

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

Refer to IPAC website, <http://ipac.vch.ca/Pages/Emerging-Issues.aspx>, to ensure you are using the most updated protocol.

VGH Laboratory Specimen Processing Guidelines

Patients with Suspect Ebola Virus Disease (EVD) or other Viral Hemorrhagic Fevers (VHF)

Designated Specimen Receiving Area: AFB Room 1103 Microbiology

General Guidelines

1. Specimen collection must not occur in the laboratory setting or in an outpatient department. In the event that a potential EVD/VHF patient arrives requesting services, the patient should be provided a surgical mask to wear and be placed in isolation. Contact a medical microbiologist immediately. Follow VGH Algorithm for Assessment of Potential Viral Hemorrhagic Fever, including Ebola Virus Disease (EVD).
2. Testing must be done in the centralized laboratory. Specimens collected at Richmond Hospital will be transported to VGH for processing according to Category A TDG regulations.
3. The AFB Room was chosen as it is Level 2 containment with Level 3 practices, or “2+”
4. Only limited testing will be done until Ebola Virus infection/VHF is ruled out.
5. Specimen handling will be limited to the fewest number of personnel. A “**Specimen Handling Contact List**” will be signed by all who handle specimens and will be kept in the microbiology TDG packaging area. The completed list will be given to the Medical Microbiologist when processing is finished.
6. Only experienced personnel that have been trained in PPE and EVD/VHF processing protocols and have been fit tested for N95 within the last year will do laboratory processing.
7. It may be necessary to call in extra staff, in the following circumstances: during off-hours, if on-site staff has not had education on proper use of PPE and/or N95 respirator fit testing has not been done, and /or TDG training. Lab supervisor will be responsible for arranging supplementary staff as required.
8. Two technologists, one from Microbiology and one from Hematology, will work together throughout. Taking turns, one technologist will perform the donning, doffing, and specimen processing while the other will observe, record and assist as needed.
9. Specimens must be **hand-delivered** to the laboratory by ED/ICU phlebotomy MLA staff. **Do not use the pneumatic tube delivery system.**
10. Specimens must never be left unattended unless in an identified secured room with restricted access.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

A: Preliminary Notification:

- Microbiology and core lab supervisors will coordinate activities and communications.
- Medical Microbiologists have their own separate communication document.

The Medical Microbiologist on-call in preparation for the immediate delivery of specimens will notify:

√		Step
	1.	The microbiology supervisor or designated technologist*
	2.	The core laboratory supervisor (604-871-5006)
	3.	The medical microbiologist on call for infection control who is to report to ED to assist with precautions as necessary

**The AFB technologist will be the designated technologist. In off-hour situations when additional staffing is required, a contact sheet listing volunteer technologists as well as all trained technologists will be posted on the huddle board in microbiology.*

The Core Lab Supervisor will notify:

√		Step
	1.	An MLA: for specimen receipt and delivery
		a. If the patient is in Emergency: The core lab supervisor will contact the ED MLA pager at 604-871-3291 or ED-MLA desk at local 63112 and give instructions for them to report to the Trained Observer outside room A10.
		b. If the patient is in ICU: The core lab supervisor will assign a core lab MLA. ICU Charge RN will contact the core lab supervisor when the blood is about to be drawn. The designated MLA will pick up the ICU MLA Ebola VD/VHF Kit” in the Core Lab room 1312A and the lab printed Sunquest labels and then report to the ICU in charge nurse.
	2.	The hematology technologist
	3.	And will ensure that each are adequately trained

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

The Microbiology Supervisor will:

√		Step
	1.	Notify the microbiology MLAs and the designated trained microbiology technologist of the pending EVD/VHF blood work.
	2.	In the event of an off - hour call back, instruct the “microbiology technologist called in” to let the core lab supervisor know when they arrive.
	3.	Determine if supplementary staff is required for TDG, and call in TDG - trained individuals if needed. (See volunteer and trained technologist contact list on huddle board)
	4.	If AFB processing is underway, assess the status of the processing and arrange to halt the processing as soon as possible. If AFB processing is not taking place turn on the BSC and record the time.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

B: Specimen Delivery and Logging in Specimens

(Hand delivered: do NOT use pneumatic tube delivery system)

- ED or ICU MLA will deliver specimens and an extra set of labels as follows:
 - a. One hard plastic TDG container with specimens for processing in AFB room labeled “VGH Lab”
 - b. One hard plastic TDG container labeled “BCCDC” with specimens to be sent to BCCDC
 - c. Labels are to be used for accessioning and for filling out BCCDC requisition in the TDG area

- All log-in of specimens into LIS will be done by Microbiology MLAs using the **extra labels, not the specimens**.

