

Form Word Template

**I. CURRENT DCLS LABORATORY TESTING**

Test Type	Method
Identification Confirmation	MALDI-TOF (Bruker Biotyper)
Antimicrobial Susceptibility Testing (AST)*	Broth Microdilution/Sensititre
Phenotypic testing - Carbapenemase Production	Modified Carbapenem Inactivation Method (mCIM)
Resistance Mechanism Identification	Real-Time PCR

**\* Submitting laboratories are REQUIRED to provide AST results when submitting suspected CRE/CRPA isolates to DCLS for testing.**

**TESTING METHODS**

- **AST** – The following drug Minimum Inhibitory Concentration (MIC) values will be determined for CRE and/or CRPA isolates:

- |                           |  |
|---------------------------|--|
| 1. Amikacin               | 9. Imipenem*                                 |
| 2. Aztreonam*             | 10. Levofloxacin                             |
| 3. Cefepime*              | 11. Meropenem*                               |
| 4. Cefotaxime* (CRE only) | 12. Piperacillin/Tazobactam**                |
| 5. Ceftazidime*           | 13. Polymyxin B                              |
| 6. Ciprofloxacin          | 14. Tobramycin                               |
| 7. Colistin*              | 15. Trimethoprim/Sulfamethoxazole (CRE only) |
| 8. Ertapenem (CRE only)   |  |

\* Testing required by the CDC's Antibiotic Resistance Laboratory Network (ARLN) for CRE and CRPA isolates.

\*\* Testing required by the CDC's ARLN for *Pseudomonas aeruginosa* isolates.

- **Real-time PCR** - Analyses will be performed on the following resistance marker genes:

- |                |                                  |
|----------------|----------------------------------|
| 1. KPC         | 4. VIM                           |
| 2. NDM         | 5. IMP                           |
| 3. OXA-48-like | 6. <i>mcr-1</i> and <i>mcr-2</i> |

**II. SPECIMEN TYPES**

- Pure suspect CRE isolates on slant or plate media.
  - 1) Member of the Enterobacteriaceae family
  - 2) Resistance to at least 1 carbapenem:
    - imipenem, meropenem or doripenem = MIC of  $\geq 4 \mu\text{g/mL}$
    - ertapenem = MIC of  $\geq 2 \mu\text{g/mL}$

**Note: *Morganella spp.*, *Proteus spp.*, and *Providencia spp.* have intrinsic elevated MICs to imipenem. MIC results for meropenem, doripenem, and/or ertapenem must be used to determine if these organisms should be forwarded to DCLS for testing.**

- Pure suspect CRPA isolates on slant or plate media.
  - 1) Isolate identified as *Pseudomonas aeruginosa*
  - 2) Resistance to at least 1 carbapenem:
    - imipenem, meropenem or doripenem = MIC of  $\geq 8 \mu\text{g/mL}$

### **III. SPECIMEN TRANSPORT**

- Ship isolates at room temperature.
- Submit a completed DCLS Clinical Microbiology/Virology Test Request form with isolate, to include the following:
  - 1) Complete patient information (including address)
  - 2) Complete submitter information
  - 3) Date of specimen collection
  - 4) Specimen source
  - 5) Organism identification, denoting “suspected carbapenem resistance”
  - 6) Outbreak ID number (if applicable)
- Include copy of laboratory’s AST results in specimen package
- **Shipping Address:**
  - Division of Consolidated Laboratory Services
  - Attn: CRE Team
  - 600 North 5<sup>th</sup> Street
  - Richmond, Virginia 23219

### **IV. RESULTS REPORTING**

- Turnaround time for reporting results will be within 6 business days of specimen receipt.
- Alert value results (**results requiring additional reference laboratory testing**) will be verbally reported within 1 working days of results. An alert email notification will be sent to the CDC as well.
- Non-alert-value results (**results NOT requiring additional reference laboratory testing**) will be verbally reported to the submitting laboratory and VDH within 2 working days of results.
- A hard copy report of final test results (Identification, AST, phenotypic and molecular) will be provided to the submitter by mail.
- VDH will receive electronic reporting of results.
- Reference laboratory results for additional characterization testing will be provided to the submitting laboratory and VDH within 2 working days of receipt from the reference laboratory.

### **V. CONTACT INFORMATION**

- **For questions regarding testing, specimen collection or shipment, please contact one of the following:**
  - Dr. LaToya Griffin-Thomas (804-648-4480, ext. 281)
  - Microbial Reference Laboratory (804-648-4480, ext. 345)
  - Molecular Detection and Characterization Laboratory (804-648-4480, ext. 298)
  - DCLS 24/7 Emergency Mobile Number (804-335-4617)

### **VI. RESOURCES**

Updated information on CRE/CRPA testing can be found on the DCLS website, under the “Hot Topics” link:  
<https://dgs.virginia.gov/division-of-consolidated-laboratory-services/updates/hot-topics/>

Link to DCLS Clinical Microbiology/Virology Test Request Form:  
[https://dgs.virginia.gov/globalassets/business-units/dcls/documents/sample-kits/dcls-micro\\_viro-form\\_fillable\\_rw.pdf](https://dgs.virginia.gov/globalassets/business-units/dcls/documents/sample-kits/dcls-micro_viro-form_fillable_rw.pdf)