Table 1A: Central Line-Associated Blood Stream Infection Prevention Bundle-Part A

**NICU Central Line Bundle**
California Children’s Hospital Association-California Children’s Services
NICU Collaborative
July 2009

<table>
<thead>
<tr>
<th>Performance Expectations</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insertion</strong></td>
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| 1. Maximum sterile barrier precautions utilized | -Cover entire infant with sterile drapes or as much as affords safe observation.  
-Recommend staff wear face mask when within 3 feet of sterile field |
| 2. Skin disinfected with Chlorhexidine (CHG) or povidone iodine (PI) | -Apply over 30 seconds (15 sec if 3.15% CHG/alcohol) & allow to dry (exception aqueous CHG) |
| 3. Dedicated team for placement & maintenance | - Insertion training course, including sterile technique, hand hygiene, use of maximum sterile barrier precautions, proper skin disinfection  
-Educational competencies for all aspects of care |
| 4. All supplies required for the procedure should be available at the bedside prior to catheter insertion | |
| 5. Hand hygiene standards met | |
| 6. Insertion checklist utilized | -Standardize critical elements of line insertion  
-Ensure staff observers are skilled in monitoring elements of sterile technique. |
| 7. Staff empowered to stop non-emergent procedure if sterile technique not followed | |

<table>
<thead>
<tr>
<th><strong>Maintenance</strong></th>
<th><strong>Considerations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment &amp; Site Care</strong></td>
<td></td>
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<td>1. Daily assessment and documentation of catheter need included as part of multidisciplinary rounds and review of daily goals</td>
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-When catheter used primarily for nutritional purposes:  
-Consider removal when infant reaches >120 ml/kg/day enteral nutrition  
-Consider discontinuing lipids when infant reaches >2.5gm/kg/day of enteral fat intake |
| 2. Review dressing integrity and site cleanliness daily | -Change PRN using sterile technique and CHG or PI for skin antisepsis |

| **Tubing, injection ports, catheter entry** | |
| 1. Use "closed" systems for infusion, blood draws & medication administration | -May use manufactured or improvised closed system. If stopcocks are used, port(s) are capped with swabable needleless connector(s).  
-Define consistent practice to be used when accessing catheters |
| 2. Assemble and connect infusion tubing using aseptic or sterile technique. Configure tubing consistently for each type of VAD. | -**Sterile** technique ideally includes sterile barrier for tubing assembly and wearing of face mask, hat, sterile gloves & 2 staff members performing connection to central catheter  
-**Aseptic** technique includes clean barrier for tubing assembly & wearing of clean gloves |
<p>| 3. Scrub needleless connector using friction with either alcohol or CHG/alcohol swab for at least 15 sec. prior to entry. Allow surface to dry prior to entry. | |
| 4. Clean gloves for all VAD entries &amp; hand hygiene utilized before &amp; after glove use | Standard precautions |
| 5. Use pre-filled, flush containing syringes wherever feasible | -Higher risk of contamination when flush withdrawn from another container by a nurse |
| 7. Staff empowered to stop non-emergent procedure if sterile technique not followed | |</p>
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<th>Administrative Leadership</th>
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| 1. Demonstrable administrative involvement in and support for achieving Zero Healthcare-Associated Infections | - Annotate CLABSI rates with descriptions and dates of practice changes  
- Celebrations of successes |
| 2. Engage Staff with feedback:  
- Posting days since last CLABSI  
- Posting CLABSI rates | - Begin process ASAP & within 24 hours of CLABSI notification. Review opportunities for system improvements after each event. |
| 3. Perform investigation and analysis of each CLABSI | - Demonstrate administrative involvement in and support for achieving Zero Healthcare-Associated Infections  
- Engage Staff with feedback:  
  - Posting days since last CLABSI  
  - Posting CLABSI rates  
  - Annotate CLABSI rates with descriptions and dates of practice changes  
  - Celebrations of successes  
- Perform investigation and analysis of each CLABSI  
- Surveillance activities of critical processes related to sustaining the gains:  
  a. Hand Hygiene  
  b. Adherence to unit catheter management and entry standards  
  c. Monitor patient processes off unit for bundle compliance  
  d. Unit personnel support for the “Stop the Line” safety culture  
- Competent trained personnel to perform specialized maintenance activities  
- Consider specialized team for dressing changes, catheter repair, catheter clearance of blockage |
| 4. Surveillance activities of critical processes related to sustaining the gains:  
 a. Hand Hygiene  
 b. Adherence to unit catheter management and entry standards  
 c. Monitor patient processes off unit for bundle compliance  
 d. Unit personnel support for the “Stop the Line” safety culture | - Capture 50 HH observations/month/activity using consistent observers  
- As above initially, then smaller volume less frequently.  
- Prospectively establish and maintain bundle compliance with off unit service departments, e.g. operating rooms (Anesthesiology and Pediatric Surgery), radiology suite (Radiology).  
- Empower staff to stop intervention at any time when technique is being breached |
| 5. Competent trained personnel to perform specialized maintenance activities | - Consider specialized team for dressing changes, catheter repair, catheter clearance of blockage |

**CLABSI Diagnosis And Classification**

1. Two or more blood cultures drawn on separate occasions from separate sites, following skin disinfection with PI or CHG, within 48 hrs of each other, i.e. blood from at least two blood draws were collected within two days of each other  
- One culture may be from a central line site if a second peripheral site is not feasible, taking into account circumstances such as vessel accessibility, pain and the infant’s clinical status.  
- The recommended neonatal culture volume is > 1 ml

2. The diagnosis of a laboratory confirmed (LC) catheter-associated BSI (CLABSI) can only be made in the absence of another clinically appreciated infectious focus, the presence of one or more positive blood cultures, and one of the following three criteria being met:  
   - Criteria 1) at least one blood culture growing a recognized pathogen (see Considerations); or  
   - Criteria 2) at least two blood cultures growing a recognized contaminant (see Considerations) and the presence of one (or more) clinical signs of generalized infection (either Fever > 38 °C (see Considerations), chills, or Hypotension; or  
   - Criteria 3) Age < 1yr: at least two blood cultures growing a recognized contaminant (see Considerations) AND at least one of the following: Fever (>38 °C core); hypothermia (<36 °C core), apnea, or bradycardia

See:  

- Recognized pathogens are those not named as common skin contaminants.  
- Common skin contaminants: diphtheroids [Corynebacterium spp.], Bacillus spp [not B. anthracis], Propionibacterium spp., coagulase-negative staphylococci [including S. Epidermidis], viridans group streptococci, Aerococcus spp., Micrococc spp.  
The collaborative recommends that axillary temperatures should be considered as a screening method; axillary temperatures < 36.0 °C (< 96.8 °F) should be tentatively labeled as “hypothermia” and axillary temperatures > 38.0 °C (> 100.4 °F) should be tentatively labeled as fever.  
Because of the variability in axillary temperature readings, the presence of an elevated or hypothermic temperature will only be termed confirmed if there have been at least two consecutive abnormal axillary measurements or one abnormal axillary and one abnormal rectal (or other core) measurement.