RAPID RISK ASSESSMENT

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

13 February 2019

Main conclusions

As of 6 February 2019, the Ministry of Health of the Democratic Republic of the Congo (DRC) has reported 791 Ebola virus disease (EVD) cases, including 737 confirmed and 54 probable cases. This epidemic in North Kivu and Ituri Provinces is the largest ever recorded in DRC and the second largest worldwide. A total of 492 deaths occurred during the reporting period. As of 29 January 2019, 65 healthcare workers have been reported among the confirmed cases. As of 6 February 2019, the overall case fatality rate was 62%. The weekly number of cases has increased to approximately 40 for three consecutive weeks since the second week of 2019. This demonstrates that the viral circulation in the community is persistent. Between the third and fifth week of 2019, 13 different health zones reported EVD cases. While the majority of the cases have been reported in urban settings, cases have also been reported in rural health zones surrounding urban centres. This suggests that transmission is also ongoing in rural areas.

Despite the impressive mobilisation of EVD response actors, significant challenges remain in this complex setting marked by a long-term humanitarian crisis and an unstable security context. According to WHO, the combination of several factors during the past weeks is driving the persistence of the Ebola virus circulation in the community, notably the sub-optimal infection prevention and control (IPC) practices in primary healthcare, incomplete contact tracing and follow-up, delays in detection and isolation of new cases and community deaths leading to potential exposure of relatives to EVD. Efforts are on-going to strengthen community-led efforts to support key EVD prevention and control interventions. Outbreak response activities continue in order to offer high quality case management, perform ring vaccination campaigns, provide the community with safe and dignified burials and ensure Points of Entry (PoE) screening. It is expected that new EVD cases will be reported in the coming weeks and a that geographical extension is still possible, given the prolonged humanitarian crisis in the region, the important cross-border population flows to and from neighbouring provinces and countries, and the observed adverse impact of security incidents and community reticence which is hindering the implementation of EVD prevention and control measures.

The probability that EU/EEA citizens living or travelling in EVD-affected areas of DRC will be exposed to the virus 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 remains very low. However, the risk can only be eliminated by stopping transmission at local level in DRC.

Suggested citation: European Centre for Disease Prevention and Control. Ebola virus disease outbreak in North Kivu and Ituri Provinces, Democratic Republic of the Congo – third update – 13 February 2019. ECDC: Stockholm; 2019.

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;
- ensure safe sexual practices.

Screening of travellers

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

- Where exit screening is 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 guidelines[1].
- Travellers who have stayed in a recently affected area should be made aware that if they develop symptoms compatible with EVD within 21 days 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 care-givers in the family and in healthcare facilities cannot be ruled out if no measures are taken for infection prevention and control.

Options for information and communication

In order to minimise the time between onset of symptoms, isolation and diagnosis, people who return from Ebola-affected areas should be informed about:

- the possibility of exposure to Ebola while in the affected countries;
- the clinical presentation of the disease and the need to seek immediate medical care if symptoms develop;
- the need to immediately disclose their travel history when seeking medical care, and to preferably do so before arriving at a healthcare facility;
- the need to indicate possible contact with sick individuals or wild animals while in the EVD-affected country;
- how to contact public health authorities for support if infection is suspected.

In addition, healthcare providers in the EU should be informed of and sensitised to:

- the possibility of EVD among returning travellers from affected areas;
- the clinical presentation of the disease and the need to inquire about travel history and contacts with family and friends visiting from EVD-affected countries;
- the availability of protocols for the ascertainment of possible cases and procedures for referral to healthcare facilities;
- the imperative need for strict implementation of barrier management, use of personal protective equipment and disinfection procedures, in accordance with specific guidelines and WHO infection control recommendations when providing care to EVD cases.

[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, 6 February 2019.

Public health issue

This is the third 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 Ebola virus outbreak in the DRC and its implications for EU/EEA citizens. This update was triggered by the persistence of the EVD transmission in urban settings, the continuous increase in the number of reported cases during the last four weeks, the persistent occurrence of new cases among contacts unknown at the time of EVD diagnostics and current challenges for the prevention and control of EVD.

