

More than a decade ago, the bundles are shown to reduce rates of central venous catheter (CVC)-related infections.<sup>4</sup> Recent studies have demonstrated that consistent application of evidence-based practices can lead to significant, sustained reductions in CLAB rates. The Institute for Healthcare Improvement (IHI) describes bundles as groupings of best practices with respect to a disease process that individually improve care, but applied together result in substantially greater improvement. The

Health care personnel education about CLABSI prevention

Availability of CVC carts that contain all necessary supplies

Checklist to ensure adherence to proper practices

Procedures stopped in nonemergent situations if evidence-based practices were not being followed

Feedback provided to health care personnel regarding the number of CLABSI episodes and overall rates

Buy-in for the CLABSI reduction initiative secured from the chief executive officers of the participating hospitals

#### Documentation

- Details of insertion are documented in the records (including date, location, catheter lot number, and signature and name of operator undertaking insertion).

\*The components are listed for adult and pediatric populations unless specified otherwise. The featured recommendations are not intended to cover emergency situations, which require clinical judgment for patient care actions. Implementation of elementary infection prevention measures, such as health care personnel education, hand hygiene, and feedback of infection rates to health care personnel, have been found to have a major impact on CLABSI rates in resource-limited countries, though the CLABSI rates have not declined to the level of those in developed countries.<sup>18-22</sup>

## Insertion Bundles to Reduce CLABSI Rates

**Intervention:**  
**Michigan Keystone Intensive Care Unit Project**

Scope of the initiative:  
 State of Michigan (US)

103 ICUs

Developed by:  
 Researchers at Johns Hopkins, the Michigan Health and Hospital Association, and Agency for Healthcare Research and Quality (AHRQ)

Time frame:  
 September 2003–September 2005

(See Chapter 2 of monograph for additional details and Toolkit Tool CLABSI Reduction Initiatives and Campaigns.)

Bundle included the following interventions<sup>6</sup>:

- Hand hygiene before catheter insertion
- Use of full barrier precautions
- Chlorhexidine skin preparation
- Avoidance of the femoral vein for inserting CVCs (except in children)
- Prompt removal of CVCs

In addition to creating the bundle, clinicians were educated about CLABSI prevention; CVC carts that contained all necessary supplies were created; a checklist was developed to ensure adherence to proper practices; procedures were stopped in nonemergent situations if evidence based practices were not being followed; feedback was provided to the clinical teams regarding the number of CLABSI episodes and overall rates; and buy-in was obtained for the initiative from the chief executive officers of the participating hospitals.<sup>6</sup>

*Note:* Rosenthal (in a separate article) points out that implementation of the bundle described here could be challenging in resource-limited countries, as supplies, such as chlorhexidine or large barriers for catheter insertion, may be limited. Furthermore, the bundle alone would likely be insufficient to prevent CLABSIs in such countries, due to the use of vented (open) intravenous fluid containers rather than closed systems.<sup>6</sup>

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| <p><b>Guidelines:</b><br/> <b>Canadian Patient Safety Institute (CPSI) Safer Healthcare Now!</b></p> <p>Scope of the initiative:<br/> National (Canada)</p> <p>Developed by:<br/> Canadian Patient Safety Institute</p> <p>Time frame:<br/> Initiative designed with a 5-year implementation period</p> | <p>Bundle included<sup>26</sup>:</p> <ul style="list-style-type: none"> <li>Hand hygiene</li> <li>Maximal barrier precautions</li> <li>Chlorhexidine skin antisepsis</li> <li>Optimal catheter type and site selection</li> <li>Avoiding the femoral vein in adults; subclavian preferred to minimize infection risk</li> <li>Site preference in children individualized, with internal jugular vein or femoral vein most commonly used</li> </ul> <p>Details on bundle elements are included in the Safer Healthcare Now! Prevent Central Line Infections Getting Started Kit available online:<br/> <a href="http://www.saferhealthcarenow.ca/EN/Interventions/CLI/Pages/default.aspx">http://www.saferhealthcarenow.ca/EN/Interventions/CLI/Pages/default.aspx</a></p> | <p>The Canadian Collaborative to Improve Patient Care and Safety in the ICU has supported a number of successful initiatives, including the following<sup>26</sup>:</p> <p>After implementing central line insertion and care bundles using rapid cycle change methodology, Sir-Mortimer B. Davis-Jewish General Hospital over a span of 15 months reduced its CLABSI rate to zero and achieved 100% compliance with the insertion bundle and a steadily increasing compliance with the care bundle.</p> <p>A multidisciplinary team at Stollery Children's Hospital in Edmonton, also using rapid change cycle methodology, implemented central line insertion and care bundles in its pediatric ICU. Over a 10-month span, the pediatric ICU experienced a 55% drop in and ach038.4(on. Magt @ Tcple8i9v9c.0011 Tw[ccg</p> |
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