

ECDC TECHNICAL REPORT

Assessment and planning for medical evacuation by air to the EU of patients with Ebola virus disease and people exposed to Ebola virus

19 September 2014

Background

The outbreak of Ebola virus disease (EVD) in West Africa is raising questions related to the evacuation of people who have been exposed to or infected with Ebola virus. As of 11 September 2014, there have been seven officially reported medical evacuations by air (air MEDEVAC)^{*} of Ebola-infected healthcare workers from West Africa: four to the USA, one to Spain, one to the United Kingdom and one to Germany. The media have also reported that an unknown number of people have been transported to the USA and Canada after exposure to Ebola virus in West Africa.

Within the EU, there are currently no commonly-agreed criteria for deciding when medical evacuation by air is recommended and there is no guidance on how such evacuations should be carried out. The capacity for medically evacuating EVD patients and people exposed to Ebola virus by air varies among Member States and overall experience within the EU, both civil and military, remains limited.

Aim

The aim of this document is to guide decision-making when there is a perceived need for medical evacuation by air of an infected or exposed person from an Ebola-affected country to an EU Member State. The decision to evacuate must be based on:

- The likelihood of the person being infected with Ebola virus;
- The potential benefits of evacuation for the concerned person/patient;
- The risks associated with medical evacuation by air for the person/patient;
- The risk of transmission to the crew and accompanying medical staff.

This document refers to the [*Ebola virus disease case definition for reporting in EU*](#) which is available on the ECDC website.

* Since the evacuation of healthcare workers infected with Ebola virus disease and healthcare workers exposed to Ebola virus out of West Africa has so far been carried out by medical teams in specially-equipped aircrafts, this document uses the term 'medical evacuation by air' rather than 'air transport'.

Likelihood of being infected with the Ebola virus

Exposed person

An exposed person refers to an asymptomatic person who has been in contact with a probable or confirmed case of EVD. An exposed person should be considered for medical evacuation by air on the basis of the risk associated with the exposure. An asymptomatic person with high-risk exposure should be considered for medical evacuation by air while an asymptomatic person with low-risk exposure should not. This is because there is less probability of infection after low-risk exposure than high-risk exposure.

Probable case

A probable case is a person who has been subjected to high-risk exposure and has symptoms compatible with EVD, as per the ECDC case definition. A probable case is therefore more likely to be infected with Ebola virus than an exposed person. Where possible, a probable case should be laboratory-confirmed before being medically evacuated by air. If appropriate tests for Ebola are not available, evacuation should be considered for a probable case in accordance with the options listed for a confirmed case.

Confirmed case

A confirmed case should always be considered for medical evacuation by air.

Benefits for the patient

Exposed persons

A person subjected to high-risk exposure who is evacuated to the EU may benefit from post-exposure prophylactic treatment (currently experimental) that is not available in the countries affected by EVD (e.g. passive or active vaccination). In the event of the exposed person developing EVD, supportive treatment can be provided to EU standards earlier than if the person had remained in the EVD-affected country.

Confirmed cases

The rationale for medical evacuation by air of confirmed cases is the assumption that better medical care can be offered to the person in the EU/EEA than that available in the EVD-affected countries.

Risk for the patient

Exposed persons

For an exposed but asymptomatic person, the risk associated with medical evacuation by air is not considered higher than for comparable commercial air travel. Should the person develop symptoms during transportation, the probability is very low that the condition would deteriorate to become life-threatening during the flight, and medical evacuation by air therefore does not represent a significantly increased risk for the exposed person.

Confirmed cases

Medical evacuation by air represents a risk for an EVD patient who is not in stable condition, and for patients who are stable but require uninterrupted intensive supportive treatment during transportation. It is the responsibility of the medical team in the EVD-affected country to assess the risks and benefits of medical evacuation by air to the individual patient in close consultation with the experts in the receiving country.

The possible outcomes of the assessment are:

- The patient is unfit for medical evacuation by air because the risks of the evacuation outweigh the benefits.
- The patient is fit for medical evacuation by air but requires uninterrupted supportive treatment of intensive-care standard during the evacuation. In this case, the 'Open isolation' approach is recommended for the evacuation (Annex 1).
- The patient is fit for medical evacuation by air but requires limited supportive treatment during the evacuation. In this case, the 'Closed isolation' approach is recommended for the evacuation (Annex 1).

Risk to the crew and accompanying medical staff

Exposed persons

Exposed asymptomatic persons are not infectious and therefore do not represent an infection risk for crew, medical staff and/or any other passengers. Because the documented minimum incubation period for EVD is 48 hours, an exposed person who reaches the final destination within 48 hours after exposure to the virus does not pose a threat to other people during transportation and could, theoretically, travel in an ordinary aircraft (i.e. a regular aircraft without specific equipment although this does not indicate a commercial flight).

