RAPID RISK ASSESSMENT

Outbreak of Rift Valley fever in Niger
Risk for the European Union

7 October 2016

Main conclusions and options for response

The current Rift Valley fever (RVF) outbreak in Niger does not pose a new risk for the European Union (EU).

- The outbreak is currently affecting rural areas that are not considered touristic areas. Travellers staying in urban areas or in areas not affected by the RVF outbreak are not at risk of infection. Travellers visiting affected areas are at risk of infection and should avoid contacts with ruminants and use protection against mosquitoes.
- Importation of human cases from Niger cannot be excluded but is unlikely, given the number of cases that have been imported to the EU in previous years.
- There is no risk of secondary transmission from viraemic passengers travelling in airplanes.
- Imports into the EU of live animals and their meat and milk from Niger are prohibited.
- Should the virus be imported, the risk of it spreading among humans within the EU appears to be very low. There is no evidence of direct human-to-human transmission. The risk of transmission to humans through an infected mosquito bite cannot be excluded.
- Risk of transmission through infected substances of human origin (SoHO) is extremely low.
- Transmission of the virus through contact with blood or infected material in healthcare settings should be prevented by applying standard precautionary measures.

The EU Member States should maintain awareness of the RVF situation in Africa and the countries of the Arabian Peninsula and continue to include RVF in their differential diagnosis for sick returning travellers. ECDC will keep monitoring the situation in Niger and update its assessment, should the risk for the EU change.

Source and date of request

ECDC internal decision, 3 October 2016.

Public health issue

Risk of importation of Rift Valley fever (RVF) virus and further spread of the virus within the European Union (EU) in relation to the ongoing outbreak of RVF in Niger.

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Consulted experts

ECDC experts (in alphabetical order): Denis Coulombier, Céline Gossner, Dragoslav Domanovic, Kaja Kaasik Aaslav, Laurence Marrama and Hervé Zeller.

External experts: Sofie Dhollander, Andrea Gervelmeyer and Giuseppe Stancanelli (European Food Safety Authority - EFSA).

Disease background information

Rift Valley fever (RVF) is an acute febrile disease affecting ruminants and humans. The disease is caused by a virus of the genus *Phlebovirus,* family Bunyaviridae [1]. The virus was first isolated in 1931 during an epidemic among sheep in the Rift Valley in Kenya [2]. Since then, the disease has been reported in regions of eastern and southern Africa, but also in most of the sub-Saharan and West African countries, Egypt, Madagascar, Saudi Arabia and Yemen [3]. To date, no autochthonous cases or outbreaks of RVF have been reported in the European Union (EU).

RVF in humans is a notifiable disease at the EU level in accordance with the Commission Decision 2009/312/EC and is listed under 'viral haemorrhagic fevers' [4].

RVF in animals is a notifiable disease in the EU, in accordance with Council Directive 82/894/EEC [5], and the measures to prevent and control RVF are laid down in Council Directive 92/119/EEC [6]. RVF is also a notifiable disease for the World Organisation for Animal Health (OIE) [7].

Transmission

The main route of infection for humans is direct or indirect contact with the blood or organs of infected animals during animal care or slaughtering, or possibly from the ingestion of raw milk. Human infection can also result from the bites of infected mosquitoes [8,9]. To date, there is no evidence of human-to-human transmission, although vertical transmission of RVF virus from a mother to her new-born has been reported [10].

The RVF virus is usually transmitted among ruminants by the bite of infected *Aedes* and *Culex* mosquitoes, but also *Anopheles* and other mosquito species. Vertical transmission also takes place in ruminants [11,12]. Direct transmission from infected ruminants to healthy ruminants has not been proven but cannot be excluded [13]. For some *Aedes* mosquitoes, the virus can infect mosquito eggs that may survive in dried mud and hatch infected imagoes [14].

Incubation period and symptoms

The incubation period in humans varies from two to six days [15]. Viraemia is usually seen during the first three days of fever [16]. Approximately 50% of infected humans remain asymptomatic while most others develop a relatively mild, flu-like disease lasting four to seven days. A small percentage of cases may develop severe syndromes: retinal lesions, meningoencephalitis or haemorrhagic fever [9].

Clinical manifestations in animals vary depending on age and animal species [17]. After a short incubation period of one to six days, symptoms may range from mild to severe, including haemorrhagic fever [18]. Abortions are frequent, especially in ewes. Fatality is high in new-born and young animals (5–100%) [19].

Populations at risk

The population groups at greatest risk of being infected with RVF virus in RVF-affected countries are livestock farmers, veterinarians, butchers and slaughterhouse employees. In addition, laboratory staff handling infected biological samples are also at higher risk of infection. People living or visiting areas where the virus is circulating are also at risk of infection through the transmission routes identified above, even though the risk is lower than for those directly exposed to animals or infectious laboratory samples [9].

