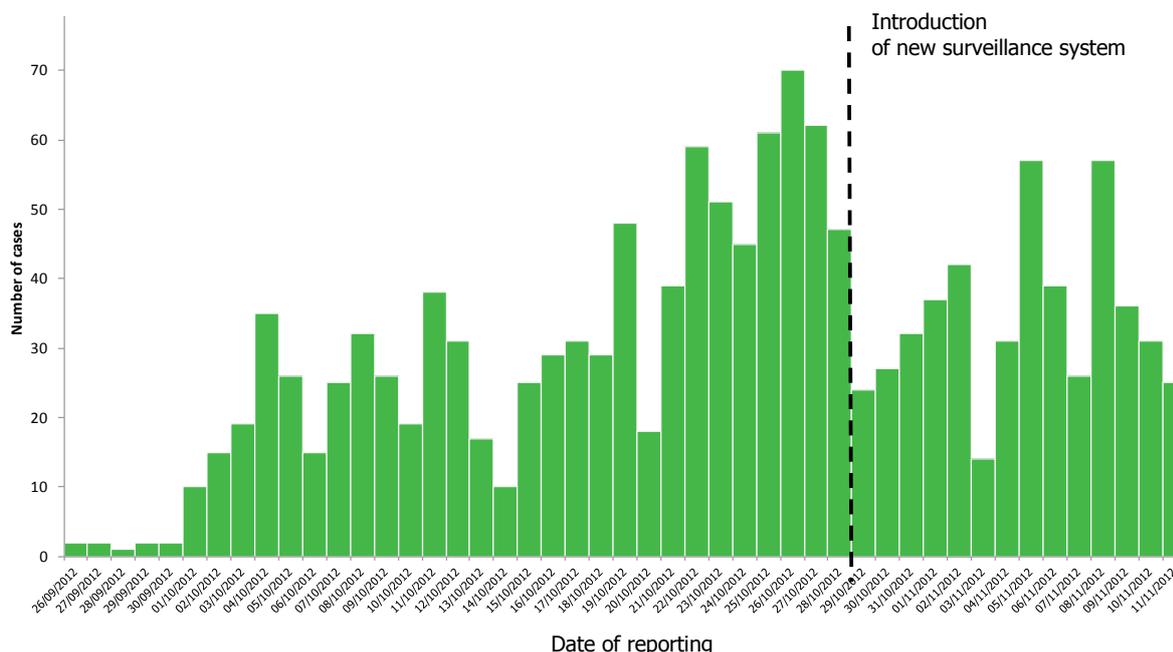
Between 3 October and 11 November 2012:

1 357 cases of dengue fever have been reported by the public health sector, including:

- 669 laboratory-confirmed cases
- 688 probable cases
- Eighty-nine cases have been hospitalised since the outbreak began (cumulative number), four of which have still not been discharged (as at [11 November 2012](#)).
- No deaths have been recorded.

The distribution of cases between 26 September 2012 and 11 November 2012 is shown in Figure 1.

**Figure 1. Distribution of probable and confirmed dengue cases, by date of reporting, 26 September–11 November 2012, Madeira (n=1357)**



The dotted line in Figure 1 indicates the date on which a new surveillance system was implemented, integrating data from the activities of hospital units and primary healthcare centres. The system, which is based on unique identifiers and reports from public health services, enables the timely monitoring of cases by date of onset, age, sex, place of residence and geographical location of daily activities. Private providers are encouraged to report via a web-based system.

The [case definition](#) for dengue surveillance was communicated in document 014/2012 published on 3 October 2012 and updated on 30 October 2012 by the Directorate of Health in Lisbon (refer to Annex 1 for the current case definition).

Almost all reported cases relate to the resident population and most municipalities of Madeira have reported at least one case of dengue infection among their residents. So far twenty-five visitors to Madeira have been diagnosed with dengue since returning to mainland Portugal (nine), [United Kingdom](#) (six), Germany (seven), [Sweden](#) (one) and France (two). ECDC is working with EU/EEA Member States and the European Commission to ensure that cases among returning travellers are reported through EWRS.

**Figure 2. Distribution of cumulative incidence rates for probable and confirmed cases of dengue/10 000 population by parish (administrative unit), weeks 39–45, Madeira**



## Public health measures

ECDC has provided technical assistance to the health authorities in Madeira in their efforts to control the outbreak by deploying a team of experts to the island (22 October–16 November).

Available data on mosquito surveillance in Madeira showed that *Aedes aegypti* is present along the southern coast and has only been detected once in the area of Porto Moniz.

The national and regional Portuguese health authorities are implementing control measures to limit the extension of the outbreak; reduce the risk of sustained transmission locally and the exportation of infected vectors from the island, and to minimise the impact of dengue on the affected population by:

- Reducing the density of mosquito populations at all stages of the life cycle (larval and adult)
- Enhancing vector surveillance in enlarged areas of the archipelago
- Promoting disinfection of aircraft and control of vector mosquitoes at ports and airports
- Improving the response by health services, including reorganisation of secondary and primary healthcare services with regard to the referral of patients
- Enhancing communication strategies and information for citizens.