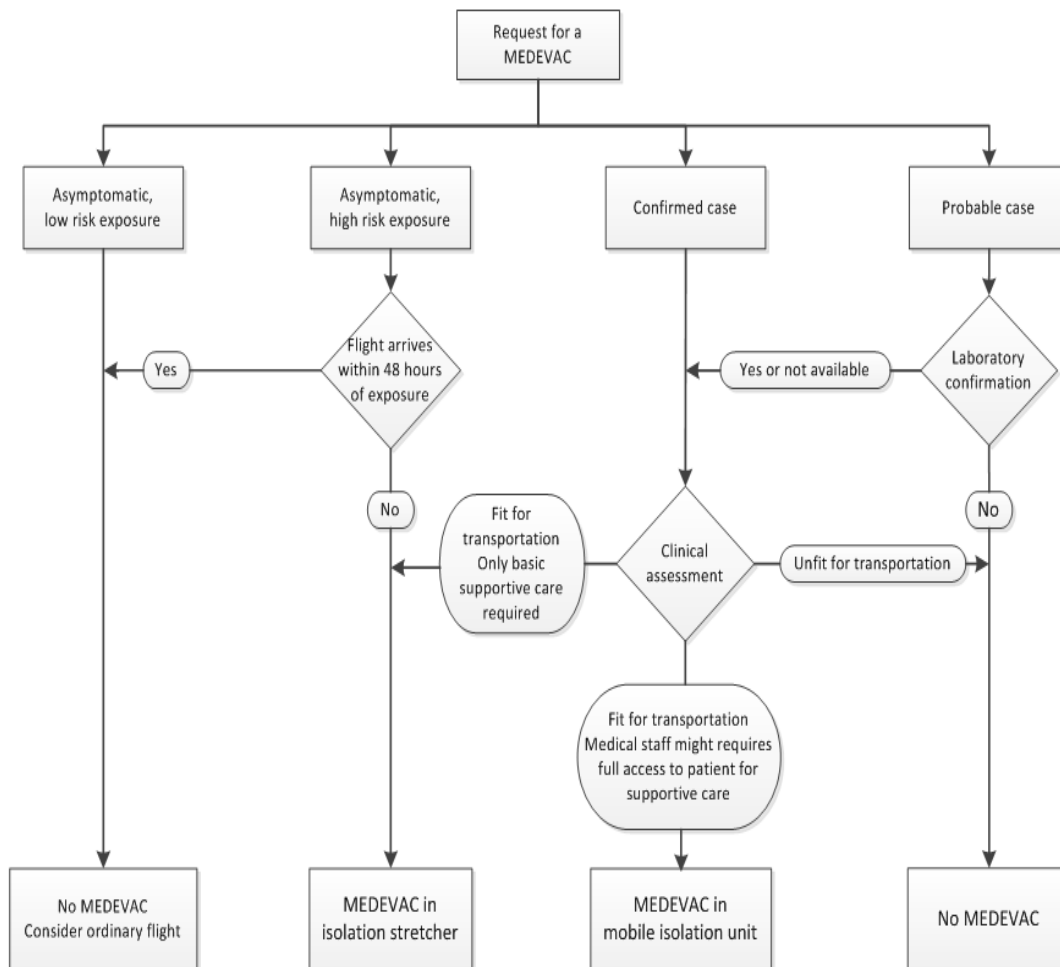
A person whose high-risk exposure occurred more than 48 hours before the expected time of arrival at the final destination should be evacuated using a closed isolation approach because it cannot be excluded that symptoms may develop during the flight. If still asymptomatic at the time of departure, the person could be evacuated in a normal airplane seat, with the isolation stretcher ready in case he/she develops symptoms.

Confirmed cases

A confirmed case must be isolated during medical evacuation by air in order to prevent transmission to the crew and accompanying medical staff.

Figure 1. Algorithm for MEDEVAC planning

Algorithm for planning for air medical evacuation of persons exposed to or infected with Ebola virus disease



References and further reading

CDC guidance on air transport of EVD patients, 14 August 2014: http://www.cdc.gov/vhf/ebola/hcp/guidanc_e-air-medical-transport-patients.html

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Protocol to be followed in medical air evacuation of patients suffering from the Ebola virus. Available in English and Spanish at:

http://www.msssi.gob.es/profesionales/saludPublica/ccayes/alertasActual/ebola/docs/Protocolo_aeroevacuacion_05092014_EN.pdf

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Guide to Air Ambulance Operations, Canada. Available at: <http://www.tc.gc.ca/Publications/en/tp10839/pdf/hr/tp10839e.pdf>

AIRSAN Project. Coordinated action in the aviation sector to control public health threats. Available at: <http://www.airsan.eu/>

Annex 1. Mitigation of transmission risks in air MEDEVAC

During MEDEVAC by air, medical staff and flight crew have to be seen as personnel at risk of transmission. This risk can be minimised by isolating the patient during transportation. Basically there are two possible isolation approaches:

Closed isolation approach

The patient is placed inside a physical containment, normally an isolation stretcher. Depending on the type, it is equipped with integrated gloves with long gauntlets, which allow some basic patient handling from outside. Most models will have negative pressure inside, with the exhaust air being purified by an HEPA filter system. Medical staff will be outside the isolator and will not need further protection. The flight crew furthermore is protected by remaining separated in the cockpit

Advantages:

Excellent level of protection for the personnel involved and for the community; easy to implement.

Drawbacks:

Any enhanced monitoring or treatment interventions for patients with unstable or deteriorating conditions are obstructed. This treatment option is cost-intensive.

Open isolation approach

The patient and the medical staff are placed inside a mobile isolation unit (e.g. tent, container, ambulance). The medical staff inside are protected by personal protective equipment. Most types of isolator will have negative pressure inside, with the exhaust air being purified by an HEPA filter system. The unit is provided with all the medical equipment necessary for enhanced monitoring and treatment interventions, such as mechanical ventilation and fluid management. Additional medical staff will be located in the cabin outside the unit to replace the staff working in personal protective equipment according to a defined schedule. The isolation unit is connected to the exterior cabin by a sluice. Staff leaving the unit need be decontaminated before taking off the personal protective equipment and entering the cabin.

Advantages:

Full access to the patient throughout transportation enables seamless medical care up to ICU level throughout the flight.

Drawbacks:

Highly complex logistics, labour- intensive and very cost intensive.