Consulted experts

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Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO) expert: Ian Van Engelgem (ECHO DAKAR).

Experts from WHO reviewed the risk assessment, but the views expressed in this document do not necessarily represent the views of WHO.

Disease background information

Infections with Ebola viruses originating from Africa cause a severe disease in humans called Ebola virus disease (EVD). Ebola viruses are highly transmissible through direct contact (e.g. through mucous membranes or broken skin) with organs, blood or other bodily fluids (e.g. saliva, urine, vomit) of living or dead infected persons or any surfaces and materials soiled by infectious fluids. The principal mode of transmission in outbreaks among humans is person-to-person through direct contact with symptomatic or dead cases, as well as indirect contact via their infectious body fluids. Further information on EVD is available in the previous risk assessments [1-3], in the ECDC fact sheet about Ebola and Marburg fevers [4], WHO fact sheets on Ebola virus disease [5], the ECDC technical reports on 'Public health management of persons having had contact with Ebola virus disease cases in the EU' [6] and on 'Infection prevention and control measures for Ebola virus disease, management of healthcare workers returning from Ebola-affected areas' [7]. Additional information regarding therapy and vaccines can be found through the ECDC update on treatment and vaccines for Ebola virus disease and in WHO's FAQs on EVD vaccine [8-10]. No vaccine is currently available for tourists visiting the DRC [8].

Event background information

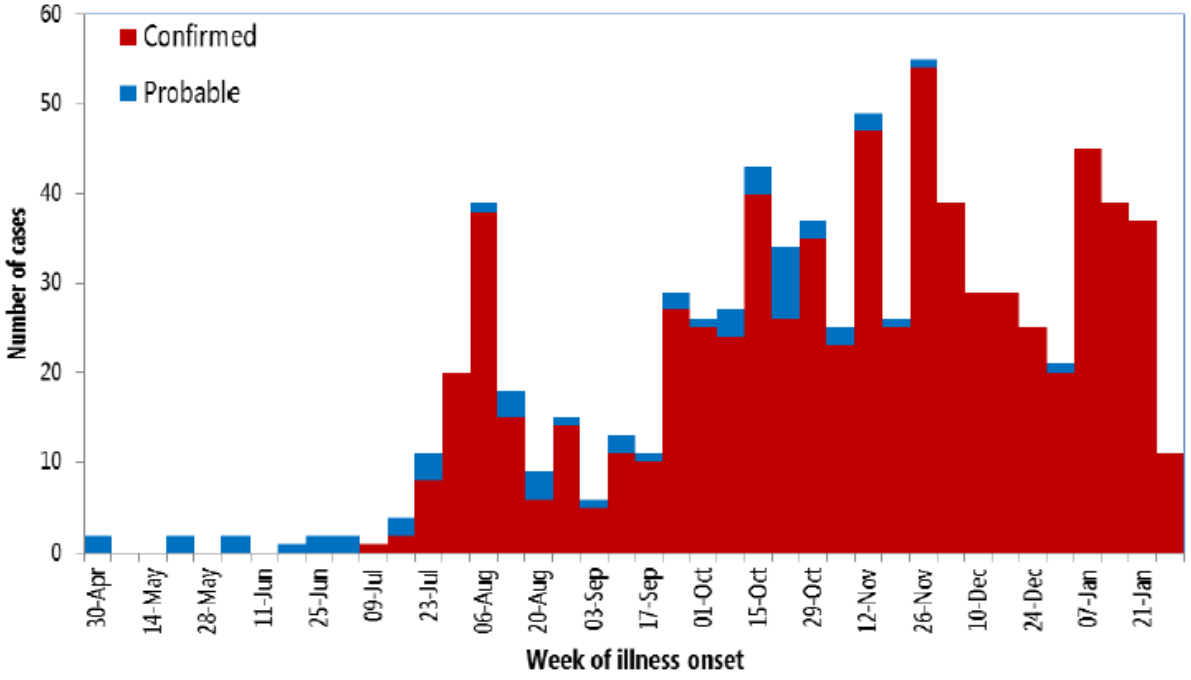
On 1 August 2018, the Ministry of Health of the Democratic Republic of the Congo (DRC) reported to WHO an EVD outbreak in the North Kivu Province with four laboratory-confirmed cases [11]. This report was triggered by the identification the previous week, on 28 July 2018, of a cluster of 26 cases of acute haemorrhagic fever (with 20 deaths) in Mabalako Health Zone in North Kivu. Further retrospective investigation identified sporadic cases and deaths compatible with EVD since May 2018 [12].

