

RAG

Risk Assessment Group

PRIMARY RISK ASSESSMENT

Possible emergence of tick-borne encephalitis in Belgium

Date of the signal	Date of the RA	Signal provider	Experts consultation	Method
10/02/2017	16/02/2017	Agentschap Zorg & Gezondheid	Permanent experts: Dr Patrick Demol (HGR), Dr Valeska Laisnez (AZG), Dr Romain Mahieu (COCOM-GGC), Dr Sophie Quoilin (WIV-ISP), Dr Daniel Reynders (FOD), Dr Carole Schirvel (AViQ), Mme Mireille Tomas (DG)	Email consultation
Date of update	Closing date			
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**PRIMARY RISK ASSESSMENT
OF POTENTIAL PUBLIC
HEALTH EVENT**

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Signal	<p>Tick-borne encephalitis (TBE) is a viral tick-borne infectious disease that occurs in endemic areas across regions of Europe. Different factors (climate change, expansion of tick populations, increased outdoor activities...) contributed to an increase of the incidence of TBE during the last decades and the emergence of new endemic foci in Europe. Approximately 5000-12 000 cases of TBE are reported in Europe each year, mainly in the Czech republic, Lithuania, Latvia, Sweden, Germany and Estonia.</p> <p>In July 2016, the first autochthonous case of tick-born encephalitis was diagnosed in the Netherlands. This event generated a lot of media attention in Belgium too, leading to anxiety among some risk groups (professionals exposed to tick bites, hikers, mountain bikers..) and individual initiatives to get vaccinated.</p> <p>In this context, Agentschap Zorg & Gezondheid (AZ&G) requested an assessment of the risk for TBE in Belgium and the need to recommend vaccination or not.</p>		
Description		Score	Description / arguments
1	Cause known?	Yes	<p>Tick-borne encephalitis, or TBE, is a human viral infectious disease caused by the tick-borne encephalitis virus (TBEV), a member of the family <i>Flaviviridae</i>.</p> <p>The virus is transmitted by the bite of infected ticks, mainly <i>Ixodes ricinus</i> for the European subtype of TBEV. Humans may acquire infection also by consumption of contaminated unpasteurised dairy products.</p> <p>The main animal reservoirs are small rodents. Different species of wild and domestic mammals (especially hares, deer, wild boar, sheep, cattle, goats) play a role in supporting virus circulation indirectly by enabling tick multiplication. Humans are incidental and dead-end hosts.</p> <p>Persons at risk of infection are people with recreational or occupational outdoor activities (e.g. hunting, fishing, camping, hiking, forestry and farming) in endemic areas.</p> <p>Approximately two-thirds of patients infected with TBEV will remain asymptomatic. When disease develops, the European type of TBE typically presents 2 phases of illness: an early viremic phase with aspecific symptoms (fever, malaise, headache...), followed after about 8 days of remission by a second phase with involvement of the central nervous system (meningitis - encephalitis).</p>

2	Unexpected/unusual	No	<p>TBE is considered an emerging disease due to its rising incidence and the expansion in new, previously uninfected, areas. Until now, no autochthonous human TBEV infection has been reported in Belgium and TBEV has never been reported in ticks in Belgium, but studies on ticks generally only test for bacteria or parasites (DNA-extraction only, not RNA).</p> <p>However, suitable climate conditions, hosts and vectors are also present in our country, and serological surveillance in animals detected antibodies to TBEV in deer (0.4% seropositivity, Wallonia, 2007-2009), cattle (2.6% to 4.3%, Belgium, 2010) and wild boars (2.9%, Flanders, 2013).</p> <p>Therefore, the occurrence of an autochthonous case of TBE would not be unexpected.</p>
	Severity	Yes	Severe neurological sequelae occur in up to 10% of patients infected with the European type of TBEV. Mortality is rare, about 0.5% to 2%.
4	Dissemination (Low/Medium/High)	Low	Although the vector for TBEV is present in Belgium, the infection rate of ticks is probably very low.
5	Risk of (inter)national spread	Low	The virus has already been identified in our neighbouring countries Germany, France (Alsace) and more recently also in The Netherlands (Sallandse Heuvelrug).
Preparedness and response			
6	Preparedness	Medium	<p>Expertise for diagnosis exists at the National reference center (NRC) for TBEV at the Institute of Tropical Medicine (since October 2015) and at the WIV-ISP (former NRC). Surveillance of human disease in Belgium relies on reports of the NRC. The number of diagnostic tests requested each year is increasing progressively, from tests for 44 patients in 2012 to 99 in 2015 and even up to 149 in 2016. The number of requests that year peaked after the report of the first autochthonous case of TBE in The Netherlands. So far, all diagnosed infections in Belgium were imported from endemic countries (about 1 case a year). However, due to a high proportion of asymptomatic infections and aspecific symptoms of clinical illness, underdiagnoses cannot be excluded.</p> <p>Surveillance in animal hosts is not routine but ad hoc based (research studies).</p> <p>A safe and effective vaccine against the TBE virus exists and is available for purchase in Belgium. Up to now, vaccination is only recommended for travellers with outdoor activities to risk areas. Recommendations are available on the website of the Institute of Tropical Medicine, under travel advice.</p>
7	Specific control measures (surveillance, control, communication)		<p>Agentschap Natuur & Bos (ANB) plans a new serological study on wild boars in Flanders in 2017.</p> <p>AZ&G plans an information campaign on prevention of tick bites in Flanders in 2017-2018, with preparation of tools for communication on TBE if needed (e.g. identification of a first</p>

			autochthonous case).
Public health impact			
A	Public health impact in Belgium (Low/Medium/high)	Low	Low impact because there is no human to human transmission, the infection rate of ticks is probably very low and only 10% of cases have severe neurological sequelae.
B	Recommendations (surveillance, control, communication)		<p>1) Since the incidence of TBE among inhabitants of an area is not directly correlated to the prevalence of TBEV in the local tick population, the collection and screening of ticks by real-time RT-PCR is not recommended for assessment of human TBE risk. A systematic search for published studies on TBEV prevalence in ticks in Poland and Germany suggested that testing large numbers of collected ticks could not consistently assure virus detection, even in known endemic foci. An alternative method of environmental TBEV monitoring is serological monitoring of rodents and other wildlife, that should be conducted on a regular basis.</p> <p>2) In area's with detection of seropositivity in animals, enhanced surveillance of disease in humans should be conducted, e.g. retrospective testing of CSF samples of patients with encephalitis in the surrounding hospitals.</p> <p>3) Since sporadic cases of TBE can occur and the identification of a first autochthonous case in Belgium will probably raise a lot of media attention, leading to concern in the general population and inappropriate use of vaccines, it seems useful to prepare national recommendations for vaccination for both the general population and more specific risk groups, adapted to the epidemiological situation:</p> <ul style="list-style-type: none"> - No human case but low level circulation of the virus - Sporadic human case - Endemic circulation
C	Actions		<ul style="list-style-type: none"> - Conduct serological surveillance in animals, both in Flanders and Wallonia. In area's with seropositive sentinel animals, targeted follow up surveys should be performed in ticks or rodents to detect and analyse the circulating TBEV strain(s) in the wild. - Conduct enhanced surveillance of (meningo-)encephalitis in humans (WIV-ISP and NRC). - Request advise on vaccination from HGR-CSS.

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