



RAPID RISK ASSESSMENT

Ebola virus disease outbreak in North Kivu and Ituri Provinces, Democratic Republic of the Congo – first update

4 October 2018

Main conclusions and options for response

As of 30 September 2018, the Ministry of Health of the Democratic Republic of Congo (DRC) reported 161 probable and confirmed cases of Ebola virus disease (EVD) in the Provinces of North Kivu and Ituri, making this the fourth largest outbreak of EVD recorded in DRC. Genetic analysis of the viral strains showed that there is no link between this outbreak and the one in Equateur province of DRC, reported in May this year.

The DRC Ministry of Health is implementing its EVD response plan in the affected areas, supported by the World Health Organization and a range of regional and global partners. Contact tracing and monitoring of case contacts are ongoing. The rVSV-ZEBOV experimental vaccine has been offered to healthcare and frontline workers, case contacts and their contacts. Preparedness activities are ongoing in neighbouring Congolese provinces and bordering countries.

Although no confirmed cases have been documented in neighbouring countries as of 30 September, the fact that the outbreak is ongoing in areas with important cross-border population flows (with Rwanda and Uganda) is of particular concern. In addition, implementation of response measures in the field remains challenging because the outbreak is occurring in areas affected by prolonged humanitarian crises and an unstable security situation arising from a complex armed conflict.

The probability that EU/EEA citizens living or travelling in EVD-affected areas of DRC will be exposed to the disease is low, provided they adhere to the precautionary measures recommended below.

There are no international airports in the affected areas of DRC that offer direct flights to EU/EEA Member States, which limits the risk of the virus being introduced into the EU/EEA. The overall risk of introduction and further spread of Ebola virus within the EU/EEA is very low. However, the risk can only be eliminated by stopping transmission at local level.

WHO advises against any travel or trade restrictions.

Options for response

EU/EEA visitors and residents of affected areas

EU/EEA visitors and residents in EVD-affected areas are at low risk of becoming infected in the community if the precautionary measures below are followed:

- Avoid contact with symptomatic patients/their bodily fluids; corpses and/or bodily fluids from deceased patients; and wild animals, both alive and dead;
- Avoid consumption of bush meat;
- Wash and peel fruit and vegetables before consumption;
- Wash hands regularly using soap or antiseptics;
- Practice safe sex.

Screening of travellers

To reduce the likelihood of Ebola virus disease being introduced into the EU/EEA, the following options for response can be considered:

- Should exit screening be implemented at an airport, a traveller presenting with symptoms (e.g. fever >38 °C) should not be allowed to board a flight;
- A passenger who develops EVD-compatible symptoms while on board a commercial flight should be isolated and his/her condition ascertained upon arrival. Should the passenger be confirmed as having EVD, contact tracing of passengers should be initiated in accordance with the recommendations for aircraft contact tracing set out in the RAGIDA guidelines¹;
- Travellers who stayed in a recently affected area should be made aware that if they develop symptoms compatible with EVD after arrival in an EU/EEA Member State, they should self-isolate, contact health services and mention potential exposure to Ebola virus. Secondary transmission to caregivers in the family and in healthcare facilities cannot be ruled out if no measures for infection prevention and control are taken.

For more information on individual exposure assessment, please refer to the rapid risk assessment on Ebola virus disease published on 18 November 2014.

¹ ECDC Risk assessment guidelines for diseases transmitted on aircraft.

Available at: www.ecdc.europa.eu/en/infectious-diseases-public-health/travellers-health/infectious-diseases-aircraft

Source and date of request

ECDC round table request, 2 October 2018.

Public health issue

This is the first update of a rapid risk assessment originally produced on 9 August 2018 [1]. This rapid risk assessment addresses the public health risk associated with the current EVD outbreak in the DRC and its implications for EU/EEA citizens. This update was triggered by the recent report of new Ebola virus disease cases in two previously unaffected health zones, Tchomia on 20 September and Komanda on 30 September, and the challenges encountered so far during the implementation of EVD response activities.

