

### Warrior Panel: Ebola and Marburg Virus Testing and Shipping Instructions

**Contact your local Health Department Epidemiologist for all suspected Ebola and Marburg virus cases. The CDC MUST be consulted before specimens can be submitted to DCLS for testing.**

**I. TESTING SUMMARY:** DCLS provides 24/7 courier and testing service for CDC-approved Patients Under Investigation (PUIs)

Testing Tier	Pathogen/Disease	Test Type	Specimen Type	Additional Comments
<b>First (1<sup>st</sup>)</b>	Ebola virus  Marburg virus	Warrior Panel Multiplex RT-PCR	Whole Blood (EDTA)	<ul style="list-style-type: none"> <li>Panel detects <i>Zaire, Sudan, Tai Forest, Reston</i>, and <i>Bundibugyo ebolavirus</i></li> <li>Panels detects Marburg and Ravn viruses <b>(Strain designation is not performed)</b></li> </ul>
<b>Second (2<sup>nd</sup>)</b>	Ebola virus  Marburg virus	Warrior Panel Multiplex RT-PCR	Whole Blood (EDTA)	Performed when <b>initial result is negative, and</b> specimen was <b>collected less than 72 hours</b> from symptom onset
	Malaria	Real time multiplex PCR	Whole Blood (EDTA)	Test detects <i>Plasmodium falciparum, malariae, ovale</i> and <i>vivax</i> individually <b>(Reflex testing performed if Ebola or Marburg result is negative)</b>
	Influenza/COVID-19	Real time multiplex PCR	NP or nasal swab in VTM	Test detects both <b>Influenza</b> and <b>SARS-COV2</b> <b>(Testing performed upon request only)</b>
<b>Third (3<sup>rd</sup>)</b>	Enteric pathogens	BioFire GI Panel	Stool in Cary Blair media	<b>Testing is provided as a last resort if testing cannot be performed at the Ebola Centers <u>AND</u> Ebola virus has been ruled out</b>

**II. RESULTS REPORTING:** Ebola virus can be detected in blood only after onset of symptoms, most notably fever. It may take up to 3 days post-onset for detectable levels of virus. **Testing turnaround time is 2-3 hours.**

Reporting Language	Results	After Actions/Notifications
<b>POSITIVE</b> for Ebola virus RNA	1 or more Ebola virus strains detected	<a href="#"><u>Specimen will be forwarded to the CDC for required confirmatory testing</u></a>
<b>POSITIVE</b> for Marburg virus RNA	Marburg and/or Ravn virus detected	
<b>NEGATIVE</b> for Ebola or Marburg virus RNA  <ul style="list-style-type: none"> <li><b>Test new specimen collected 72 hours after symptom onset if first sample was collected less than 72 hours</b></li> </ul>	No Ebola virus strains, Marburg and Ravn viruses were detected	<a href="#"><u>Specimen collected &gt; 72 hours after symptom onset will be forwarded to the CDC for required confirmatory testing</u></a>

**Upon request, testing reports can be provided to the submitting hospital via fax on the next business day, if requested during verbal reporting of results and a secured fax number is provided.**

### III. SPECIMEN COLLECTION/SUBMISSION:

- Ebola / Marburg / Malaria: Collect **2 whole blood specimens using EDTA purple-top blood tubes** (plastic only)  
**\* Do not centrifuge blood tubes**
- Influenza/COVID-19: Collect **1 NP or nasal swab specimen in viral transport media (VTM)**
- Enteric pathogens: Collect **raw stool and transfer to a Cary Blair vial, fill vial ½ to ¾ full only**
  - **Store and ship all specimens at 4°C**
  - Submit a completed DCLS Test Request form with each specimen, providing all patient information, and medical history (**place completed form on the outside of the secondary specimen receptacle**)
  - Complete Shipper's Declaration Form with red border paper (**place 3 copies\* in the plastic sleeve that is attached to the outermost insulated shipper**) **\*Print 2 of 3 copies in color**

#### CONSIDERATIONS FOR SPECIMEN PACKAGING/TRANSPORT:

- Dept. of Transportation (DOT) requires "contracted" couriers ONLY transport Risk Group 4 specimen packages that are prepared by Category A certified individuals.  
**\* Please communicate to DCLS if your facility does not have staff certified to package and ship Category A specimens\***  
**The DCLS courier cannot be deployed to retrieve a Risk Group 4 specimen that has not been packaged properly by a Category A certified shipper using defined DOT requirements:**
- Category A packages must include DOT-approved labeling, packaging materials and shipper's declaration.
- DCLS provides Category A/Risk Group 4 shipping kits (See Section IV) to all area Health Districts and Ebola Centers for Ebola virus testing.
- DCLS can also provide a kit directly to a facility upon CDC testing approval for a PUI if a kit cannot be obtained from an area Health District.

