

## Preventing Central Line–Associated Bloodstream Infections: Useful Tools, An International Perspective – Tools Directory

**Note:** Tools in this directory are presented in the order in which they appear in the toolkit.

Chapter	Tool/Note
Introduction	<ul style="list-style-type: none"> <li><a href="#">Prevalence of HCAI in Developed Countries</a> (corresponding to Figure I-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global Challenge, A Global Perspective</i>, page viii)</li> </ul>
Introduction	<ul style="list-style-type: none"> <li><a href="#">Prevalence of HCAI in Developing Countries</a> (corresponding to Figure I-2 of CLABSI Monograph, page ix)</li> </ul>
Introduction	<ul style="list-style-type: none"> <li><a href="#">HAI Causes in US by DHHS</a> (corresponding to Sidebar I-1 of CLABSI Monograph, page vi)</li> </ul>
Introduction	<ul style="list-style-type: none"> <li><a href="#">2013 CDC Central Line-Associated Bloodstream Infection (CLABSI) Event Definition</a></li> </ul>
Introduction	<ul style="list-style-type: none"> <li><a href="#">CLABSI Fact Sheet</a> (Source: Quality and Safety Research Group, Johns Hopkins University)</li> </ul>
Chapter 1	<b>Types of CVCs</b> <ul style="list-style-type: none"> <li><a href="#">Comparison of the Major Types of Central Venous Catheters (CVCs)</a> (corresponding to Table 1-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global Challenge, A Global Perspective</i>, page 3)</li> </ul>
Chapter 1	<ul style="list-style-type: none"> <li><a href="#">Pediatric Vascular Access Devices</a></li> </ul>
Chapter 1	<ul style="list-style-type: none"> <li><a href="#">CDC – FAQ About Catheters</a></li> </ul>
Chapter 1	<ul style="list-style-type: none"> <li><a href="#">Visual Depiction of Each Type of CVC</a></li> </ul>
Chapter 1	<b>Risk Factors for CLABSI</b> <ul style="list-style-type: none"> <li><a href="#">Intrinsic and Extrinsic Risk Factors for CLABSI</a> (corresponding to Table 1-2 of CLABSI Monograph, page 4)</li> </ul>
Chapter 1	<ul style="list-style-type: none"> <li><a href="#">Intrinsic Risk Factors for CLABSIs and Susceptible Populations</a> (adapted from CLABSI Monograph)</li> </ul>
Chapter 1	<b>Pathogenesis of CLABSIs</b> <ul style="list-style-type: none"> <li><a href="#">Routes for Central Venous Catheter Contamination with Microorganisms</a> (corresponding to Figure 1-1 of CLABSI Monograph, page 5)</li> </ul>
Chapter 2	<b>Clinical Practice Guidelines</b> <ul style="list-style-type: none"> <li><a href="#">Examples of International Clinical Practice Guidelines That Include CLABSI Prevention Strategies</a> (corresponding to Table 2-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global</i></li> </ul>