Consulted experts

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Disease background information

Disease background

Infections with Ebola viruses originating from Africa cause a severe disease in humans called Ebola virus disease. There are five species of the genus *Ebolavirus* (*Filoviridae* family): *Zaire ebolavirus*, *Sudan ebolavirus*, *Reston ebolavirus*, *Tai Forest ebolavirus*, and *Bundibugyo ebolavirus* [2-4]. Ebola viruses are biosafety level-4 pathogens (BSL-4, risk group 4 in relation to its virulence profile and the continued lack of effective prophylaxis or therapy) and require special containment measures and barrier protection, particularly for healthcare workers.

The incubation period is usually four to ten days but can be as short as two days and as long as 21 days. The symptoms usually consist of a sudden onset of fever, malaise, headache, muscle pain and sore throat. This phase can be followed by symptoms and clinical manifestations from several organ systems (gastrointestinal, neurological, vascular, cutaneous and respiratory). Severe exhaustion, haemorrhagic manifestations and multi-organ failure occur in the severe form of EVD. The case–fatality ratio for *Zaire ebolavirus* infections is estimated to be between 44% and 90% [5].

Ebola viruses are highly transmissible through direct contact with infected blood, secretions, tissues, organs and other bodily fluids from dead or living infected animals or persons [6]. Transmission via objects contaminated with infected bodily fluids (fomites) is possible [7]. The principal mode of transmission in outbreaks among humans is person-to-person through direct contact with symptomatic or dead cases. Airborne transmission has not been documented. The risk of transmission is low in the early phase of human disease. Burial ceremonies and the handling of dead bodies have had an important role in disease transmission in previous outbreaks, as have healthcare workers caring for EVD cases without appropriate infection prevention and control measures.

More information about EVD is available in the [ECDC fact sheet about Ebola and Marburg fevers](#) [4] and the [WHO fact sheets on Ebola virus disease](#) [3].

Diagnostics and diagnostic capacity in EU/EEA

EVD is diagnosed by detection of Ebola virus ribonucleic acid (RNA) in whole blood, plasma, or serum during the acute phase of illness, using reverse transcription polymerase chain reaction (RT-PCR) [8]. Viral RNA can usually be detected up to a few days after the disappearance of symptoms. Viral RNA may also be detected in other body fluids, such as semen, saliva and urine [9]. Throat swabs are suitable for virus detection in deceased patients. Viral RNA has been detected in seminal fluid and in the breast milk of survivors months to years after acute illness, posing a risk for sexual or mother-to-child transmission. Identification of acute infections based on serology is uncommon.

According to the latest 2016 EULabCap survey, only one EU/EEA Member State does not have the capacity (or a formal agreement with external laboratories) to diagnose Ebola virus [10]. The majority of countries (n=22) surveyed by EULabCap are able to perform molecular detection at BSL-3 level or have formal agreements with a BSL-3 laboratory in another EU/EEA Member State. Seven countries were able to perform further characterisation at BSL-4 level [10].

A survey on the status of Ebola virus diagnostics, biorisk management and quality assurance in European countries was recently published by the EMERGE and EVD-LabNet laboratory networks [11]. A complete overview of Ebola virus diagnostic capacity in the EU/EEA can be found in the EVD-LabNet directory [12].

Treatment and vaccine

Supportive care and treatment of specific symptoms improves survival [13]. There is no proven treatment for EVD, but health authorities are evaluating several potential treatments. In addition, several Ebola virus vaccine candidates are being evaluated and preliminary trials and vaccination campaign results have shown a high level of protection against the *Zaire ebolavirus* species. Further information is available under [Treatment and vaccines for Ebola virus disease](#) update [14].

No vaccine is currently available for tourists visiting the DRC or any other affected areas [15].