- Test menu orders are limited to:
 - Blood cultures x 2
 - Ebola testing to be done at BCCDC
 - Malaria – rapid test for *P. falciparum* and thin smear
 - Hemoglobin, estimated white blood cell count, estimated platelet count
 - ALP, ALT, AST, total bilirubin, albumin, total protein
 - Sodium, potassium, chloride, TCO₂, urea, creatinine, glucose, calcium

Micro MLA will:

√		Step
	1.	Notify the microbiology supervisor (or designated technologist) that the ED or ICU MLA has arrived with the Suspect EVD/VHF specimens
	2.	Log in the limited test orders using the labels provided
	3.	Once logging in is completed, take the labels to the TDG packaging area where the patient information will be used to complete the required requisitions and shipping documents.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

Micro Supervisor or Designate will:

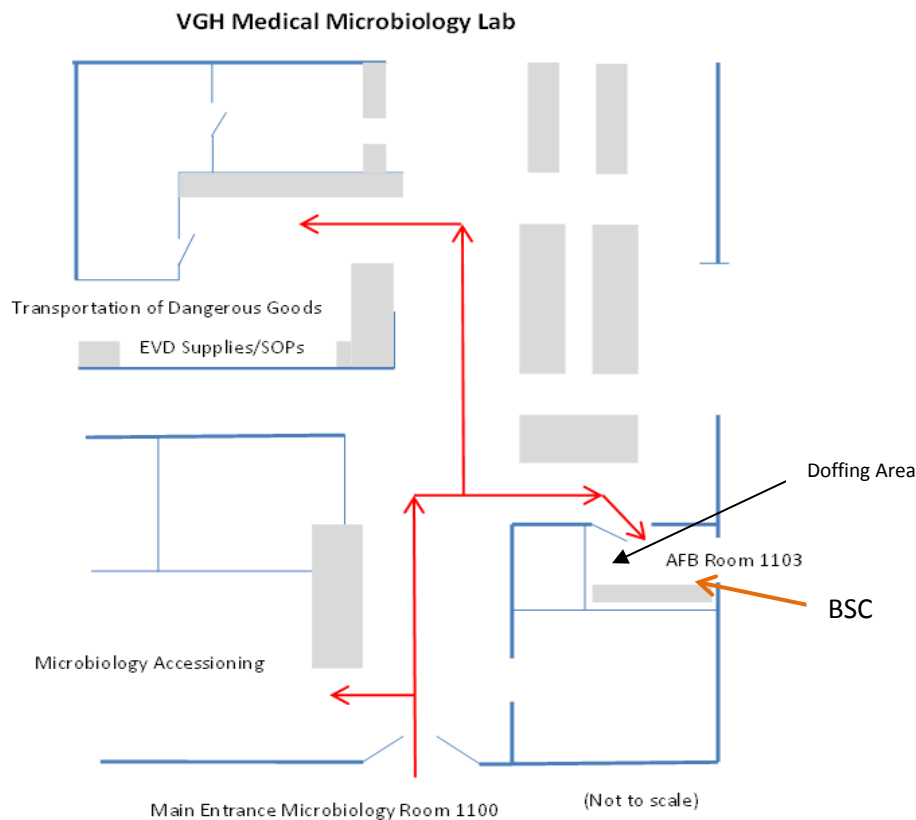
√	Step
	1. Notify Medical Microbiologist that specimens have arrived
	2. Meet the ED/ICU MLA at the entrance to the lab
	3. Give labels to Microbiology accessioning.
	4. Escort the ED/ICU MLA carrying the two hard plastic containers to the AFB room.
	<ul style="list-style-type: none"> • If room not in use: <ul style="list-style-type: none"> - Place both the hard plastic TDG containers into the BSC - Close door and place "Suspect EVD/VHF Sample Containment / Processing. "DO NOT ENTER" sign on door - Place barrier tape (masking tape) over the door to prevent accidental entry
	<ul style="list-style-type: none"> • If the AFB room is in use: <ul style="list-style-type: none"> - Knock on the door and hand both the TDG containers to the technologist to place immediately into the BSC or, if necessary, onto the bench in the AFB room. - Upon leaving the AFB room, close the door and place "Suspect EVD/VHF Sample Containment / Processing. DO NOT ENTER" sign on door.
	5. Escort the ED/ICU MLA to the TDG packaging area where they are to sign the Specimen Handling Infection Prevention List. Leave the Specimen Handling Contact List in the TDG packaging area.
	6. Ensure that TDG packaging commences immediately by TDG trained staff.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