This is the tenth EVD outbreak in the DRC since the discovery of the virus in 1976. The results of the phylogenetic analysis of the causative Zaire ebolavirus species (ZEBOV) in the North Kivu outbreak revealed that there is no link between the current outbreak and the earlier outbreak in Equateur Province in 2018 [13,14].

This epidemic in North Kivu and Ituri Provinces is the largest ever recorded in DRC and the second largest worldwide. Since 11 May 2018 and as of 6 February 2019, the Ministry of Health of the DRC has reported 791 cases of EVD, including 737 confirmed and 54 probable [15]. A total of 492 deaths have occurred during the reporting period (overall case-fatality ratio of 62%). As of 3 February 2019, females accounted for 58% of the confirmed cases [16]. As of 29 January 2019, 30% of the confirmed cases with a known age were less than 18 years old and half of those were under five years old [17]. Among the reported cases, 65 were healthcare workers [17].

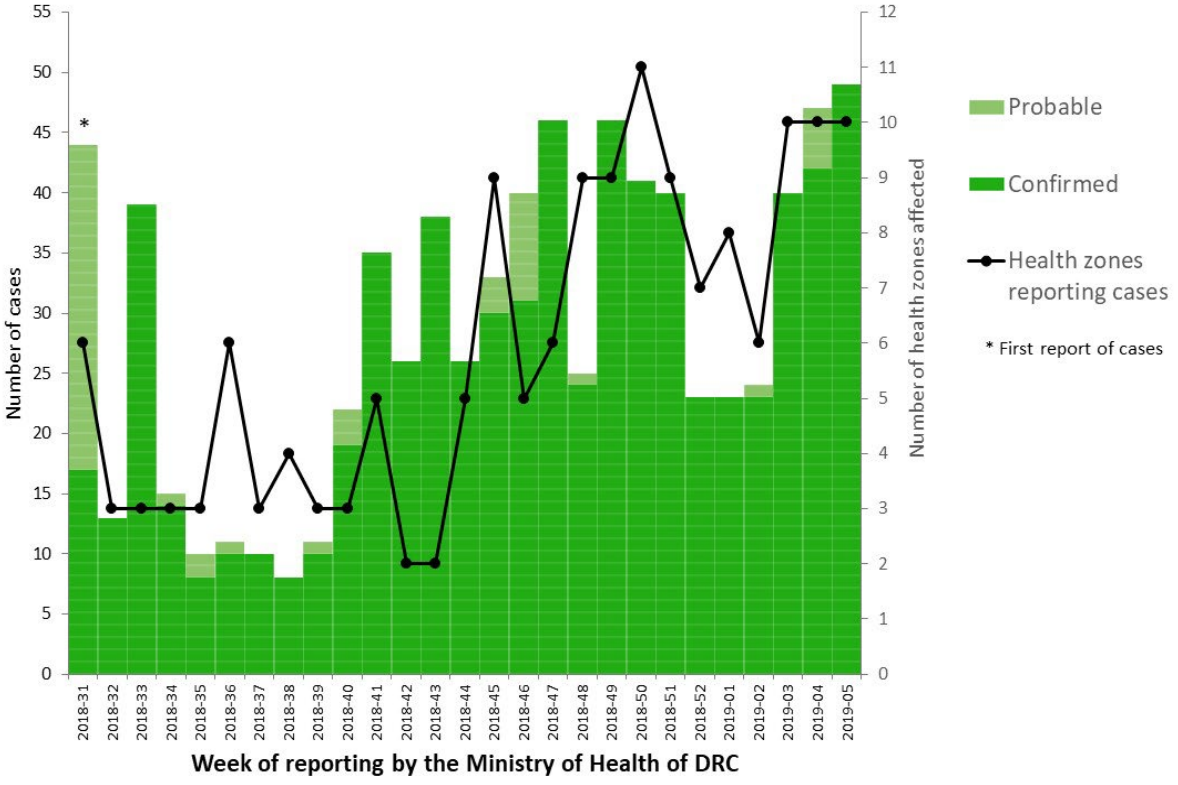
The epidemic curve of confirmed and probable EVD cases is presented by date of symptom onset in Figure 1 and by date of reporting in Figure 2. Figure 2 shows cases reported until week five of 2019, whereas Figure 1 reports data up to 3 February 2019. It is worth noting that there is often a lag of several weeks in the reporting of cases by date of onset, which is probably why the number of reported cases, as shown in Figure 1, appears to have decreased in recent weeks. Conversely, the epidemic curve by date of reporting, presented in Figure 2, suggests an increase in the occurrence of EVD cases in recent weeks.