Chapter	Tool/Note
	<i>Challenge, A Global Perspective, pages 13–15)</i>
Chapter 2	<ul style="list-style-type: none"> <li>▪ <a href="#">Examples of Clinical Practice Guidelines or Practice Standards Developed by Organizations or Professional Societies Regarding Aspects of CLABSI Prevention or Diagnosis</a> (corresponding to Table 2-2 of CLABSI Monograph, pages 15–21)</li> </ul>
Chapter 2	<p><b>Position Papers</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Position Papers Related to CVCs, CLABSIs, and Their Prevention</a> (corresponding to Table 2-3 of CLABSI Monograph, pages 21–22)</li> </ul>
Chapter 2	<p><b>Initiatives and Campaigns</b></p> <ul style="list-style-type: none"> <li>• <a href="#">CLABSI Reduction Initiatives and Campaigns</a> (adapted from Table 2-5 of CLABSI Monograph, pages 27–30)</li> </ul>
Chapter 2	<ul style="list-style-type: none"> <li>• Society for Healthcare Epidemiology of America/Infectious Diseases Society of America Compendium of Strategies to Prevent Healthcare-Associated Infections <ul style="list-style-type: none"> <li>○ <a href="#">Chapter on CLABSIs</a></li> </ul> </li> </ul>
Chapter 2	<ul style="list-style-type: none"> <li>▪ <a href="#">Review of Joint Commission and Joint Commission International Requirements That Address the Prevention and Control of CLABSI</a></li> </ul>
Chapter 3	<p><b>Education and Training of Health Care Personnel</b></p> <p><i>Note:</i> The provider’s skill in inserting a CVC is a key component of safety and prevention of CLABSI. It is imperative to assess each individual as competent to perform insertion and removal of a CVC. More manipulations and breach of aseptic technique may occur more often with inexperienced providers. Organization policy must dictate an acceptable number of multiple verified placements under the direct supervision of providers experienced in successfully placing CVCs.</p>
Chapter 3	<ul style="list-style-type: none"> <li>• CUSP Vascular Access Device <a href="#">Training Slides</a> and <a href="#">Quiz</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Examples of Studies from Developing Countries Regarding Education and Reduced CLABSI Rates</a> (corresponding to Table 3-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global Challenge, A Global Perspective, page 40)</i></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Potential Educational Delivery Methods and Reduced CLABSI Rates</a> (adapted from CLABSI Monograph)</li> </ul>
Chapter 3	<p><b>Hand Hygiene</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">World Health Organization’s “My 5 Moments for Hand Hygiene”</a> (corresponding to Figure 3-1 of CLABSI Monograph, page 43)</li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ WHO Guidelines on Hand Hygiene in Health Care <ul style="list-style-type: none"> <li>▪ <a href="#">Handwashing Technique with Soap and Water</a> (See Figure II.2, p.156)</li> <li>▪ <a href="#">Hand Hygiene Technique with Alcohol-Based Hand Rub</a> (See Figure II.1, p.155)</li> </ul> </li> </ul>

Chapter	Tool/Note
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Complimentary Hand Hygiene Educational Resources</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">2011 CDC Hand Hygiene Guidelines to Minimize CLABSI Risk</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ Center for Transforming Healthcare Targeted Solutions Tool® – Hand Hygiene Module <ul style="list-style-type: none"> <li>▪ <a href="#">Targeted Solutions Tool</a></li> <li>▪ <a href="#">How to access the TST</a></li> <li>▪ <a href="#">Reduce HAIs - Hand Hygiene Targeted Solutions Tool</a></li> </ul> </li> </ul>
Chapter 3	<b>Aseptic Technique</b> <ul style="list-style-type: none"> <li>▪ <a href="#">Aseptic versus Clean Technique</a></li> </ul>
Chapter 3	<b>CVC Insertion Preparation</b> <b>Maximal Sterile Barrier Precautions</b> <i>Note:</i> Maximal sterile barrier (MSB) precautions require the CVC inserter to wear a mask and cap, a sterile gown, and sterile gloves and to use a large (head-to-toe) sterile drape over the patient during the placement of a CVC or exchange of a catheter over a guidewire. <sup>1-5</sup> Several studies have demonstrated the benefit, either alone or as part of multimodal CLABSI prevention strategies, of using MSB precautions during CVC placement to reduce the risk of CLABSIs.
Chapter 3	<b>Skin Preparation</b> <i>Note:</i> The following summarizes current recommendations for skin antisepsis prior to CVC insertion and during dressing changes <sup>1-5</sup> : <ul style="list-style-type: none"> <li>• Apply antiseptics to clean skin.</li> <li>• Apply alcoholic chlorhexidine, with a chlorhexidine concentration greater than 0.5% in alcohol.</li> <li>• If there is a contraindication to chlorhexidine, apply tincture of iodine, an iodophor, or alcohol as an alternative.</li> <li>• Allow the antiseptic solution to dry before placing the catheter.</li> </ul> <p>It should be noted, however, that in some countries, chlorhexidine availability may be an issue, in which case povidone-iodine<sup>6</sup> or alcoholic chlorhexidine should be used.</p>
Chapter 3	<b>Catheter Selection</b> <b>Number of Lumens</b> <ul style="list-style-type: none"> <li>▪ Catheter Choice Chart <ul style="list-style-type: none"> <li>▪ Article: <a href="#">“Device Selection: A Critical Strategy in the Reduction of Catheter-Related Complications.”</a> with chart on Vascular Access Device Selection.  Reprinted from <i>Nutrition</i> vol. 12, no. 2, M Ryder, Device Selection: A Critical Strategy in the Reduction of Catheter-Related Complications, pp. 143–145, Copyright 1996, with permission from Elsevier Science Inc.</li> </ul> </li> </ul>
Chapter 3	<b>Antimicrobial- or Antiseptic-Impregnated</b> <ul style="list-style-type: none"> <li>▪ <a href="#">Antimicrobial- or Antiseptic-Impregnated Catheters Utilization Algorithm</a></li> </ul>