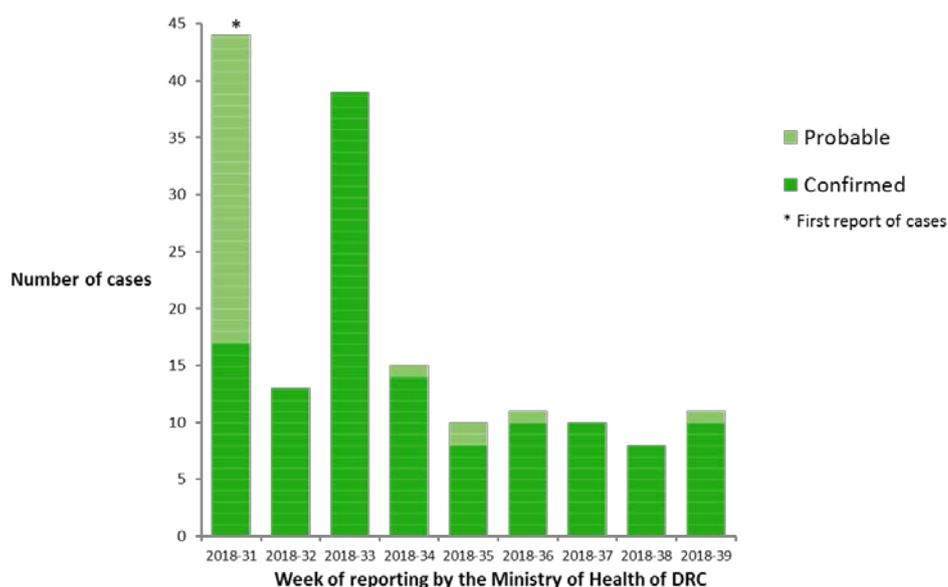
Surveillance in EU/EEA Member States

Viral haemorrhagic fevers such as EVD are notifiable diseases in the EU/EEA and have to be reported in a timely manner. In 2014, ECDC published an Ebola case definition for reporting in the EU/EEA [16].

Event background information

On 1 August 2018, the DRC Ministry of Health reported to WHO an EVD outbreak in the North Kivu province with four laboratory-confirmed cases [17]. This report was triggered by the identification the previous week, on 28 July 2018, of a cluster of 26 cases of acute haemorrhagic fever (with 20 deaths) in Mabalako Health Zone in North Kivu. Further retrospective investigation identified sporadic cases and deaths compatible with EVD in May 2018 [18]. This is the tenth EVD outbreak in the DRC since the discovery of the virus in 1976. The results of the genetic analysis of the *Zaire ebolavirus* strain revealed that there is no link between the current outbreak and the earlier outbreak in Equateur province [19].

Since 11 May 2018 and as of 30 September 2018, the Ministry of Health has reported 161 confirmed and probable EVD cases. The epicurve of confirmed and probable EVD cases is presented in Figure 1.

Figure 1. Distribution of confirmed and probable EVD cases in North Kivu and Ituri Provinces, DRC, as of 30 September 2018

Source: Adapted from Ministry of Health, DRC.

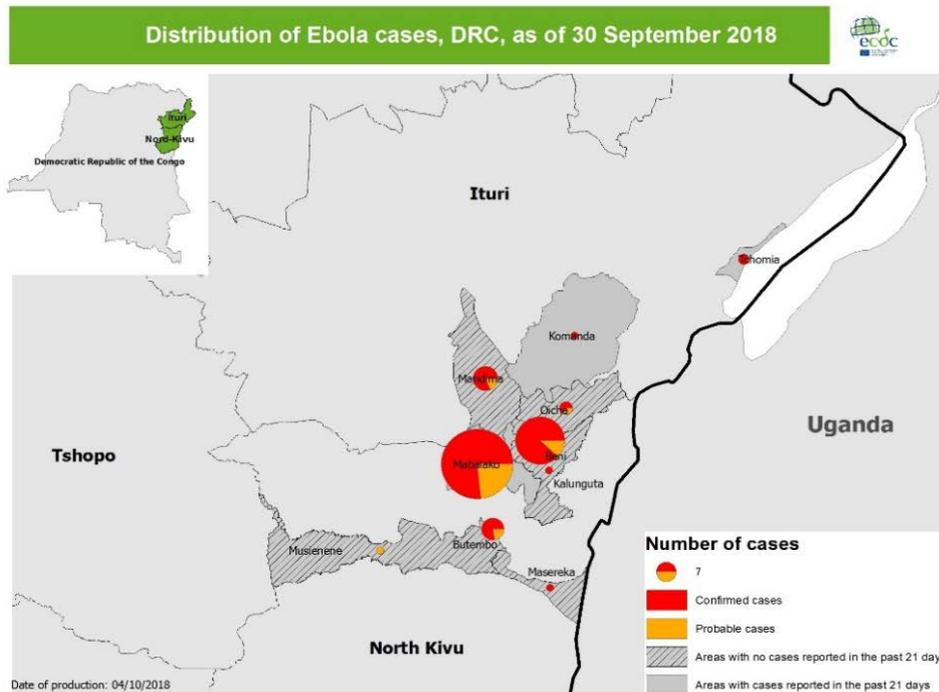
Seven health zones in North Kivu province are affected: Beni, Butembo, Kalunguta, Mabalako, Masereka, Musienene and Oicha (see Table 1 and Figure 2). In Ituri province, Komanda, Mandima and Tchomia health zones have also reported probable and confirmed cases. Of these 161 reported cases, 129 are confirmed and 32 are probable. As of 30 September 2018, seventy-three confirmed cases and 32 probable cases have died and nine suspected cases are being investigated in Beni (4), Butembo (2), Mabalako (2) and Tchomia (1) [20].