The recommendations for entomological measures prepared by the mission experts are being reviewed and will constitute the basis for the current dengue control measures implemented in Madeira in the short and medium term.

Measures implemented for the safety of blood, cells, tissues and organ donations in the Autonomous Region of Madeira and mainland Portugal in all relevant services nationwide are still ongoing, in accordance with national recommendations dated 4 October 2012 (see [initial risk assessment](#)).

## ECDC threat assessment for the EU

Local transmission of dengue infection has been now established for eight weeks. Most administrative units on the southern coast of the island of Madeira, where populations are concentrated and vector activity has been confirmed, have reported cases. With the spread of the outbreak, it has been difficult to assess the precise location of the infection as most inhabitants work and reside in different parts of the island.

The risk for travellers and residents will depend on the course of the outbreak in the coming weeks. The updated figures indicate that the outbreak is still ongoing and its evolution cannot be anticipated. If temperatures and humidity conditions remain as they are, *Aedes aegypti* mosquito breeding may continue until the beginning of next year, when climate conditions will contribute to a decrease in vector spread. The number of visitors to the islands usually peaks over the Christmas holidays during which time more cases among the island population and returning tourists can be expected. *Aedes aegypti*, the most effective of the vectors transmitting dengue virus, was first documented on Madeira in 2005. The habitat is very favourable and the *Aedes aegypti* population has expanded rapidly. Since then, vector control measures have been implemented in most affected areas of Madeira. However, due to the topography of the environment and the numerous breeding sites, the impact of regional measures might be limited. These measures will probably not interrupt viral transmission in the coming weeks. However during the winter months, mosquito activity should decrease along with the spread of the disease.

The large number of tourists visiting the island means that continued importation of dengue cases from Madeira to the EU is expected until the mosquito population decreases and transmission is interrupted.

At present, there are no reports of established populations of *Aedes aegypti* in continental Europe. However, the risk of *Aedes aegypti* spreading to the neighbouring islands and into the Mediterranean basin cannot be excluded. However, if dengue transmission becomes entrenched in Madeira, the risk of spread to continental Europe during the summer of 2013 would need to be assessed carefully.

The mosquito season of *Aedes albopictus*, a secondary vector of dengue, will be coming to an end in the next weeks across southern Europe and the risk of further transmission of the virus from viraemic patients is unlikely.

As dengue infection is mild or asymptomatic in a large proportion of infected persons, it poses a safety risk to substances of human origin if asymptomatic viraemic carriers of dengue viral infection make donations (bloods, tissues, cells or organs).

## Conclusions and recommendations

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The epidemiological situation does not imply any trade or travel restriction beyond the disinfections currently being implemented. Aircraft disinfection and control of vector mosquitoes at ports and airports in Madeira should be continued.

As the influenza transmission season will commence around the end of the year, it will be important to allow concomitant monitoring of dengue and influenza in Madeira.

National and regional public health authorities in Portugal have implemented all the appropriate control measures and the risk of transmitting dengue through blood or other substances of human origin in Madeira is currently mitigated. For visitors returning from Madeira, deferral should be considered by Member States, in accordance with section 2.3, Annex III of the [Commission Directive 2004/33/EC of 22 March 2004](#).

Residents and travellers visiting the island of Madeira are strongly advised to take individual [protective measures](#) to avoid mosquito bites. Dengue is transmitted by a daytime mosquito and consequently protective measures must be applied throughout the day.

Travellers experiencing febrile symptoms with severe headache, retro-orbital pain, myalgia, arthralgia and maculopapular rash within 21 days of visiting Madeira are advised to seek medical advice. ECDC is gathering information on confirmed cases reported by EU/EEA Member States.

Neighbouring geographical areas (e.g. the Canary Islands) and other EU Member States need to assess the risk of *Aedes* mosquito populations becoming established and dengue being introduced. Surveillance activities need to be implemented on the basis of such a risk assessment.

## Annex 1. Epidemiological case definition

The case definition for dengue surveillance was communicated in document [014/2012 published on 3 October 2012 and updated on 30 October 2012](#) by the Health Directorate of Lisbon (Abordagem de casos de dengue, Orientação nº 014/2012 de 03/10/2012, atualizada a 30/10/2012, in Portuguese).

**Probable case** must meet both the clinical and epidemiological criteria.

Clinical criteria: acute onset of fever and at least two of the following symptoms and signs: headache, retro-orbital pain, myalgia, arthralgia, exanthema, haemorrhagic manifestations or leucopenia.

Epidemiological criteria: resident in or visit to a dengue-affected area during the 21 days prior to onset of symptoms.\*

**Confirmed case** is defined as a probable case with at least one of the following laboratory results:

- Presence of dengue-virus-specific IgM antibodies in blood or cerebrospinal fluid (CSF).
- Significant increase in the concentration of dengue-virus-specific IgG antibodies (seroconversion).
- Detection of dengue virus nucleic acid in blood or CSF with RT-PCR or other NAAT.

\* The entire Autonomous Region of Madeira is considered an affected area, which means that the epidemiological criterion is met for all cases.