Specimen Delivery During Off Hour Shifts: (10pm – 6am)

Once notified by the Medical Microbiologist of the impending delivery of specimens, the Core Lab Supervisor will be prepared to:

- 1) Receive a call from the ED or ICU MLA stating he or she is ready to transport the specimens to the lab
- 2) Meet the ED or ICU MLA at main doors to Microbiology Room 1100 to ensure entry to the lab
- 3) Ensure the labels are used for the logging in of the limited test menu
- 4) Ensure that a set of labels is left available in the TDG area as patient information on the labels is required to complete the BCCDC virology requisition.
- 5) Escort the MLA to the AFB Room 1103 and **leave both TDG containers in the BSC.**
- 6) Turn on the BSC and record time.
- 7) Close door and place the sign on the door "Suspect EVD/VHF Specimen Containment/Processing - DO NOT ENTER" (the sign can be found in the pocket on the outside of door).
- 8) Escort the MLA to the TDG send out area. MLA is to sign the Specimen Handling Contact List. The list is kept in the TDG packaging bench on a clipboard labeled with a pink Ebola sticker.



Medical Microbiology

Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

- Accel INTERVention Disinfectant Wipes = ‘Disinfectant Wipes’: ALLOW ONE MINUTE DRYING TIME
- Accel 5 TB Disinfectant liquid = ‘Disinfectant liquid’: ALLOW FIVE MINUTE DRYING TIME
- Alcohol Based Hand Rub = ABHR
- Blue Biohazardous Waste Bin = ‘Blue Bin’

C: TDG Packaging and Transport of Specimens to BCCDC

- It is important to expedite the transport of specimens to BCCDC
- To be performed only by trained TDG certified staff

√	Step
1.	As soon as the specimens arrive, the designated micro technologist will phone World Courier at 604 232 9444 and arrange for pick up for suspect Ebola VD/VHF specimens (Account #61626).
2.	<p>It is necessary to ensure all regulations are followed for the transport of Category A dangerous goods. A visual inspection of the contents of the TDG container being sent to BCCDC is required to check that the correct specimens are present and that they are packaged according to TDG regulations. The containers and all contents have been thoroughly disinfected at the time of collection so it is not necessary to Don PPE.</p> <ul style="list-style-type: none"> ● Ensure the BSC has been running for 30 minutes ● Don a pair of gloves ● Open the container labeled BCCDC ● Check that there are two lavender top tubes, two gold top tubes and that they are each packaged individually in sealed biohazard bags containing absorbent material. ● Make any corrections as required ● Reseal TDG container ● Wipe outside of container with disinfectant wipes. Allow 1 minute drying time. Use Alcohol based hand rub (ABHR) on gloves, allow 1 minute to dry. ● Remove gloves using glove to glove technique and discard in blue bin if in place, or into routine waste if blue bin not present in room as yet. ● Carry the container to the TDG packaging area and proceed with preparations for transport.
3.	<p>Locate red folder in TDG area of laboratory labelled: ‘Ebola VD/VHF Requisitions and Shipping Documentation’.</p> <p>BCCDC Virology requisitions and the required shipping documents are kept in the pocket of this folder.</p> <p>(* Folder to be created if not in place.)</p>
4.	Ensure all regulations are followed for the Transport of Category A Dangerous Goods and that the ERAP number: ERP2-0746 appears in the “Additional Handling Information Box” on the shipper’s declaration.
5.	Fill out shipper’s declaration and BCCDC Virology requisition. Patient information is available using the labels provided.

