In-Country shipment: How to safely ship human blood samples from suspected Ebola cases within a country by road, rail and sea

Step 1: Before handling the sample, prepare all shipping equipment

(1) Manage logistics:
- Identify the name and telephone number and/or e-mail of 1) responsible person /emergency contact at the National Reference Laboratory (this person should be available 24 hours a day until shipment arrives), and 2) lead epidemiologist /medical officer at the MoH
- Notify National Reference Laboratory and the lead epidemiologist / medical officer that the sample shipment will be coming
- Verify schedule / timetable for the company transporting the sample

(2) Assemble equipment for packaging samples:

**Packaging:**
- Absorbent material in sufficient quantity to absorb the entire liquid content, should the primary container(s) leak
- Leak-proof secondary container
- Rigid shipping box
- Cushioning material, e.g. bubble wrap
- Tape to seal the outer package (if required)
- Inner lining

**If refrigeration of the samples is necessary:**
- Styrofoam container
- Frozen ice pads

**Shipping / Transporting:**
- Receiver’s name, address and telephone number
- Epidemiological questionnaire or line-list which includes patient name, sex, age (birthdate), clinical information, symptoms, date of onset, date specimen collected, type of sample
- Laboratory form or letter describing the main epidemiological and clinical findings and the lab tests that are required
- Waterproof Marker

(3) Locate the sample:

Quick Tips for Category A shipments (an infectious substance that when exposed to it can cause permanent disability, life-threatening or fatal disease in healthy people or animals):
- Ensure the primary and secondary containers are leak-proof
- Vacutainer(s) in a sealed plastic bag or a screw-capped rigid tube can constitute a leak-proof primary container
- Do not place any sharps in your package: no needles, no cutters, no blades.
- Shipping packages can be reused; but the packaging needs to be appropriately disinfected.
- The minimal dimensions to ship a Category A package is 10cm x 10cm x 10cm.
- Remember that training to ship Category A samples is a legal requirement and must be renewed every 2 years.
**Step 2: Prepare the sample**

**A. If the sample is in a plastic leak-proof primary container proceed to step 3**

**B. If sample is not in a plastic leak-proof primary container follow steps B1-B8**

- If the sample is not in a leak-proof container, (e.g. Vacutainers or blood collection tubes) DO NOT touch Vacutainers or blood collection tubes without wearing appropriate personal protective equipment.

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**Step B1. Put on a gown, face protection and gloves (over cuffs) [see "How To safely collect blood samples from persons suspected to be infected with highly infectious blood-borne pathogens"]**

**Step B2. Protect the sample from breaking during transport by wrapping the tube of blood in a paper towel or cushioning material.**

Do not wipe sample collection tubes with disinfectant. Use disposable paper towel only.

**Step B3. Ask a designated assistant to approach you with the unscrewed plastic leak-proof primary packaging container.**

- This person should have gloves on.

**Step B4: Place the wrapped tube of blood into the plastic leak-proof primary packaging container.**

- Be careful not to touch the outside of the plastic leak-proof primary packaging container tube with contaminated gloves.

**Step B6: Have the designated, gloved assistant tightly close the plastic leak-proof primary packaging container.**

- When closed, the outside of the primary tube can be disinfected.

**Step B6. Both persons should remove their personal protective equipment [see "How To safely collect blood samples from persons suspected to be infected with highly infectious blood-borne pathogens"]**

**Step B7. Put contaminated items into an infectious waste bag for destruction.**

**Step B8. Both persons should perform hand hygiene. Duration of the entire procedure: 40-60 sec.**

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Step 3: Package the sample (1st part)

**Step 3a. Prepare the rigid shipping box by inserting the inner lining into it**

**Step 3b. Open the secondary leak-proof container**
- Choose the size of the container to match the number of samples being shipped

**Step 3c. Insert the absorbent material**
- There should be enough material to absorb all contents in primary container

**Step 3d. Wrap the primary container with cushioning material**
- If packaging more than one sample, wrap each primary container individually with the bubble wrap to prevent breakage

**Step 3e. Place the primary container(s) into the secondary container**

**Step 3f. Close the secondary container**
Step 3: Package the sample (last part)

Step 3g. If refrigeration is not necessary, place the secondary container into the lined rigid shipping box and proceed to step 3j.

Step 3j: Put laboratory form / letter and epidemiological questionnaire into an envelope

If refrigeration is necessary:

3h. Place the secondary leak-proof container into a styrofoam container and surround with ice packs.

3i. Place styrofoam container into the rigid shipping box

3k. Put laboratory form / letter and epidemiological questionnaire into the rigid shipping box

- If no refrigeration is needed, place the laboratory form/letter and epidemiological questionnaire inside of the box.
- If refrigeration is needed, place the form/letter on the outside of the styrofoam container so that moisture will not destroy the writing on the forms.

3l. Close the top of the box (s)

3m: Tape the box closed

World Health Organization
**Step 4. Mark and label the box**

**Step 4a: Write the name and addresses on box**
- ✔ Shipper’s name and address
- ✔ Receiver’s name and address

**Step 4b. Write the name and the telephone number of the contact person at the National Reference Laboratory**
- ✔ Person should be available 24 hours a day until shipment arrives

**Step 4c. Place the Infectious Substance label on box**
- ✔ Write: ‘infectious substance, affecting humans, UN2814’

**Step 4d. Verify that the orientation arrows are on the box**
- ✔ Arrows should be found on opposite sides of box
- ✔ Arrows are required when total volume of infectious substance exceeds 50 ml per box

**Step 5. Finalize the shipment**

**Step 5a. Contact the National Reference Laboratory to inform them that samples have been sent**

**Step 5b. Contact the transporting company to either pick-up shipment or inform them that you will bring the shipment to them**
- ✔ Inform the transporting company if short delivery times are required due to refrigeration

**Step 5c. Obtain shipping and tracking receipt and store in a safe location for 2 years**
- ✔ If possible, scan and email the tracking receipt to the lead epidemiologist / medical officer in charge of outbreak investigation and the responsible person in the laboratory