**Ebola virus disease (EVD)**

**Frequently Asked Questions**

**Ebola virus disease (EVD)—For the Laboratory**

The following list covers some frequently asked questions about Ebola virus disease pertinent to laboratory settings. These questions and answers are designed to supplement the guidance of the various documents and guidelines available at [www.paho.org/Ebola](http://www.paho.org/ebola).

1. **How can I obtain access to diagnostic tests for Ebola?**

All Biosafety Level 3 (BSL-3) national laboratories that have the infrastructure in place to conduct molecular diagnostics can implement a molecular technique for **preliminary detection** of the Ebola virus following specimen inactivation. We recommend that PAHO/WHO be contacted to provide guidance on the protocols to be used.

Remember that, for confirmation of the first cases of EVD, the suspicious specimens should be shipped (as Category A) to a WHO Collaborating Center.

In the Americas, the only laboratories that can receive specimens for confirmation of EVD diagnosis are the WHO Collaborating Centers at the U.S. Centers for Disease Control and Prevention (CDC) and the National Microbiology Laboratory of Canada.

1. **Where/in which laboratories should Ebola be diagnosed?**

Although preliminary detection of the Ebola virus by molecular techniques (PCR) in inactivated specimens can be carried out at any BSL-3 laboratory, definitive confirmation of the first cases in a country or territory should be carried out in one of the WHO Collaborating Centers. Thus, countries should ensure shipment of any such specimens to a WHO Collaborating Center, in compliance with Category A IATA Regulations.

1. **What is the detailed procedure for specimen inactivation for laboratory testing?**

Specimen inactivation should be carried out in a National Reference Laboratory BSL-3 containment environment, with particular attention to the proper use of personal protective equipment and environmental protection measures (biological risk management and good laboratory practices), in accordance with the technical guidance provided in the following document:

http://www.paho.org/hq/index.php?option=com\_docman&task=doc\_view&Itemid=270&gid=27787&lang=en

1. **Should a small, dedicated laboratory be set up for the isolation area? What type of laboratory is recommended?**

It is recommended that contact with EVD patient specimens be kept to a minimum and that a strict risk assessment be carried out before deciding on therapeutic objectives, and, therefore, on the need to carry out blood chemistry and other blood tests.

If laboratory tests are deemed necessary for patient management, it is recommended that all specimens be inactivated in a BSL-3 environment before processing. Details on specimen inactivation and collection are available in the document “General procedures for inactivation of potentially infectious samples with Ebola virus and other highly pathogenic viral agents”.

If a specimen is not inactivated, it should only be processed in closed-system analyzers that minimize contact with the specimen and that are contained within a BSL-2 or BSL-3 biosafety cabinet.

1. **What should be done if a specimen has been collected from a patient who is subsequently suspected of having Ebola virus disease?**

If a specimen was obtained and processed under different clinical hypothesis and the patient is subsequently suspected of having Ebola virus disease (EVD), the specimen should be sent immediately and under appropriate packaging conditions (IATA Category A) to a WHO Collaborating Center.

All surfaces (biosafety cabinets, laboratory benches and countertops, equipment, etc.) where the specimen has been worked on should be disinfected with 0.5% hypochlorite solution. Any automated equipment should be decontaminated with 0.5% hypochlorite solution (using repeated cleaning cycles in accordance with manufacturer recommendations). If the manufacturer recommends an alternative decontamination procedure, it should first be checked whether the alternative procedure is sufficient to inactivate agents such as Ebola. If a decontamination process is known to be sufficient to inactivate the hepatitis C or hepatitis B viruses, then it will suffice for inactivation of filoviruses, including the Ebola virus.

All laboratory staff that came into contact with the specimen before EVD was suspected **should be regarded as contacts**.

1. **Once a specimen has been collected, should it be transported by ambulance? Which type of vehicle is recommended?**

An **appropriately packaged** sample (placed in triple packaging at the site of specimen collection) can be **transported safely in any vehicle**. Guidance on how to pack specimens is available in *Recommendations for safe collection and proper management of specimens potentially infected with highly pathogenic agents.* PAHO/WHO, 2014; and *Recommendations for proper packaging and shipping by land of specimens potentially infected with highly pathogenic agents.* PAHO/WHO, 2014.

1. **Who should pack specimens from a patient with suspected Ebola virus disease?**

Any professional that has been trained in the use of the triple packaging system can carry out this task. However, shipment and appropriate use of packaging materials **should be supervised by an IATA-certified shipper**, who will also be the person responsible for shipment of the specimen.

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1. **8. Does specimen packaging need to take place in a biosafety cabinet?**

No. Once the specimen has been placed in a primary container, it is safe to place the primary container directly into the secondary and then tertiary packaging in a clean area without any risk of exposure, as explained in the available documentation (*Recommendations for safe collection and proper management of specimens potentially infected with highly pathogenic agents.* PAHO/WHO, 2014; *Recommendations for proper packaging and shipping by land of specimens potentially infected with highly pathogenic agents.* PAHO/WHO, 2014).

**9. What is the recommended coolant for specimen transportation—ice packs or dry ice?**

A cold chain must be maintained. Although the use of dry ice is not compulsory, because specimens do not require freezing, ice packs only stay cold for around 24 hours. If shipping is expected to take longer, it is better to use dry ice (only to maintain a refrigerated environment, not to freeze the specimen).

1. **10. Specimen shipment: What if the courier refuses to transport a specimen?**

It is recommended that countries identify, **in advance**, the appropriate mechanisms to ensure specimen shipment. This entails **prior discussion and negotiation** with a courier that operates in the country to ensure that specimen shipment is available when a suspected case arises.

In the event that no certified courier is available, the national authorities should contact the aeronautical authorities to establish, **in advance**,the necessary agreements to ensure specimen shipment to any of the WHO Collaborating Centers.

In accordance with ICAO electronic bulletin EB 2014/57, civil and commercial airlines should facilitate the transport by air of Biological Substances Category A, provided that they are packaged according to IATA standards by a certified shipper. Therefore, the national health authorities should agree **in advance** onterms and conditions to ensure specimen shipment.

**References**

* General procedures for inactivation of potentially infectious samples with Ebola virus and other highly pathogenic viral agents. Available at: [General procedures for inactivation of potentially infectious samples with Ebola virus and other highly pathogenic viral agents](http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=27787&lang=en)
* *Recommendations for safe collection and proper management of specimens potentially infected with highly pathogenic agents.* PAHO/WHO, 2014. Available at:

<http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=27683&lang=en>

* *Recommendations for proper packaging and shipping by land of specimens potentially infected with highly pathogenic agents.* PAHO/WHO, 2014. Available at: <http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=27681&lang=en>