Chapter	Tool/Note
Chapter 3	<p><b>Use of Catheter Kits or Carts</b></p> <ul style="list-style-type: none"> <li>• <a href="#">CVC Removal</a> – Equipment Preparation</li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>• <a href="#">CUSP Line Cart Inventory</a></li> </ul>
Chapter 3	<p><b>CVC Insertion</b></p> <p><b>Catheter Site Selection</b></p> <p><i>Note:</i></p> <ul style="list-style-type: none"> <li>• Avoid using the femoral site for CVC access in adult patients.</li> <li>• Keep in mind that studies have shown that, unlike in adults, in pediatric patients femoral catheters have a low incidence of mechanical complications and might have an equivalent infection rate to that of nonfemoral catheters.</li> <li>• Use a subclavian site rather than a jugular site to minimize infection risks in adult patients. (Note, however, that the literature reflects comparisons of insertion sites before the routine use of ultrasound-guided insertions, so this area is deserving of additional study.) <ul style="list-style-type: none"> <li>○ Avoid the subclavian site in hemodialysis patients.</li> </ul> </li> </ul>
Chapter 3	<p><b>Insertion Under Ultrasound Guidance</b></p> <p><i>Note:</i> Ultrasound guidance has been associated with a higher rate of success at first-attempt insertions compared to blind techniques in several randomized controlled trials and is associated with a decrease in CLABSIs.<sup>5</sup></p>
Chapter 3	<p><b>Catheter Site Dressing Regimes</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">CUSP Dressing Change Policy</a></li> </ul>
Chapter 3	<p><b>Securement Devices</b> (See CLABSI Monograph, page 48)</p>
Chapter 3	<p><b>CVC Insertion Checklist Sample Documents</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Virginia Mason Medical Center – Central Line Bundle Insertion Checklist</a></li> <li>▪ <a href="#">Virginia Mason Medical Center – Surgical Safety Checklist</a></li> <li>▪ <a href="#">Johns Hopkins Hospital Insertion Checklist</a></li> <li>▪ <a href="#">Beth Israel Medical Center – Central Line Checklist</a></li> <li>▪ <a href="#">BJC Vascular Catheter Insertion Checklist</a></li> <li>▪ <a href="#">Scotland - CVC insertion checklist</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Central Line Insertion Checklist—Template</a>   <a href="#">Word Document</a></li> </ul>
Chapter 3	<p><b>Use of a CVC Insertion Bundle</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">CVC Insertion Bundles</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ University Hospitals of Geneva (HUG) Prevention of Hospital Infections by Intervention and Training (PROHIBIT) Website – <b>CVC Insertion Videos:</b> <ul style="list-style-type: none"> <li>○ <a href="#">Preparation of Equipment</a></li> </ul> </li> </ul>

