Core Measures for All Facilities Regardless of their CRE Prevalence:

1) **Hand Hygiene**
   - Promote, monitor, and ensure access

2) **Healthcare Provider Education**
   - Increase awareness and educate staff about CRE

3) **Contact Precautions**
   
   **Acute Care**
   - Place all CRE colonized or infected patients on Contact Precautions
   - Consider preemptive Contact Precautions on patients admitted after recent hospitalization (within 6 – 12 months) in a country outside the U.S. or in patients transferred from facilities known to have outbreaks or clusters of CRE colonized or infected patients
   - Educate staff regarding Contact Precautions and monitor adherence
   - No recommendations exist regarding discontinuation of Contact Precautions

   **Long-Term Care**
   - Place CRE colonized or infected patients at high-risk [e.g., unable to perform hand hygiene, ventilator-dependent, incontinent of stool or urine, dependent on staff for activities of daily living (ADLs), draining wounds] for transmission on Contact Precautions
   - For CRE colonized or infected patients at lower risk [e.g., able to perform hand hygiene, continent of stool and urine, less dependent on staff for ADLs, no draining wounds] for transmission, Standard Precautions may be used

4) **Patient and Staff Cohorting**
   - Place all CRE colonized or infected patients in single-patient rooms when possible
   - If single-patient rooms limited, reserve for patients with highest risk for transmission (e.g., patients with incontinence, medical devices, wounds with uncontrolled drainage)
   - When possible, cohort staff that care for CRE patients even if patients housed in single room

5) **Minimize Use of Invasive Devices**

6) **Promote Antimicrobial Stewardship**

7) **Timely Notification from Laboratories when CRE are Identified**

8) **Interfacility Communication**
   - If a patient with CRE infection/colonization is transferred to another facility, ensure that CRE information is shared with accepting facility
   - If CRE identified upon admission to your facility, ensure that information is shared with originating facility.

9) **Screening – for carbapenemase-producing CRO only** (see below VDH Fact Sheet for Facilities on Screening)
   - Develop lab protocols for notifying clinicians and infection prevention staff about potential CRE
   - Screen patients with epidemiologic links (e.g., roommate) to previously unrecognized CRE colonized or infected patients
   - Consider point prevalence surveys of unit(s) containing previously unrecognized CRE patients
   - Screen patients admitted after recent hospitalization (within 6 – 12 months) in a country outside the U.S. or within the U.S. in a facility that has a high CRE prevalence

 Supplemental Measures if Transmission is Ongoing

**Active Surveillance Testing** (see below VDH Fact Sheet for Facilities on Screening)
   - Screen high-risk patients at admission, or both at admission and periodically during their stay
   - Place patients on preemptive Contact Precautions while admission surveillance tests are pending
   - If patient is transferred from a facility known to have CRE, consider screening on admission

**Chlorhexidine Bathing**
   - Bathe patients with 2% chlorhexidine (diluted liquid) or 2% chlorhexidine-impregnated wipes

**Know Your Baseline for CRE**
   - Especially important for facilities that have never identified CRE or rarely (e.g., <1 per month) see CRE
   - Consider review of previous 6-12 months of microbiology records to detect previously unrecognized CRE
   - If previously unrecognized CRE patients identified, perform point prevalence survey in high-risk units
   - Conduct surveillance testing of patients with epidemiologic links to previously unrecognized CRE patients
   - If CRE have been present, know if there has been evidence of intra-facility transmission and which wards/units are most affected

**When to Call the Health Department**
   - Suspected/confirmed clusters or outbreaks of any CRO (infection OR colonization)
   - Individual cases of confirmed carbapenemase-producing CRO (CPO) – considered “unusual occurrence of disease of public health concern”

*Note: DCLS and VDH request that all sentinel laboratories submit CRE or CRPA isolates to DCLS for further testing and characterization.*
VDH Fast Facts: Screening for Carbapenem-Resistant Gram-Negative Organisms (CRO), including Carbapenem-Resistant Enterobacteriaceae (CRE)

Screening for CRO Colonization
The purpose of screening is to identify asymptomatic carriers so that additional control measures (e.g., contact precautions) can be put into place. The rationale for this testing is that clinical testing might only identify a small proportion of patients who are colonized. Screening typically involves collecting and testing rectal or perirectal culture swabs. Sometimes other anatomical sites (e.g., stool, skin sites, wounds, or urine if a urinary catheter is present) can be added to improve sensitivity. Screening can involve: screening contacts; conducting a point prevalence survey; or conducting active surveillance testing. These three situations are described in more detail below. VDH recognizes that each situation is unique and other local factors may be considered. The final approach to screening will be based on discussions between VDH and the facility.