Prevention and treatment

Control measures to prevent the spread of the virus to humans include sanitary restrictions relating to products of animal origin, such as meat and milk; use of insect repellents and netting, information campaigns targeting those at risk (e.g. farmers), and appropriate disposal of dead animals. Standard precautions in healthcare settings are effective at preventing transmission [9]. There is no licenced vaccine for humans.

In animals, standard sanitary and hygiene interventions, such as vaccination with live vaccines in endemic areas, are recommended to prevent the infection and spread of the disease. In the EU, any suspicion of disease in animals is subject to restrictions being placed on the entire holding until RVF can be ruled out. Confirmation of

disease results in the slaughter and disposal of the entire herd affected and the establishment of a protection and surveillance zone around the holding. Prevention relies on strict import controls.

There is no specific therapy for humans or animals.

Event background information

From 2 August to 28 September 2016, 78 human cases including 26 deaths (CFR: 33%) were reported in the district of Tchintabaraden (Tahoua Region) in Niger. The region is mainly populated by nomadic stockbreeders. Most of the cases are male (66%) farmers or animal breeders. Cases and deaths attributed to RVF are also being reported in animals [20]. Around two million cattle and small ruminants were in the affected region due to the nomadic stockbreeders and neighbouring countries celebration of Cure Salée, an annual festival marking the end of the rainy season in mid-September.

Following the end of the rainy season, the nomadic stockbreeders and their animals will move to other southern sub-Saharan countries along the Niger River and irrigation systems where pastures will be available.

ECDC threat assessment for the EU

Risk for travellers to Niger

Around 25 000 people from the EU arrive in Niger by air each year, according to an estimation by the International Air Transport Association (IATA), based on 2015 data. The outbreak is currently limited to two regions which are rural areas and not considered to be touristic. The risk of infection can be considered minimal for travellers staying in urban areas or in areas not affected by the RVF outbreak [10]. Travellers visiting affected areas are at risk of infection and should avoid contact with ruminants and use protection against mosquitoes.

Risk of human cases being imported from Niger

The risk of RVF cases being imported into the EU is not new as RVF is endemic in many African countries and in Saudi Arabia, a country to which many EU citizens travel.

According to The European Surveillance System (TESSy), between 2010 and 2015, four cases of RVF were reported in the EU, all imported [21-23]. In France, two cases were imported from the Union of the Comoros and Mali in 2012 and 2015 respectively, and in the United Kingdom, two cases were imported from Egypt and Uganda in 2012 and 2013 [21-23].

Despite extensive travel between endemic countries and continental Europe, the number of imported cases remains very low. It is likely that more cases have been imported but were not reported, either because they presented with mild symptoms not requiring medical attention or because they were not diagnosed. Thus, the importation of cases from Niger cannot be excluded.

There is no risk of secondary transmission from viraemic passengers travelling in airplanes.

Risk of infected animals being imported to EU

Import into the EU of live animals from Niger is prohibited. The current outbreak of RVF in Niger does not change the conclusions of the EFSA Scientific Opinion, published in 2013, assessing the risk of RVF virus being introduced into the southern Mediterranean basin [24].

Risk of the virus spreading within the EU

Because direct human-to-human transmission has never been described for RVF, the risk of seeing secondary cases in the EU through direct human-to-human transmission is negligible.

Potential RVF virus vectors are present in the EU (e.g. *Aedes vexans, Ochlerotatus caspius, Ochlerotatus detritus, Culex pipiens, Culex theileri, Culex perexiguus, Culex antenantus, Culex tritaeniorhynchus, Aedes caspius, Aedes albopictus*) [24]. Should the virus be imported into the EU, the risk of transmission to humans through an infected mosquito bite cannot be excluded.

The transmission of RVF virus through substances of human origin (SoHO) donated by an asymptomatic viraemic donor cannot be excluded. Since RVF-endemic countries are also endemic for malaria, the deferral period for donors returning from areas affected by malaria is sufficient to prevent the donation of RVF-virus-infected SoHO. Transmission of RVF through transfusion/transplantation has not been reported. Therefore, the risk of SoHO donation by an RVF-virus-infected traveller from Niger appears to be extremely low.

Transmission of the virus through contact with blood or infected materials in healthcare settings may occur, but should be prevented by applying standard precautionary measures [10].

Therefore, should the virus be imported, the risk of it spreading among humans within the EU is considered low.

Risk of indigenous transmission of RVF virus being established in the EU

Weather conditions in the EU in October 2016 are no longer favourable to high mosquito abundance. Therefore, even if local transmission was to occur following an introduction of the virus into the EU, the risk of a sustained indigenous transmission being established is currently negligible.

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