Chapter	Tool/Note
	<ul style="list-style-type: none"> <li>○ <a href="#">Actions before CVC insertion</a></li> <li>○ <a href="#">CVC insertion</a></li> </ul> <p>Videos included in this toolkit were developed for a broad international audience. It is important to note that recommendations for practice vary within and across countries. For example, one video depicts the landmark technique for insertion of the central venous catheter. While ultrasound-guided insertion is used in some countries, the technology is not universally available, so many countries continue to rely on the landmark technique. Additionally, another video shows a single technique to prepare the skin for insertion of a central venous catheter. Certainly other skin preparation techniques may be used and one should always follow the manufacturer’s directions for the skin prepping agent that is used in your facility.</p> <p>The Joint Commission and its collaborating organizations are not responsible for any claims or losses arising from the use of, or from any errors or omissions in, this toolkit.</p>
Chapter 3	<ul style="list-style-type: none"> <li>▪ CDC Dialysis Bloodstream Infection Prevention Collaborative <a href="#">audit tools, protocols, and checklists</a> <ul style="list-style-type: none"> <li>○ <a href="#">CDC’s dialysis checklists portfolio</a></li> <li>○ <a href="#">CDC’s dialysis audit tools portfolio</a></li> </ul> </li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Open Versus Closed Intravenous Systems</a> (corresponding to Sidebar 3-1 of CLABSI Monograph, page 49)</li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ Article: <a href="#">Comparative risk of bloodstream infection in hospitalized patients receiving intravenous medication by open, point-of-care, or closed delivery systems</a> Originally published in Mercaldi J, Lanes S, Bradt J. Comparative risk of bloodstream infection in hospitalized patients receiving intravenous medication by open, point-of-care, or closed delivery systems. <i>Am J Health-Syst Pharm</i> 2013 Jun 1;70:957–965. © 2013, American Society of Health-System Pharmacists, Inc. All rights reserved. Reprinted with permission. (R1307)</li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">CDC Hemodialysis Scrub the Hub Protocol</a></li> </ul>
Chapter 3	<p><b>CVC Maintenance</b> <b><i>Prophylactic Antibiotic Lock Solutions, Antimicrobial Flush Solutions, and Catheter Lock Solutions</i></b> <i>Note:</i> These flushes and locks should not be routinely used to prevent CLABSI. The science on the use of these flushes and locks is evolving and use may be appropriate for specific patients.</p> <p><b><i>Disinfection of Catheter Hubs, Connectors, and Injection Ports</i></b> <i>Note:</i> In general, closed catheter access systems are associated with fewer infections than open systems and should be used preferentially.<sup>1,2</sup></p>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Scrub the Hub</a></li> </ul>

Chapter	Tool/Note
Chapter 3	<p><b><i>Chlorhexidine Bathing</i></b>  <b>Note:</b> The US Centers for Disease Control and Prevention (CDC) and Society for Healthcare Epidemiology of America (SHEA) / Infectious Diseases Society of America (IDSA) recommendations suggest that daily bathing of ICU patients older than 2 months of age with a 2% chlorhexidine-impregnated washcloth may be a useful strategy to decrease CLABSI rates in organizations that have unacceptably high CLABSI rates, despite implementation of the basic recommended prevention strategies.<sup>2,3</sup> Concern has been raised, however, regarding the potential for chlorhexidine resistance and whether widespread use of chlorhexidine gluconate bathing may create problems in the future.<sup>7</sup></p>
	<p><b><i>Use of a CVC Maintenance Bundle</i></b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">CVC Maintenance Bundles</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Daily Central Line Maintenance Checklist—Template</a>   <a href="#">Word Document</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">CUSP Central Line Maintenance Audit Form</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">CUSP Event Report Template</a></li> </ul>
Chapter 3	<p><b>Removal or Replacement of Catheters or System Components</b> (See CLABSI Monograph, page 57)</p> <ul style="list-style-type: none"> <li>▪ <a href="#">CVC Removal Considerations</a></li> </ul>
Chapter 3	<p><b>Tools and Techniques</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Organizational Self Assessment</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">Individual Self Assessment</a></li> </ul>
Chapter 3	<ul style="list-style-type: none"> <li>▪ <a href="#">CUSP Care of Patient with Peripheral Line</a></li> <li>▪ <a href="#">CUSP Care of Patient with PICC Line</a></li> <li>▪ <a href="#">CUSP Care of Patient with Short Term CVC</a></li> <li>▪ <a href="#">CUSP Care of Patient with Tunneled CVC of Implanted Port</a></li> <li>▪ <a href="#">CUSP Care of Patient with Hemodialysis Catheter</a></li> <li>▪ <a href="#">CUSP Care of Patient with Hemopheresis Catheter</a></li> <li>▪ <a href="#">CUSP Blood Drawing from a Hemodialysis and Hemopheresis Catheter</a></li> <li>▪ <a href="#">CUSP Care of Patient Receiving PPN/CPN</a></li> <li>▪ <a href="#">CUSP Accessing/Deaccessing Implanted CV Access Port</a></li> </ul>
Chapter 4	<p><b>The Challenges of Translating Evidence into Practice</b></p> <ul style="list-style-type: none"> <li>• <a href="#">CUSP Barrier Identification and Mitigation Tool - See Appendix N</a></li> </ul>