### IV. CATEGORY A/RISK GROUP 4 (RG4) KIT CONTENTS:

#### QTY:

- (2) Lavender-top EDTA plastic blood tubes
- (2) Biohazard bags w/absorbent material
- (2) Squares of parafilm to seal blood tubes
- (1) Secondary specimen receptacle
- (2) Cold packs (**Freeze prior to shipping**)
- (1) Ziplock plastic bag for documents  
(**placed outside secondary container**)

#### QTY:

- (1) DCLS Ebola Virus Testing Instructions
- (3) DCLS Test Request Form
- (1) IATA pre-labeled insulated shipper for Category A shipments
- (2) Sheets of paper with **red diagonal** hatch marks to print  
**Shipper's Declaration Form**
- (1) Itemized list of contents card (**be sure to include specimen type quantities** (e.g., 5ml EDTA whole blood tube/qty 2))

**\*Place completed card between the secondary receptacle and outer package\***

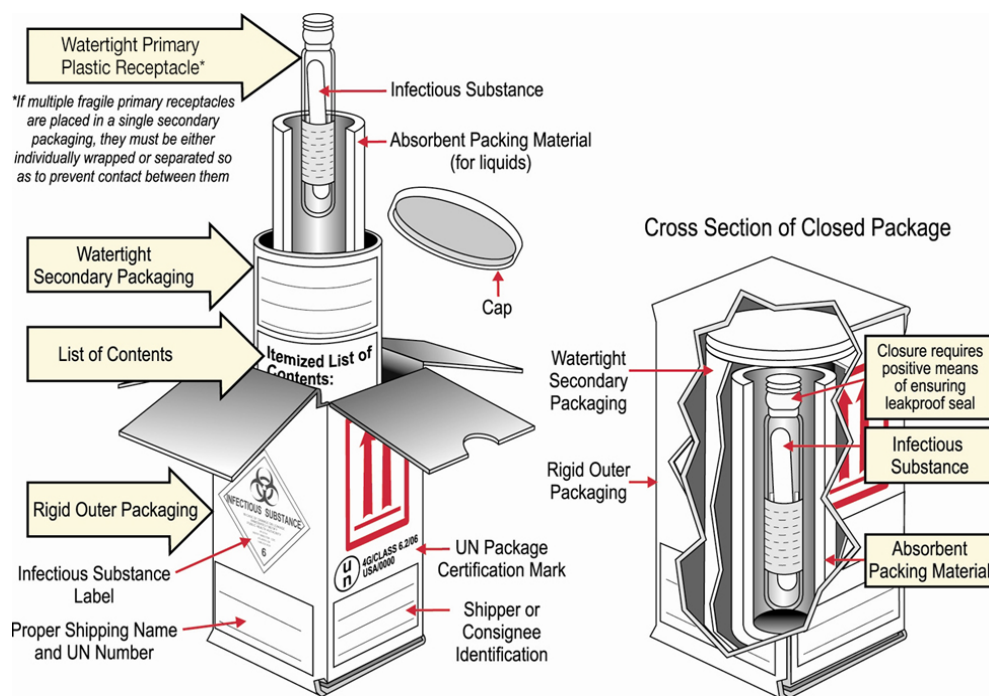
### V. SPECIMEN PACKAGING

- Package specimens following the basic TRIPLE PACKAGING SYSTEM (see diagram below):
  - **Primary "shipping" receptacle** - (sealable specimen bag) wrapped with absorbent material)
  - **Secondary "shipping" receptacle** - (watertight, leak-proof, and puncture proof container)
  - **Tertiary "shipping" receptacle** - (rigid outer shipping package)

**If multiple primary receptacles will be placed in a single secondary receptacle, they must be individually wrapped or separated to prevent contact between them.**

- **DCLS Test Request form should be included inside the package, but outside of the secondary receptacle**
- The shipping receptacle should have the appropriate DOT-approved labeling required for Category A packages

## Diagram 1: Triple Packaging System



**Infectious Substance,  
Affecting Humans  
UN2814**

## VI. CONTACT INFORMATION / REFERENCES:

**DCLS 24/7 Emergency Number: (804-335-4617)**

**DCLS Bioterrorism/Special Pathogens Testing Coordinator: Dr. LaToya Griffin-Thomas (804-385-8057)**

**DCLS Test Request Form:** <https://dgs.virginia.gov/globalassets/document-center/dcls-forms/dcls-test-request-form-16857-4.pdf>

**DCLS Hot Topics/Updates:** <https://dgs.virginia.gov/division-of-consolidated-laboratory-services/updates/hot-topics/>

**Shipper's Declaration Forms:**

<https://www.iata.org/contentassets/a9f496cd8c87466b98142fa6d4cdb209/shippers-declaration-column-format-fillable.pdf> OR <https://www.fedex.com/content/dam/fedex/us-united-states/services/ShippersDecColumnsColorPrinter.pdf>