Medical Microbiology

Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

	6.	Label the hard plastic TDG container with list of contents (Ebola Virus Disease/VHF) and volumes (2x5 ml and 2x6 ml).
	7.	Place the BCCDC Virology requisition and the provided set of labels on top of the sealed container.
	8.	Fold the lids to the white Cat A TDG box in sequence as indicated on packaging.
	9.	Seal lid securely using broad width packing tape.
	10.	Check that the shipper and consignee addresses on the Category A TDG package match those on the documents.
	11.	Fill in the Total Weight/ Volume on the outside of Cat A box (22ml).
	12.	Make 3 copies of the prepared shipper's declaration: one for shipper, one for receiver (tape to the top of Category A box) and one for the courier. These documents found in the red EVD/VHF folder.
	13.	Fill out shipper information on World Courier Waybill.
	14.	Package cannot be left unattended , assign someone to be responsible for safe keeping if necessary.
	15.	Courier to sign shipping documents.
	16.	Courier to sign Specimen Handling Contact List.
	17.	Resume AFB room preparation using protocol: ' AFB Room Supply Lists – Suspect Ebola Virus Disease (EVD)/VHF Specimen Processing '. Once preparation of the room is complete, the donning of PPE may begin.

Medical Microbiology

Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

D: AFB Room Check List of Supplies:

- ***It is important to expedite the transport of specimens to BCCDC:*** the designated Microbiology technologist will commence AFB room preparation as soon as the room is available, **continue only until the delivery of the specimens from the ED or ICU, and resume room preparations only after the specimens are sent by TDG to BCCDC.**
- ***Refer to: 'AFB Room Supplies Lis – Suspect EVD/VHF Specimen Processing'***

√		Step
	1.	Turn on the BSC to ensure it runs at least 30 minutes before use. Record time. Refer to instructions for proper use of BSC (laminated copy is posted near AFB Room BSC).
	2.	Remove all items from inside the BSC.
	3.	Tie off and remove all TB processing biohazard waste, label with "Autoclave before disposal" sticker and place in wash-up area for autoclaving. <i>It is imperative that all biohazardous waste is removed before proceeding with room preparations. Any waste left in room must subsequently be treated as EVD/VHF waste.</i>
	4.	Place blue bin and lid (stored in the wash up area room 1351) in AFB Room; ensure it is double lined with red biohazard bags and has absorbent material at the bottom (not inside bags), and that twist ties and all required labels for the bin are available.
	5.	Clear/de-clutter work space area outside of BSC. Clear the top of the cart to be used for the transfer of the blood culture bottles to the BACTEC Instrument.
	6.	Refer to AFB Room Supplies protocol: <i>'AFB Room Supplies Lists – Suspect EVD/VHF Specimen Processing'</i> , to make sure all required supplies are compiled and in place prior to testing.
	7.	Place a blue absorbent mat <u>on top of the cart</u> and place the following on top of the mat. 1 st set: <ul style="list-style-type: none"> • Disinfectant wipes, ready to be dispensed • Disinfectant (liquid) • Alcohol-based hand rub (ABHR) • Suspect Ebola VD/VHF Labels
	8.	Prepare a working area inside the hood by placing down blue absorbent pads.
	9.	Place on blue mats in BSC:
		a. Specimen rack
		b. Ebola VD/VHF labels x 4 for blood culture bottles
		c. Disinfectant wipes (ready to be dispensed), disinfectant (liquid) and ABHR - 2nd set

Medical Microbiology
Ebola Virus Disease (EVD)/ Viral Hemorrhagic Fevers Processing Protocol