Figure 1. Distribution of confirmed and probable EVD cases by date of onset of symptoms in North Kivu and Ituri Provinces, DRC, as of 3 February 2019



Note: *Due to delays in reporting, the number of cases for the last three weeks are provisional.*
Source: *Reproduced from WHO situation report no. 27 [16].*

Figure 2. Distribution of confirmed and probable EVD cases and health zones reporting cases by week of reporting in North Kivu and Ituri Provinces, DRC, as of 6 February 2019



Note: *As the Ministry of Health of DRC is regularly curating data, these figures are likely to change in the coming days.*

Source: Adapted from the Ministry of Health of DRC [15].

Since the start of the outbreak, 18 health zones in two provinces have been reporting confirmed or probable EVD cases, including, Beni, Biena, Butembo, Mabalako, Manguredjipa, Masereka, Mutwanga, Musienene, Oicha, Kalunguta, Katwa, Kayna, Kyondo and Vuhovi health zones in North Kivu Province and Nyankunde, Komanda, Mandima and Tchomia health zones in Ituri Province (see Table 1 and Figure 3). Table 1 below presents the number of EVD cases per health zone in the affected provinces.

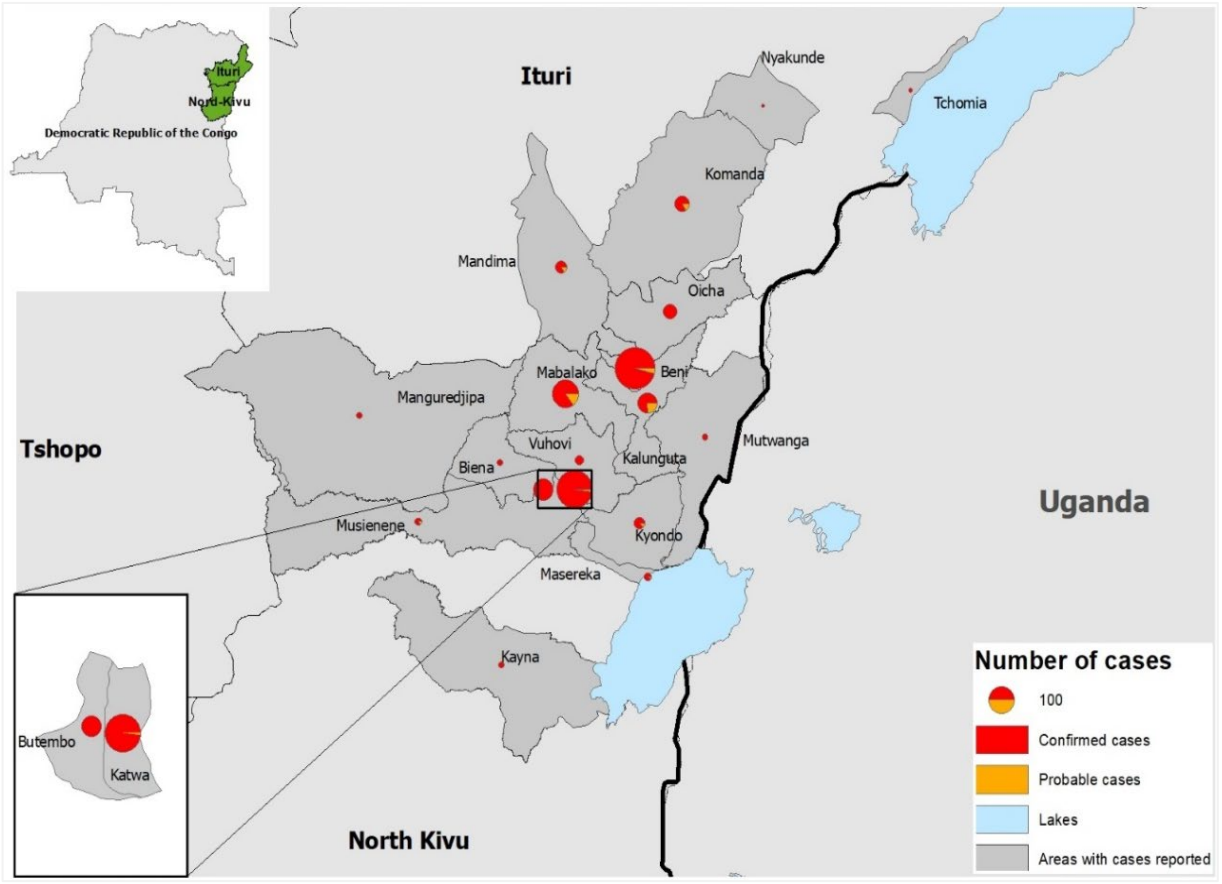
Table 1. Number of EVD cases by health district between 11 May 2018 and 6 February 2019