Table 1. Distribution of EVD cases between 11 May and 30 September 2018

Province	Health zone	Confirmed cases	Probable cases	Sum of confirmed and probable cases	Deaths among confirmed and probable cases
Ituri	Mandima	9	2	11	3
	Tchomia	2	0	2	1
	Komanda	1	0	1	0
North Kivu	Mabalako	69	21	90	65
	Beni	37	5	42	29
	Butembo	7	2	9	4
	Oicha	2	1	3	1
	Masereka	1	0	1	1
	Musienene	0	1	1	1
	Kalunguta	1	0	1	0
Total		129	32	161	105

Source: Adapted from Ministry of Health, DRC.

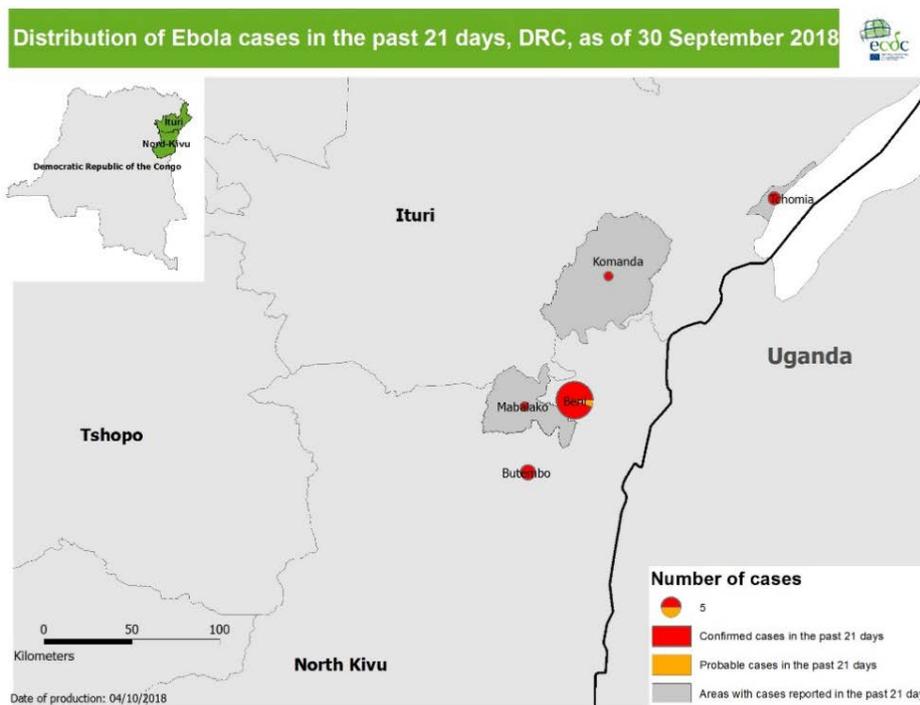
Figure 2. Geographical distribution of Ebola virus disease cases by health zone, North Kivu and Ituri Provinces, DRC, as of 30 September 2018



Source: [Adapted from Ministry of Health, DRC.](#)

In the past 21 days and as of 30 September 2018, 29 EVD cases (28 confirmed and one probable) have been reported in DRC (see Figure 3). Fourteen deaths have been reported among the confirmed and probable cases. The most affected health zones were Beni with 18 new cases (17 confirmed and one probable) and Butembo with five new confirmed cases. Mabalako also reported three additional confirmed cases. During the same time period, two new health zones have been affected and are reporting confirmed cases: Tchomia (two cases) and Komanda (one case), both in Ituri province.