		d. Waxed-cardboard discard bucket, double-lined with biohazardous bags for Ebola Virus Disease/VHF specimens and other waste.
		e. Twist ties.
		f. Sharps container
	10.	Notify the Hematology technologist to bring all their required equipment and protocols and place in BSC attending to safe practice use of BSC. Ebola VD/VHF Hematology Supplies Bin to be placed on the bench beside the BSC.
	11.	Ensure proper airflow by maintaining adequate space between all objects inside the cabinet and keeping the front grill clear. Refer to instructions for proper use of BSC (laminated copy is posted near AFB BSC).
	12.	Ensure the following are inside AFB room (to the left of the door):
		a. Spill kit with absorbent towels
		b. White board and marker
	13.	Ensure the following is immediately outside the AFB room:
		a. Doffing Kit for a spill requiring evacuation
		b. Doffing pads x 4
		c. Two double lined red biohazard pails, lids and mallet
	14.	Lift blind over window in AFB room.
	15.	Activate baby monitor and check that it is working and audible outside the AFB room. To activate the base, press and hold the button marked with a red sticker until the indicator light flashes green. Locate the outside receiver in the corner of the blood culture bench and activate the same way.
	16.	If baby monitors are not working a white board is available in the AFB room for use to communicate through the window of the AFB room.
	17.	A phone may be used when working off shift in the absence of personnel in the immediate area. A phone list is posted above the phone. Disinfect outer gloves surface with disinfectant wipe or alcohol based hand rub. Allow to dry. Use disinfectant wipe to pick up receiver, place call and wipe surfaces clean with additional disinfectant wipes when finished.
	18.	Ensure "Suspect Ebola VD/VHF Processing and Containment. DO NOT ENTER" sign is on the door then proceed with donning.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

E : Donning Procedure of Personal Protective Equipment (PPE):

Follow the PPE checklist: **Donning and Doffing PPE Checklist - for VGH Laboratory Technologists.**

Do not rush when Donning

- All personnel must wear the appropriate PPE.
- All personnel must be trained in PPE donning and doffing procedures and be fit tested for N95 within the last year.
- The designated donning area is outside of Room 1105A •

Donning of PPE will not commence until:

- a) both technologists (Medical Microbiology and Hematology) are present
- b) both technologists have ***signed the Specimen Handling Infection Prevention Sheet***

- Both technologists are to be engaged and assist one another in the donning process, one donning at a time while the other instructs, observes, assists and records on the check list the process ensuring each step is followed.

F: Microbiology Procedure:

- Accel INTERVention disinfectant wipes require a **one minute contact time;**
- Accel 5 TB Disinfectant (liquid) requires a **five minute contact time**

√		Step
	1.	Ensure the BSC has been on for 30 minutes. Wearing full PPE, open the TDG container in the BSC.
	2.	Check that specimens are fully labeled with the patient's name, hospital identification number, accession number, date of collection.
	3.	Place tubes for blood tests in rack and BACTEC bottles on blue absorbent mat.
	4.	Inspect the blood culture bottles for any signs of breakage. Place pink 'Suspected Ebola VD/VHF' sticker on the neck of the bottle.
	5.	Return the blood cultures to the TDG container, close TDG container and wipe surfaces with Disinfectant Wipe.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

	6.	Disinfect outer gloves using disinfectant wipe(s) or alcohol based hand rub. Allow to dry.
	7.	Place TDG container on blue absorbent mat on cart along with pink Suspect Ebola VD/VHF labels. Use the cart to transport the specimens to the BACTEC instrument.
	8.	Hematology technologist to assist exiting AFB room by wiping AFB door hardware with disinfectant wipe before opening and closing door, and to assist placing the BACTEC bottles into the instrument by opening and closing instrument doors using disinfectant wipes.
	9.	If TDG container is dropped, do not open, return it immediately to BSC, and notify microbiology supervisor.
	10.	Place pink "Suspect Ebola VD/VHF virus" sign on the door of the BACTEC machine.
	11.	Return to AFB room, again with assistance of hematology technologist to disinfect door hardware before you enter. Place TDG container in BSC.
	12.	Disinfect outer gloves using a disinfectant wipe or alcohol based hand rub. Allow to dry.
	13.	Commence assisting Hematology Technologist. See chemistry and hematology protocol: <i>Viral Hemorrhagic Fever (VHF) – Mod/High Risk, eg. Ebola virus - Sample Processing Hematology Lab</i>

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

G: Preliminary AFB Room Clean-up and Preparation for Waste Removal:

After all testing in the AFB room is complete, commence cleaning of AFB room and prepare for waste removal of blue biohazardous waste bin.

