
ANNEX 12 Skin Biopsy on Fatal Cases for Diagnosis of Ebola

Ebola virus can be detected in fatal cases from a skin specimen using an immunohistochemistry test developed by the Centers for Disease Control and Prevention (CDC) Infectious Diseases Pathology Activity. The skin specimen is fixed in formalin which kills the virus. The specimen is no longer infectious once it is placed in formalin and the outside of the vial has been decontaminated. This vial can be shipped by mail or hand carried to the lab without risk. Results are available within a week after the specimen arrives at the CDC.

CDC provides Skin Biopsy Kits for the collection of skin samples in formalin. If these are available in your area, follow the simple instructions that are provided in the kit. An example of the instructions is on the following pages.

If a kit is not available, the biopsy can still be collected and sent for diagnosis to:

Dr. Sherif Zaki
Centers for Disease Control and Prevention
Infectious Diseases Pathology G-32
1600 Clifton Road, NE
Atlanta, GA 30329-4018



Viral Hemorrhagic Fever

Skin Biopsy Kit For Surveillance



Check the list of equipment and make sure everything is in place before beginning.

Kit Equipment List:

1. Instruction sheet
2. Selection criteria and surveillance forms
3. (1) box powdered bleach
4. (2) pairs latex gloves
5. (1) pair heavy-duty gloves
6. (2) masks
7. (1) face shield
8. (1) tweezers and scissors set
9. (1) vial with formalin
10. (1) vial with chaotrope
11. (1) piece hand soap
12. (2) pieces of parafilm
13. (1) mailing tube
14. (1) set mailing labels

Other items needed:

1. 1 or 2 buckets for disinfectant and handwashing
2. Gowns or plastic aprons
3. 10 litres water
4. VHF Infection Control Manual

Shipping Instructions:

Be sure to fill out the forms with the name of the patient on each page. Number the vial and put the number on the form. This is very important, especially if you have more than one specimen to send. Use a pencil to write on the lid of the vial.

The formalin- and chaotrope-fixed specimens are not infectious. The vial can be sent by normal mail or carried on a plane **without risk** to the carrier.

Put the forms and the vial containing the specimen into the mailing tube. Close the lid tightly and seal with tape if available. Put the label on the tube and send it to CDC by the post office. It can be mailed in your country or if someone carries it to the United States, it can be placed in any U.S. mailbox.





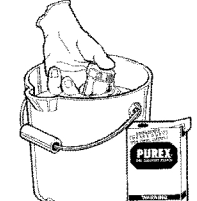






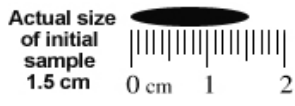
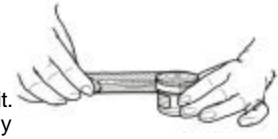
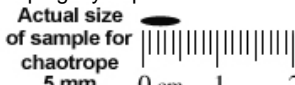


Please remember to put stamps on the mailing tube.

Surveillance for Viral Hemorrhagic Fever

INSTRUCTION FOR USING THE SKIN BIOPSY KIT

IMPORTANT: The instruments used in the biopsy are for one use only, must not be reused, and should be disinfected and incinerated after the biopsy. Reusing could result in contamination of subsequent samples.

See the "Infection Control for Viral Haemorrhagic Fevers" manual for detailed information on how to properly put on and take off protective clothing and how to make an incinerator.

<p>1. Fill out the patient forms with the patient's information. Include your address for sending the results. Check the equipment and make sure you have everything you need.</p> 	<p>8. Place the remaining sample in the formalin. See example sample size. Close the cap tightly to prevent leaks.</p> <p>Actual size of sample for formalin 10 mm or 1 cm</p>  
<p>2. Prepare the disinfectant solution. Mix the contents of the box of bleach in 10 liters of water.</p> 	<p>9. Dip the vials in the disinfectant for 1 minute. Set them aside to dry.</p> 
<p>3. Put on the protective clothing. Begin with the gown, next the latex gloves, then the kitchen gloves, then the mask, and finally the face shield or eye protection. Use a plastic apron if one is available. See the "Infection Control for Viral Haemorrhagic Fevers" manual for detailed information on protective clothing.</p> 	<p>10. Place the rest of the equipment in the bucket and leave it for 30 minutes. If you need to move the cadaver, do so while you have the protective clothing on. When you are finished, rinse your exterior gloves in the disinfectant, remove them, and drop them in the bucket.</p> 
<p>4. Take the equipment to the work site. Label vials with patient name and date. Open the vials of formalin and chaotrope.* Open the instruments: the scissors and the tweezers. Arrange them for use near the body.</p> 	<p>11. Wearing the interior gloves, pour excess bleach solution out at the base of the incinerator (without pouring out equipment). Empty equipment from bucket by dumping directly into the incinerator. Remove interior gloves and place them in the incinerator. Using caution, light the incinerator.</p> 
<p>5. Gently turn the head of the cadaver to expose the side of the neck.</p> 	<p>12. Wash your hands with soap and water. The specimen is not infectious after it is placed in formalin and chaotrope, and the outside of the vial is disinfected.</p> 
<p>6. With the tweezers and scissors, cut a piece of skin approximately 1.5 cm in size from the neck and remove.</p> <p>Actual size of initial sample 1.5 cm</p> 	<p>13. Stretch a piece of parafilm around the closure of each vial to provide an extra seal. This will help prevent leakage during transit. Be sure that both vials are properly labeled.</p> 
<p>7. From the piece of skin, cut a smaller sample (about the size of a rice grain) and place it in the chaotrope. See example sample size. Close the cap tightly to prevent leaks.</p> <p>Actual size of sample for chaotrope 5 mm</p>  	<p>14. Place the vials and the patient forms in the mailing tube and send to CDC Atlanta. Do not freeze the sample.</p> 