Health district	No. of confirmed cases	No. of probable cases	Confirmed and probable cases		No. of deaths	
			Sum	%	Sum	%
North-Kivu	**690**	**46**	**736**	**93.0**	**455**	**92.5**
Beni	225	9	234	29.6	147	29.9
Katwa	187	4	191	24.1	109	22.2
Mabalako	89	16	105	13.3	71	14.4
Butembo	59	0	59	7.5	56	11.4
Kalunguta	42	13	55	7.0	34	6.9
Oicha	30	0	30	3.8	7	1.4
Kyondo	16	2	18	2.3	10	2.0
Vuhovi	10	0	10	1.3	4	0.8
Masereka	7	1	8	1.0	3	0.6
Musienene	6	1	7	0.9	3	0.6
Biena	5	0	5	0.6	2	0.4
Kayna	5	0	5	0.6	2	0.4
Manguredjipa	5	0	5	0.6	4	0.8
Mutwanga	4	0	4	0.5	3	0.6
Ituri	**47**	**8**	**55**	**7.0**	**37**	**7.5**
Komanda	27	5	32	4.0	21	4.3
Mandima	17	3	20	2.5	13	2.6
Tchomia	2	0	2	0.3	2	0.4
Nyakunde	1	0	1	0.1	1	0.2
Total	737	54	791	100	492	100

Source: *Adapted from the Ministry of Health of DRC [15].*

The most affected health zone since the beginning of the outbreak is Beni, with 225 confirmed and nine probable cases. However, in the last 21 days (17 January – 6 February), Katwa and Butembo have reported the highest number of cases – 71% of the 118 confirmed cases reported. Within this same time period, Beni reported nine new confirmed cases. All previously affected health zones in North Kivu Province have reported new confirmed cases within the last 21 days, apart from Mabalako and Masereka. No new confirmed cases were reported in Ituri Province (Figure 3).