- Ask the Microbiologist to sign the Waste Release Form B (Refer to SOP: 'Release Form for Removal of Waste from Suspect Ebola Virus Disease/other Viral Hemorrhagic Fevers Processing')
- Accel INTERVention Disinfectant requires a **one minute contact time**; Accel 5 TB Disinfectant (liquid) requires a **five minute contact time**
- Blue biohazardous waste bin = 'blue bin'

√	Step
1.	Tie off biohazardous bags, one inside the other, in the wax cardboard discard bucket.
2.	Place all disposable waste, including the specimens, any used items, TDG containers, sharps container and specimen rack, into the blue bin double-lined with red biohazard bags.
3.	Do NOT press down to compress.
4.	Disinfect gloves with disinfectant wipe or ABHR. Allow to dry.
5.	Proceed with a Primary Clean
6.	<p>a. Wipe all surfaces inside the BSC and all surfaces used outside the BSC using Disinfectant or Disinfecting Wipes, including the surfaces of the disinfectant containers. Note the time applied and allow to remain wet for required time, reapplying if necessary.</p> <p>b. Using disinfectant wipes, wipe the point of care equipment in the BSC. (Follow the Hemocue and Piccolo manufacturer's instructions provided by hematology). Allow to remain wet for one minute.</p>
7.	Perform Secondary Clean by repeating the above cleaning process
8.	Disinfect gloves with disinfectant wipe(s) or ABHR. Allow to dry.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

9.	<p>Storage of Point of Care Instruments: instruments will be stored in the AFB room until the final status of the patient is determined.</p> <ol style="list-style-type: none"> Place Hemocue and Piccolo in red biohazard bags (double bagged). Tie off one bag inside the other. Label Point of Care Instruments using a white label with red edging and bold lettering: “Ebola VD/VHF status pending. Do not remove from AFB Room” Place into Ebola VD/VHF Hematology Supplies Bin
10.	Disinfect gloves with disinfectant wipe or ABHR. Allow to dry.
11.	Wipe all the exterior surfaces of the blue bin with disinfectant wipes. Allow to dry.
12.	Place blue bin onto a doffing mat soaked with disinfectant liquid.
13.	<p>In doffing area of AFB room, commence removal of PPE carefully following the doffing protocol and check list: <u>Donning and Doffing PPE Checklist - for VGH Laboratory Technologists.</u></p> <p>Both technologists are to be engaged and assist one another in the doffing process, each taking turns doffing while the other instructs, observes assists and records the process on checklist ensuring all steps are followed.</p>
14.	All PPE removed is to be carefully discarded into the blue bin. Do not press down to compress.
15.	Put on new gloves and a routine lab gown.
16.	Tie off red bags with twist ties, one inside the other, being careful to avoid contact of gown or self to the blue bin.
17.	Disinfect gloves with disinfectant wipe or ABHR. Allow to dry.
18.	Using the supplied silver marker, write the “Quarantine Patient # (as issued by infection control) on the label provided. Place the label on outside of blue bin.
19.	Place two biohazard symbol labels on the blue bin so they are visible from two sides.
20.	Place lid on top of blue bin. Crothall will clamp lid upon removal.
21.	Remove routine gown by carefully rolling outside in and place in box provided for used AFB processing gowns
22.	Disinfect gloves with disinfectant wipe or ABHR. Allow to dry. Wipe the outside surfaces of the containers of disinfectant wipes and ABHR with disinfectant wipes.

Medical Microbiology
Ebola Virus Disease (EVD) /Viral Hemorrhagic Fevers (VHF) Processing Protocol

	23.	Using glove to glove technique, remove gloves and place in routine biohazard waste.
	24.	Carefully perform hand hygiene with soap and water at a clean sink or with ABHR.
	25.	Leave AFB room, close door and secure room leaving signage in place and applying barrier (masking) tape over the door to prevent accidental entry.
	26.	Call Crothall at 1-844-372-1959 and request: “Blue Bin/Drum for suspect Ebola VD/VHF” “STAT specialized terminal clean for suspect Ebola VD/VHF”
	27.	AFB room cannot be used until Crothall removes all waste and completes the final room cleaning.

H: Restocking of all supplies

√		Step
	1.	Restock supplies for specimen processing and PPE donning and doffing.
	2	Replace documents in red folder (‘Ebola VD/VHF Requisitions and Shipping Documentation’) in TDG area. Print entire protocol and place in one pocket, and in the opposite pocket place the required set of TDG documents and the donning/doffing protocol. Also place copies of donning/doffing protocol along with EVD/VHF specimen processing supplies.
	3.	Replace a copy of the Microbiology Procedure (Section F) and Preliminary AFB Room Clean-Up Procedure (Section G) along with EVD/VHF specimen processing supplies.
	4.	Prepare and address a new Category A TDG box