Screening Contacts
- Consider if epidemiologically important CRO, including carbapenemase-producing CRE is identified
- Consider placing patients in empiric contact precautions until surveillance testing is found to be negative
- Screen all roommates even if discharged or moved to another ward
- Further consideration for screening contacts at high risk include:
  - Proximity to case patient
  - Shared healthcare workers
  - High levels of care (including ICU)
  - Stool and urine incontinence
  - Open wounds
  - Being bedbound
  - Medical devices (e.g. mechanical ventilator, central IV lines)
  - Shared medical equipment or procedures
  - Overlapping stay of 3 or more days with index patient
  - Recent antibiotic exposure
- In general, healthcare exposures over the preceding month should be investigated unless information is available about the time that the organism was most likely acquired

Point Prevalence Survey
- Form of screening in which all patients present in a specified location (e.g. unit, ward) are screened at the same time
- Helpful to evaluate transmission during a CRO outbreak
- Can be performed serially (e.g. weekly, biweekly) if transmission is ongoing, until few or no additional CRO-colonized patients identified
- Consult with VDH to plan and support survey

Active Surveillance Testing
Unrecognized colonized patients might not be on contact precautions and are a potential source of CRO transmission. Consider placing patients in empiric contact precautions until surveillance testing is found to be negative. Consider for non-epidemiologically linked patients who may meet certain pre-specified criteria, including those admitted:
- From long-term acute care facilities
- Who received medical care in endemic regions (including international travel)
- To high-risk settings, e.g. ICUs
- During a CRO outbreak
- Who were previously identified as high risk contacts of an index patient but not tested (follow contact screening criteria above)

This was adapted from CDC’s facility guidance for controlling CRE (https://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf)
Table 1. Recommendations for Carbapenem-Resistant Gram-Negative Organisms (e.g., CRE, *Acinetobacter* spp., *Pseudomonas* spp.) in Acute Care Settings*

<table>
<thead>
<tr>
<th>Infection Prevention Measure</th>
<th>Carbapenemase-Producing Organism</th>
<th>Non-Carbapenemase-Producing Organism</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Infected</td>
<td>Colonized</td>
</tr>
<tr>
<td>Standard Precautions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Contact Precautions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Private Room</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Door signage</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Designated or disposable equipment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Visitor Recommendations**

<table>
<thead>
<tr>
<th>Visitor Recommendations</th>
<th>Infected</th>
<th>Colonized</th>
<th>Infected</th>
<th>Colonized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform hand hygiene often, and always after leaving resident’s room</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wear gown/gloves if contact with body fluids is anticipated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wear gown/gloves if no contact with body fluids is anticipated</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*Acute care settings include acute care hospitals, long-term acute care hospitals, and ventilator units of skilled nursing facilities. Adapted by VDH from Washington State Department of Health.

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Table 2. Recommendations for Carbapenem-Resistant Gram-Negative Organisms (e.g., CRE, *Acinetobacter* spp., *Pseudomonas* spp.) in Long-Term Care Settings*

<table>
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<tr>
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<th>Non-Carbapenemase-Producing Organism</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Infected</td>
<td>Colonized</td>
</tr>
<tr>
<td>Standard Precautions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Contact Precautions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Private Room</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Restricted to Room</td>
<td>Yes</td>
<td>No, unless at higher risk of transmission †</td>
</tr>
<tr>
<td>Door signage</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Designated or disposable equipment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Enhanced Environmental Cleaning§</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Visitor Recommendations**

<table>
<thead>
<tr>
<th>Visitor Recommendations</th>
<th>Infected</th>
<th>Colonized</th>
<th>Infected</th>
<th>Colonized</th>
</tr>
</thead>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
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<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*Adapted by VDH from Washington State Department of Health. † Contact precautions should be maintained and every effort made to provide a private room for residents who are at higher risk for transmission, for example, those who are ventilator-dependent, have uncontained incontinence of urine or stool, wounds with difficult to control drainage, or who engage in behavior that spreads infection. § Enhanced environmental cleaning includes communicating with environmental services staff about their role in protecting patients, using EPA-approved disinfectants, ensuring thorough daily cleaning that includes areas in close proximity to the patient and terminal cleaning, and considering monitoring of cleaning processes to ensure all surfaces are cleaned and disinfected.