Figure 3. Geographical distribution of EVD cases as of 30 September 2018 by health zone in North Kivu and Ituri Provinces, DRC



Source: [Adapted from Ministry of Health, DRC](#)

As of 27 September 2018, 19 health care workers (18 confirmed, one probable) had acquired EVD. Among them, three had a fatal outcome [21].

Contact tracing activities were initiated on 5 August 2018. Since then, over 5 700 contacts have been registered. As of 25 September 2018, 1 660 contacts remained under surveillance with follow-up activities. In week 39, the coverage of these activities dropped to 60–76% due to the suspension of field activities in Beni and the start-up of operations in a newly affected health zone [21]. However, according to the European Civil Protection and Humanitarian Aid Operations (ECHO), the contact tracing coverage has improved in recent days, reaching 90% on 29 September 2018.

According to WHO, the DRC Ministry of Health is implementing a comprehensive response plan in North Kivu and Ituri Provinces with support from WHO and a number of local, national and international partner organisations, NGOs and UN agencies (UNICEF, International Organization for Migration (IMO), World Food Programme (WFP), the United Nations Office for the Coordination of Humanitarian Affairs, WHO Global Alert and Response Network (GOARN), the European Civil Protection and Humanitarian Aid Operations (ECHO), Médecins Sans Frontières (MSF), the Alliance for International Medical Action (ALIMA), the Africa Centres for Disease Control and Prevention and the US Centres for Disease Control and Prevention). Priorities include the establishment and strengthening of surveillance, contact tracing, laboratory capacity support, infection prevention and control, clinical management, community engagement, safe and dignified burials, response coordination, cross-border surveillance, and preparedness activities in neighbouring provinces and countries. With the support of international partners, as of 27 September 2018, Ebola treatment centres are being established in Beni (1), Butembo (1), Makeke (1) and Mangina (1) [21]. Mobile laboratories have been established in Beni, Butembo, Goma and Mangina to facilitate the timely diagnosis of suspected cases [22].

Between 8 August and 30 September 2018, 13 208 people were vaccinated in Mabalako (4 207), Beni (4 095), Mandima (1 632), Katwa (1 193), Butembo (944), Masereka (270), Tchomia (260), Bunia (257), Komanda (164), Oicha (121) and Kinshasa (65). These vaccination campaigns target healthcare workers, frontline workers, and contacts (and their contacts) of the confirmed cases [20,21].

Activities to promote engagement with the EVD response activities, mostly through news media and social mobilisation in public spaces, are ongoing in several affected communities and neighbouring countries [22]. However, some violent attacks against response groups in the field have been reported. On 3 October 2018, villagers attacked three volunteers from the International Committee of the Red Cross (ICRC) when they were conducting safe and dignified burial activities. In consequence, ICRC had to suspend these activities in the area [23].

Uganda, which has high cross-border mobility with the DRC, has put in place an EVD preparedness plan, with support from WHO, covering the following areas: coordination, investigations and surveillance, risk communication, cross-border entry screening at all major border points in all the very high-risk districts, laboratory diagnostics and case management [24-26]. Furthermore, Burundi, Rwanda, Uganda and Zimbabwe have established entry screening [19,27,28]. According to the International Organization for Migration (IOM), as of 3 October 2018, 14 points of entry had been identified along Uganda's border with DRC. One additional point of entry has been identified in Kyanika, between Rwanda and Uganda. However, four of these entry points between Uganda and DRC have been reported to have no entry screening activities: Kaiso, Nsonga, Bweramule and Katwe.