Figure 3. Geographical distribution of EVD cases by health zone, North Kivu and Ituri Provinces, DRC, as of 6 February 2019.



Source: *Adapted from the Ministry of Health of DRC [15].*

ECDC threat assessment for the EU

This is the first EVD outbreak of ZEBOV detected in the Provinces of North Kivu and Ituri. To date, this outbreak, which has now been ongoing for eight months, is the largest outbreak of EVD ever recorded in DRC and the second largest worldwide.

Since the second week of 2019, the weekly number of cases has increased to around 40 for three consecutive weeks, demonstrating a persistence of the viral circulation in the community (Figure 1). While the city of Butembo (Katwa and Butembo health zones) is now the main epicentre of the outbreak, in total 13 different health zones reported EVD cases between the third and fifth week of 2019 (Figure 2). Even though the majority of cases are reported in urban settings, EVD cases reported in surrounding rural health zones suggest ongoing transmission in several rural areas. Previously affected health zones remain under enhanced surveillance in order to promptly detect reintroductions from neighbouring health zones and local flare-ups of EVD cases. Overall, the current EVD epidemic has continued to advance in the recent week, particularly in the urban context of Butembo city.

WHO and EVD response partners, under the coordination of the DRC government, are supporting the implementation of EVD prevention and control measures. Between 8 August 2018 and 3 February 2019, the EVD ring vaccination campaign has successfully managed to vaccinate around 73 000 individuals in the DRC despite the volatile security context and logistical challenges [16,18]. The ring vaccination strategy has probably countered a wider spread of the disease in the community and is a major asset for the control of this long-lasting EVD outbreak. However, the success of ring vaccination depends on the vaccination coverage of the entire contact network (contacts, and contacts of contacts) and local healthcare workers [19,20]. Other aspects of the EVD response are also proving successful, including the Points of Entry (PoE) programme, the case management with investigational therapeutics as part of a randomised controlled trial available in the Ebola treatment centres, and the field laboratory capacity deployed in the North Kivu Province.

Despite the impressive mobilisation of EVD response actors, significant challenges remain in this complex setting marked by a long-term humanitarian crisis and an unstable security context. According to WHO, the combination of several factors has been driving the persistence of the Ebola virus circulation in the community during recent weeks, notably [18]:

- Population movement and mistrust in Ebola response teams and activities in several areas are hampering a comprehensive contact listing and follow-up of all EVD contacts. A complete contact tracing – defined by WHO as the identification and follow-up of persons who may have come into contact with a person infected with the Ebola virus – is essential because it allows timely and comprehensive implementation of both ring vaccination and early isolation of symptomatic individuals. However, population mistrust and movement, limited access to areas with volatile security and, to a certain extent, vaccination hesitancy result in an incomplete inventory of contacts. These factors are therefore challenging the critical EVD response pillars based on the early isolation of EVD cases and the ring vaccination strategy. As a consequence, the majority of new cases are occurring among contacts unknown at the time of EVD diagnostics, hampering the comprehensive mapping of active chains of EVD transmission and a complete coverage of the ring vaccination strategy.
- The recently reported persistence in community deaths and the long delays between onset of symptoms and isolation. These significantly increase the risk of transmission in the community by extending the period of infectious individuals staying in contact with their family and community networks. Intensification of active case finding in health facilities and communities together with the reinforcement of social mobilisation are ongoing to gain community confidence in EVD response activities, to improve the coverage of contact follow-up and to favour early referral of suspected cases from the community.
- The observation of recurrent EVD cases among health workers from primary healthcare facilities and hospitals (around 8.3% since the start of the outbreak) and the fact that symptomatic cases are seeking care at several healthcare facilities prior to their isolation in specialised Ebola treatment centres. The resulting increased probability of EVD nosocomial transmission may have amplified the outbreak in association with primary healthcare. This fact emphasises the need to continuously enhance IPC programmes focussing on healthcare professionals at all primary care facilities and hospitals in the affected and surrounding health zones.

