



CONSULTATIVE SIGNAL ASSESSMENT
PRIMARY RISK ASSESSMENT
EVIDENCE BASED RISK ASSESSMENT
PUBLIC HEALTH EVENT ASSESSMENT

TWO AUTOCHTONOUS MALARIA CASES

Date of the signal	Date of the PRA	Signal provider	Experts consultation	Method
08/10/2020	08/10/2020	Marjan Van Esbroeck (Malaria National reference laboratory)	Permanent experts: Dirk Wildemeersch (AZG), Romain Mahieu (COCOM-GGC), Paul Pardon (FOD), Sophie Lokietek (AViQ), Karin Cormann (DGOV), Patrick Demol (HGR-CSS), Sophie Quoilin (Sciensano). Specific experts : Marjan Van Esbroeck (ITG), Wim Flipse (AZG), Isra Deblauwe (ITG), Steven Callens (UZ Gent), Emmanuel Bottieau (ITG), Bart Bautmans (AZG)	E-mail consultation
Date of update	Closing date			

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Signal

Two malaria cases were notified on 02/10/2020. One of the cases was a 82 years old woman, admitted in the AZ Jan Portaels who died from a shock without diagnosis. Her 83 years old husband was also admitted in a serious condition *Plasmodium* spp. was found in the bloodsmear. He was transferred to the UZ Leuven where he died two days later.

The laboratory reported the first result to Zorg en Gezondheid on 02/10.

For both patients, the laboratory diagnostic was then confirmed by the malaria National reference laboratory. Samples were PCR positive and further investigation found high levels of parasitemia of *Plasmodium falciparum* spp. particularly in the man (1170852 asecs.paras./µl).

Hypotheses on source of infection:

1. Travel related malaria, acquired in endemic zones:

- No recent travel history. Last travel to an endemic area in the years 1960.
- No travel of another member of the family to an endemic area and no visitors from abroad.
- No relapsing malaria as *Plasmodium falciparum* spp.

2. Induced malaria or non-mosquito transmitted

- No particular medical history, no blood transfusion.

3. Introduced malaria, meaning the possibility of transmission by local *Anopheles* infected on (asymptomatic) gametocyte carrier (originating from endemic areas)

- Currently no notification of imported malaria cases in the same period and the area/province of the autochthonous cases

4. Odyssean¹ malaria or acquired through imported exotic mosquitoes (suitcase malaria)

- The couple lived in Kampenhout, at 4-5 km north from the Zaventem International airport and the military base/airport, the specimen could have flown to the house of the couple.

Description

Cause known?

- Two confirmed malaria cases, autochthonous, from unknown origin.
- Although the route of transmission remains undetermined, airport malaria seems the most plausible explanation for infection. Since the couple lived near Zaventem International airport and the military base/airport, the specimen could have flown the 4 to 5 km to the house of the infected persons or it could have entered a car that drove to the area close to the house.
- Although competent vectors to transmit the parasite could be present, as already identified by Modirisk project in 2008 in Belgium, it is unlikely that they are at the origin of these cases.

Unexpected/unusual

- Autochthonous malaria cases have already been described in Belgium and occur sporadically, but it is an unusual event. There was a cluster of 6 cases in 1995 (with a delay in diagnosis in the first cases). In the

¹ Malaria acquired in a non-malarious area from the bite of an imported mosquito

	<p>following years, few other cases has been described. The latest two were one case in 2011 and another in 2015.</p> <ul style="list-style-type: none"> - The main vectors of <i>Pl. falciparum</i> are tropical <i>Anopheles</i> such as <i>Anopheles gambiae</i> and <i>Anopheles funestus</i> in Africa. Based on laboratory experiments and modelling <i>An. gambiae</i> is expected to be able to fly between 2 and 10 km. Adult blood-fed <i>An. gambiae</i> can live until 30 days in laboratory conditions. And it is possible that one mosquito had bitten the two cases and transmitted the <i>Plasmodium</i> to both.
Severity	<p>Patients with autochthonous malaria can present complications and die due to the delayed or missed diagnosis of the cause of illness.</p>
Dissemination (Low/Medium/High)	<ul style="list-style-type: none"> - No risk of malaria dissemination expected. - Further entomological assessment awaited.
Risk of (inter)national spread	<ul style="list-style-type: none"> - No
Preparedness and response	
Preparedness	<ul style="list-style-type: none"> - The laboratory capacity to diagnose malaria is available in most Belgian labs and Belgium has a National reference laboratory (NRL). - Malaria surveillance in Belgium relies on the sentinel laboratory network and the NRL. Both report on a voluntary base. - Autochthonous malaria is mandatory notifiable, and all cases are to be reported to regional health authorities. - Currently no national surveillance/monitoring of (invasive/exotic) mosquitoes in Belgium is in place and there is no national plan to manage potential installation of invasive/exotic mosquitoes. A two years surveillance project (with a focus on <i>Aedes</i> mosquitoes) has been submitted and accepted by JICEH beginning of 2020. However, this will be (re)discussed and voted again at the next JICEH end of 2020.
Specific control measures (surveillance, control, communication)	<ul style="list-style-type: none"> - Entomological investigation will be carried out starting on 9/10. A mosquito trap will be set on 09/10/2020 for one week in the garden of the cases and their house will be checked to look for living and dead mosquitoes. On the 12/10/2020, the surrounding (500m buffer zone and the nature reserve 'Torfbroek', cf annex) of the house will be investigated to look for native <i>Anopheles</i> larvae in the surrounding area. - Despite that the infection probably happened mid-September 2020 and that the tropical <i>Anopheles</i> mosquito, which could have bitten the two persons is already dead, entomological investigation at and around the house of the cases will serve to investigate the presence of <i>Anopheles plumbeus</i> and <i>Anopheles atroparvus</i>. Both are competent vectors of <i>Plasmodium</i> in the lab and are present in Belgium.

Public health impact	
Public health impact in Belgium (Low/Medium/high)	<ul style="list-style-type: none"> - Low. No further autochthonous malaria cases are expected related to this event. However, it remains important to keep doctors aware of the possible risk, for early diagnosis.
Recommendations (surveillance, control, communication)	<ul style="list-style-type: none"> - Although this particular event has no political sensitiveness and there is no risk of establishment of <i>Anopheles</i> mosquitoes in Belgium yet, this event highlights the importance of having a structure in place for surveillance of mosquitoes in Belgium, allowing rapid setting up of entomological surveillance. Within this context, response in case of emergence of vector borne diseases in Belgium should be prepared.
Actions	<ul style="list-style-type: none"> - Agentschap Zorg en Gezondheid (AZG): have informed local authorities, who actively informed the population of the area. The mayor together with AZG will make a press conference on 10/10/2020 to inform on this event. - Awareness should be raised among GPs/hospitals in areas around airports. Information letters should be sent to inform them on this event. - The sentinel laboratories and the NRL should keep reporting on malaria cases (autochthons and imported), as this is of paramount to ensure a good surveillance and understand the epidemiology of malaria in Belgium. - Entomological investigation: started on 9/10. - The notification of the event to WHO (IHR) is not necessary since these are isolated cases. The event will be notified by EWRS for information. - RAG: RMG must be informed in order to put again the attention of health authorities on the problem of potential emerging mosquito borne diseases and in particular on the necessary surveillance of mosquitoes and of mosquito-borne-diseases (human and animal) in Belgium. This event underlines the importance of having a decision on the 2 years passive and active mosquito surveillance project submitted to the JICEH.

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ANNEXE