ECDC threat assessment for the EU

This is the first EVD outbreak of *Zaire ebolavirus* detected in the Provinces of North Kivu and Ituri. A genetic analysis of the viral strains showed no link between the current outbreak and the earlier outbreak in Equateur province which was declared over on 24 July 2018 [29].

Nine weeks after the report of the EVD outbreak in Ituri, between eight and ten confirmed EVD cases have been reported weekly over the past five weeks (Figure 1). Chains of transmission are still active in Beni and Mabalako in North Kivu province despite significant efforts in terms of case investigations, contact monitoring and ring vaccination. It should be noted that the recently identified new cases are still related to known chains of transmission [21].

New sporadic cases were recently reported in a non-affected health zone in Ituri, raising concerns of a potential extension of the outbreak. Among the newly affected health zones, Tchomia is located on the shore of Lake Albert at the border between DRC and Uganda, which increases the risk of a cross-border extension of the outbreak into neighbouring health zones in both the DRC and Uganda.

With support from WHO and partners, laboratory diagnostics and Ebola treatment centres have been made available in North Kivu (Butembo, Beni, and Mangina health zones), and case management capacities are going to be enhanced in Ituri. The EVD vaccination campaign has successfully managed to vaccinate more than 12 000 individuals since 8 August 2018 in both provinces [21]. Due to its large population coverage, it is expected that the ring vaccination strategy will help in the overall control of the outbreak.

While significant progress has been made in case detection, contact vaccination and monitoring, and implementation of safe and dignified burials, the efficacy of such response activities are dependent on population accessibility, which is influenced by the security situation and the level of acceptance by the local community.

Community resistance and security incidents have been regularly reported during the past week in affected areas, notably in Beni where field activities were suspended between 19 and 25 September in relation to the security situation [21]. Community reluctance and mistrust of EVD response efforts and the lack of accessibility are known factors for delayed recognition of EVD cases and incomplete identification or follow-up of contacts, thus increasing the risk of unrecognised active chains of transmission.

It is expected that new EVD cases will be reported in the coming weeks and a geographical extension of the outbreak cannot be excluded, given the prolonged humanitarian crisis in the region and the impact of the security situation on the implementation of response measures. Cross-border surveillance and preparedness activities in neighbouring provinces and countries are ongoing in order to address potential geographical spread of this EVD outbreak.

Due to the security context and the significant population movements within the region, including between neighbouring countries, WHO has upgraded the public health risk to very high at the national and regional levels, although the risk remains low globally [21]. However, WHO advises against any restriction of travel and trade to the DRC based on the information currently available.

Risk to EU/EEA citizens living or travelling in DRC

The probability that EU/EEA citizens living or travelling in EVD-affected areas of the DRC will be exposed to the virus is low, provided they adhere to the recommended precautionary measures outlined above. To date, no travel-associated EVD cases have been reported among travellers returning to Europe from DRC in 2018.

Staff members of humanitarian, religious and other organisations, and especially healthcare workers who are in direct contact with patients and/or local communities in the affected areas, are more likely to be exposed to the virus. EU/EEA citizens working for humanitarian aid organisations remain at low risk, provided they strictly adhere to the recommended precautionary measures.

Risk of introduction and further spread within the EU/EEA

The most likely method by which the virus could be introduced into the EU/EEA is through infected travellers from affected areas travelling to Europe. Since there are no international airports in the affected areas with direct flights to EU/EEA Member States, and that so far the outbreak appears to be relatively limited, the risk of EVD-infected individuals arriving in the EU/EEA is very low.

An infected case from one of the EVD-affected areas of the DRC arriving in the EU/EEA (e.g. a returning traveller or medical evacuee) would pose a very low risk of further spread because EU/EEA Member States have the capacity to detect and manage imported EVD cases at a very early stage.

During the substantially larger EVD outbreak in West Africa in 2014 (approximately 28 600 cases and 11 300 deaths), only one local transmission occurred in the EU/EEA (Spain): a healthcare worker attending to an evacuated EVD affected patient [30].

WHO advises against the application of any travel or trade restrictions against DRC [21]. According to WHO, the public health risk is considered low at the global level [21].

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