It is expected that new EVD cases will continue to be reported in the coming weeks and a geographical extension is still possible given the prolonged humanitarian crisis in the region, the high cross-border of population flows to and from neighbouring provinces and countries, and the observed adverse impact of security incidents and community reticence, hindering the implementation of EVD prevention and control measures. According to Médecins Sans Frontières (MSF) and WHO, determining the evolution of the outbreak has been made difficult by the fact that many of the new cases are not linked to any previously known chain of transmission at the time of initial investigation/diagnostics [21,22]. The occurrence of clusters of EVD cases in conflict zones, in relatively densely populated rural areas or in large cities (e.g. Goma) is of major concern for the prompt control of this outbreak. Furthermore, other outbreak-prone diseases could potentially jeopardise the availability of resources for the prevention and control of the EVD epidemic.

On 28 September 2018, WHO upgraded the assessment of the public health risk to very high at the national and regional levels in relation to the security context and the significant population movements within the region, including between neighbouring countries [23]. However, the global risk was assessed as low. On 17 October 2018, the International Health Regulations (IHR 2005) Emergency Committee advised not to declare this outbreak as a Public Health Emergency of International Concern (PHEIC) but recommended that 'the government of the Democratic Republic of the Congo, WHO, and partners must intensify the current response […] and should be supported by the entire international community' and that 'failure in intensifying preparedness and response activities would lead to worsening conditions and potential further spread' [24]. As of 7 February 2019, WHO is still advising against any restriction of travel to, and trade with the DRC based on the currently available information and the WHO risk assessment remains valid [16,18,25].

Risk to EU/EEA citizens living or travelling in the DRC

The probability that EU/EEA citizens living or travelling in EVD-affected areas of the DRC will be exposed to the virus remains low, provided they adhere to the recommended precautionary measures outlined above in the section 'Options for response'. To date, no travel-associated EVD cases have been reported among travellers returning to Europe from DRC in 2018 and 2019.

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. Training on occupational health and safety in EVD-affected areas can be found on the WHO ePROTECT webpage and in ECDC's tutorial aiming to provide trainers with practical information on different options for the use of personal protective equipment (PPE) in healthcare settings in Europe [26,27].

Risk of introduction and spread within the EU/EEA

The most likely route 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 - meaning that the number of people from the affected areas travelling to the EU/EEA is small - and exit screening is in place at Goma airport, the risk of EVD-infected individuals arriving in the EU/EEA is very low.

An EVD-infected traveller or medical evacuee arriving in the EU/EEA would pose a very low risk of further spread because the majority of the EU/EEA Member States have the capacity to detect and manage imported EVD cases at a very early stage. However, the risk can only be eliminated by stopping transmission at the local level in the DRC.

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 (in Spain): a healthcare worker attending to an evacuated EVD-infected patient [28].

Specific risks related to transmission through substances of human origin

A full assessment of the risk of EVD transmission through substances of human origin was published in May 2018 [29,30].

Disclaimer

ECDC issues this risk assessment document based on an internal decision and in accordance with Article 10 of Decision No 1082/13/EC and Article 7.1 of Regulation (EC) No 851/2004 establishing a European Centre for Disease Prevention and Control (ECDC). In the framework of ECDC's mandate, the specific purpose of an ECDC risk assessment is to present different options on a certain matter with their respective advantages and disadvantages. The responsibility on the choice of which option to pursue and action to take, including the adoption of mandatory rules or guidelines, lies exclusively with EU/EEA Member States. In its activities, ECDC strives to ensure its independence, high scientific quality, transparency and efficiency. This report was written with the coordination and assistance of an Internal Response Team at the ECDC. All data published in this risk assessment are correct to the best of our knowledge at the time of publication. Maps and figures published do not represent a statement on the part of ECDC or its partners on the legal or border status of the countries and territories shown.

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