* Chaotrope is a skin irritant and may be harmful if swallowed or splashed in the eye. Use caution when handling open containers of chaotrope. In case of contact on skin, wash with soap and water. In case of contact in eyes, flush with water or saline. Get medical attention immediately. For safety data about formalin, see label on container.

Hemorrhagic Fever Surveillance Form

Vial Number:

Name and location of Health Center:

Name of physician or nurse:

Contact address (**Important: to receive results, give a very specific contact address**):

Telephone/Fax number:

Patient data	Hospital Number:
Name:	
Age:	
Sex: __ Male __ Female	
Address:	
Profession or occupation:	
Date of first symptoms:	Date of admittance:
Date of death:	Date of biopsy:
If patient was not hospitalized, who cared for the patient?	

Are any other family members ill? If yes, relationship:

Symptoms of family member:

If the patient was hospitalized, use the table attached to mark the symptoms you observed and any other important observations.

Clinical Signs and Symptoms Form

Name of Patient:

Symptoms (Check each one present)	Date of appearance:
<input type="checkbox"/> Fever	
<input type="checkbox"/> Diarrhea	
<input type="checkbox"/> Extreme weakness after rehydration	
<input type="checkbox"/> Nausea	
<input type="checkbox"/> Vomiting	
<input type="checkbox"/> Sore Throat	
<input type="checkbox"/> Headache	
<input type="checkbox"/> Loss of appetite	
<input type="checkbox"/> Muscle pain	
<input type="checkbox"/> Joint pain	
<input type="checkbox"/> Hiccups	
<input type="checkbox"/> Cough	
<input type="checkbox"/> Conjunctivitis	
<input type="checkbox"/> Chest pain	
<input type="checkbox"/> Rapid respiration	
<input type="checkbox"/> Recent loss of hearing	
<input type="checkbox"/> Burning sensations of the skin	
Bleeding, specify below:	Date of appearance:
<input type="checkbox"/> Black or bloody vomit	
<input type="checkbox"/> Black or bloody stool	
<input type="checkbox"/> Mouth	
<input type="checkbox"/> Nose	
<input type="checkbox"/> Urine	
<input type="checkbox"/> Skin or puncture site	
<input type="checkbox"/> Other bleeding: (specify)	
Other Observations:(specify)	

Selection criteria for testing of suspected viral hemorrhagic fever (VHF)

Patient's last name, first name:

When to obtain a skin biopsy sample for testing:

The patient had the following symptoms within 2 weeks preceding death:

- Fever and
- Diarrhea and

One of the following signs:

- Headache
- Intense weakness after rehydration
- Muscle pains
- Joint pains
- Back pains

Treatment was given with antibiotics and antimalarials for a minimum of 3 days.

The patient failed to respond to treatment with no definitive diagnosis and died with at least 3 of the following:

- Sore throat or difficulty in swallowing
- Red eyes
- Skin eruptions
- Hiccups
- Burning sensation of the skin
- Bleeding: nose, mouth, urine, stools (black or bloody), or vomit (black or bloody)
- Rapid respiration
- Patient reports another similar death in the family within last 10 days*

* Measures should be taken to put the family and contacts under surveillance.

Obtain a skin biopsy sample, following the instructions given in this document.

The biopsy sample is not infectious once in formalin or chaotrope.

Send it to CDC for testing at the following address:

Special Pathogens Branch, CDC
1600 Clifton Rd., MS G-14
Atlanta, GA 30333, USA
Telephone: (404) 639-1115
TELEX 549571CDCATL