Chapter	Tool/Note
Chapter 4	<p><b>Factors That Affect the Success of Improvement Initiatives</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Overview of Factors Affecting the Success of Improvement Initiatives</a> (corresponding to Table 4-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global Challenge, A Global Perspective</i>, page 73)</li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>• <a href="#">Sustainability Rating Scale</a> (from The Joint Commission's Multidrug-Resistant Organism (MDRO) Toolkit, <i>What Every Health Care Executive Should Know: The Cost of Antibiotic Resistance</i>)</li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>• <a href="#">Project Prioritization Matrix</a> (from MDRO Toolkit)</li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>• <a href="#">Root Cause Analysis and Action Plan (JCR)</a></li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>• <a href="#">AHRQ Quality Indicators Toolkit for Hospitals</a></li> </ul>
Chapter 4	<p><b>Leadership</b></p> <ul style="list-style-type: none"> <li>• <a href="#">CUSP Engage the Senior Executive Tools</a></li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>• <a href="#">CUSP Back to the Basics Document - See The CLABSI Elimination Toolkit – Appendix 9</a></li> </ul>
Chapter 4	<p><b>Culture of Safety</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">AHRQ Surveys on Patient Safety Culture</a> <ul style="list-style-type: none"> <li>○ Hospital Survey on Patient Safety Culture</li> <li>○ Nursing Home Survey on Patient Safety Culture</li> </ul> </li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>▪ Michigan Keystone intensive care unit (ICU) project: Six-step Comprehensive United Based Safety Program (CUSP) process to assess and improve the safety culture <ul style="list-style-type: none"> <li>○ <a href="#">CUSP How to Conduct a Culture Check-up - See Appendix G</a></li> </ul> </li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>○ <a href="#">NCABSI Team Check-Up - See Appendix I</a></li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>▪ <a href="#">Develop a Culture of Safety - IHI Website</a></li> </ul>
Chapter 4	<p><b>Multidisciplinary Teams and Teamwork</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Team Strategies and Tools to Enhance Performance and Patient (TeamSTEPPS) toolkit</a></li> </ul>
Chapter 4	<p><b>Accountability of Health Care Personnel</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Accountability of Health Care Personnel in Preventing CLABSIs</a></li> </ul>
Chapter 4	<p><b>Empowerment</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Johns Hopkins Quality Safety Research Group – Nurse Empowerment (PPT Slides)</a></li> </ul>
Chapter 4	<p><b>Resource Availability</b></p>

Chapter	Tool/Note
	<ul style="list-style-type: none"> <li>▪ <a href="#">Resources to Support Health Care Personnel in CLABSI Prevention</a></li> </ul>
Chapter 4	<p><b>Data Collection and Feedback of CLABSI Rates</b>  <i>Note:</i> See Chapter 5 for detailed information regarding Surveillance Systems, Measures, and Measurement Approaches.</p>
Chapter 4	<p><b>Policies and Procedures</b>  <i>Note:</i> Applicable Policies and Procedures are included under corresponding chapters within the toolkit. Organizations should review their policies and procedures, as well as actual practices, against recommended best practices. On an ongoing basis, policies should be reviewed and updated as new information or technology becomes available.</p>
Chapter 4	<p><b>Involvement of Patients and Families</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">American Thoracic Society Patient Education Material – Central Venous Catheter</a></li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>▪ <a href="#">CDC Central Line-associated Bloodstream Infections: Resources for Patients and Healthcare Providers</a>  <i>Note:</i> This has been shown to be effective in some settings but has not been tested in all settings. Adapt for your own population and culture.</li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>▪ <a href="#">CDC Frequently Asked Questions about Catheters</a></li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>▪ <a href="#">CDC-SHEA Patient Guides: FAQ's about catheter associated blood stream infections</a></li> </ul>
Chapter 4	<ul style="list-style-type: none"> <li>▪ <a href="#">A Brochure from The Joint Commission's Speak Up™ Campaign</a></li> </ul>
Chapter 4	<p><b>The Role of Collaboratives</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Lessons from the Keystone ICU Project</a></li> </ul>
Chapter 5	<p><b>Overview of Surveillance and Surveillance Systems</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Examples of National and International HAI Surveillance Systems</a> (corresponding to Table 5-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global Challenge, A Global Perspective</i>, pages 87–89)</li> </ul>
Chapter 5	<p><b>CLABSI Surveillance Methods</b>  <b>Prevalence Surveys</b></p> <p><b>Electronic Surveillance Systems</b></p> <ul style="list-style-type: none"> <li>▪ <a href="#">Benefits, Essential Components, and Limitations of Electronic Surveillance Systems</a> (corresponding to Table 5-2 of CLABSI Monograph, page 91)</li> </ul>
Chapter 5	<ul style="list-style-type: none"> <li>▪ <a href="#">Steps in Evaluating Electronic Surveillance Systems for Potential Incorporation into a Facility</a></li> </ul>



Chapter	Tool/Note
Chapter 5	<ul style="list-style-type: none"> <li>▪ Surveillance Form Examples               <ul style="list-style-type: none"> <li>▪ <a href="#">Surveillance Form 1</a></li> <li>▪ <a href="#">Surveillance Form 2</a></li> </ul> </li> </ul>
Chapter 5	<b>Measurement Approaches: Outcomes and Process Performance Measures</b> <ul style="list-style-type: none"> <li>▪ <a href="#">Outcome and Process Performance Measures</a> (adapted from CLABSI Monograph)</li> </ul>
Chapter 5	<ul style="list-style-type: none"> <li>▪ <a href="#">NHSN Central Line Insertion Practices (CLIP)</a></li> </ul>
Chapter 5	<b>Benchmarking and Public Reporting</b> <ul style="list-style-type: none"> <li>▪ <a href="#">SICU Monthly Survey</a></li> </ul>
Chapter 6	<ul style="list-style-type: none"> <li>▪ <a href="#">Terminology Used in Economic Evaluations</a> (corresponding to Table 6-1 of CLABSI Monograph <i>Preventing Central Line–Associated Bloodstream Infections: A Global Challenge, A Global Perspective</i>, page 104)</li> </ul>
Chapter 6	<ul style="list-style-type: none"> <li>▪ <a href="#">Pooled Cumulative Incidence Densities for CLABSI in Adult ICU Patients, WHO Data 1995–2010</a> (corresponding to Table 6-2. of CLABSI Monograph, page 105)</li> </ul>
Chapter 6	<ul style="list-style-type: none"> <li>▪ <a href="#">CLABSI Rates per 1,000 Central Line–Days in Limited-Resource Countries (2002–2011)</a> (corresponding to Appendix B of CLABSI Monograph, pages 115–118)</li> </ul>
Chapter 6	<b>First Do No Harm</b> <ul style="list-style-type: none"> <li>▪ <a href="#">WHO Assessing and tracking patient harm – A methodological guide for data-poor hospitals</a></li> </ul>
Chapter 6	<b>Estimating CLABSI Costs</b> <ul style="list-style-type: none"> <li>▪ <a href="#">Stop BSI - CLABSI Opportunity Estimator</a></li> </ul>
Chapter 6	<ul style="list-style-type: none"> <li>▪ <a href="#">Inflation Calculator: International Example</a></li> </ul>
Chapter 6	<b>Economic Analyses in Health Care</b> <ul style="list-style-type: none"> <li>▪ <a href="#">Steps in Developing a Business Case Analysis</a> (adapted from Table 6-3 of CLABSI Monograph, pages 108–110)</li> </ul>
Chapter 6	<ul style="list-style-type: none"> <li>▪ <a href="#">The business case for quality: economic analysis of the Michigan Keystone Patient Safety Program in ICUs</a></li> </ul>

## References

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