

Catheter access/manipulation

Aseptic techniques are used for all access to the line.

Catheter site care is performed with chlorhexidine at dressing changes.⁵ In the absence of chlorhexidine, use povidone iodine.

Ports or hubs are cleaned using “Scrub the Hub” protocol prior to catheter access.

Administration set (primary and secondary) replacement

Set is replaced no more frequently than every 96 hours, and at least every 7 days, after initiation of use unless contamination occurs. This replacement interval is safe and permits considerable cost savings to health care organizations,^{6,3,7} with the following exceptions:

- Set is replaced immediately after administration of blood/blood products.
- Set is replaced after 24 hours following administration of infusates that enhance microbial growth (for example, fat emulsions combined with amino acids and glucose in three-in-one admixture or infused separately).^{6,3,7}
- Needleless components should be changed at least as often as the administration set and no more often than every 72 hours.³

The evidence is less clear for intravenous sets that are used intermittently, due to a lack of published research in this area.

Infusate preparation using aseptic technique

Health care personnel training

All staff members manipulating CVCs could be required to attend a hands-on training class in the proper techniques for caring for and accessing catheters followed by a competency evaluation of CVC insertion site and hub care.

Maintenance Bundles to Reduce CLABSI Rates

Intervention/Organization/Guidelines	Bundle Components	Outcomes (if applicable or available)
Scope: National (U.S.) and multi-institutional, 5 adult ICUs Developed by: U.S. researchers at a large university		

Intervention/Organization/Guidelines	Bundle Components	Outcomes (if applicable or available)
	<ul style="list-style-type: none"> ○ Use a prepackaged dressing-change kit or supply area. <p>Catheter hub, cap, and tubing care</p> <ul style="list-style-type: none"> ○ Replace administration sets, including add-on devices, no more frequently than every 72 hours unless they are soiled or suspected to be infected. ○ <u>Replace tubing that is used to administer blood, blood products, or lipids within 24 hours of initiating infusion.</u> ○ <u>Change caps no more often than 72 hours (or according to manufacturer recommendations); however, caps should be replaced when the administration</u> 	

Intervention/Organization/Guidelines	Bundle Components	Outcomes (if applicable or available)
<p>Guidelines: Health Protection Scotland: Preventing infections when inserting and maintaining a CVC^{11,12}</p> <p>Developed by: National Services Scotland</p>	<p>When maintaining an inserted CVC and accessing the insertion site and line, ensure the following^{11,12}:</p> <ul style="list-style-type: none"> The need for the CVC is reviewed and recorded today (on a daily basis). The CVC dressing is intact. The CVC dressing has been changed in the last seven days. A solution of 2% chlorhexidine gluconate in 70% isopropyl alcohol is used for cleaning the insertion site during dressing changes. Hand hygiene is performed immediately before accessing the line or site (WHO Moment 2 of “My 5 Moments for Hand Hygiene”). An antiseptic containing 70% isopropyl alcohol is used to clean the access hub prior to accessing; rub the access hub for at least 15 seconds (“scrub the hub”). 	
<p>Guidelines: United Kingdom Department of Health – High Impact Intervention: Central venous catheter care bundle¹³</p>	<p>Central venous catheter care bundle includes¹³:</p> <ul style="list-style-type: none"> Hand hygiene <ul style="list-style-type: none"> Hands are decontaminated immediately before and after each episode of patient contact using the correct hand hygiene technique. (Use of the WHO “My 5 Moments of Hand Hygiene” or the National Patient Safety Association “Clean Your Hands” campaign is recommended.) Site inspection <ul style="list-style-type: none"> Site is inspected daily for signs of infection, and finding is recorded in the patient’s record. Dressing <ul style="list-style-type: none"> An intact, dry, adherent transparent dressing is present. Insertion site should be cleaned with 2% chlorhexidine gluconate in 70% isopropyl alcohol prior to if dressing changed. Catheter injection ports <ul style="list-style-type: none"> Injection ports are covered by caps or valved connectors. Catheter access <ul style="list-style-type: none"> Aseptic techniques are used for all access to the line. Ports or hubs are cleaned with 2% chlorhexidine gluconate in 70% isopropyl alcohol prior to catheter access. Administration set replacement <ul style="list-style-type: none"> Set is replaced immediately after administration of blood/blood products. Set is replaced after 24 hours following total parenteral nutrition (if it contains lipids). Set is replaced within 72 hours of all other fluid sets. Catheter replacement <ul style="list-style-type: none"> Catheter is removed if no longer required or decision not to remove is recorded. Details of removal are documented in the records (including date, location, and signature and name of operator undertaking removal.) 	

Intervention/Organization/Guidelines	Bundle Components	Outcomes (if applicable or available)
<p>Guidelines: Canadian Patient Safety Institute (CPSI) Safer Healthcare Now!¹⁴</p>	<p>Central Line Care bundle¹⁴:</p> <ul style="list-style-type: none"> Daily review of line necessity, with prompt removal of unnecessary lines Aseptic lumen access Catheter site and tubing <p>Compliance with the central line bundles can be measured by simple assessment of completion of each item. The approach has been most successful when all elements are executed together—an “all or none” strategy used by collaborative pediatric teams.</p> <p>Additional details for each of the bundle elements are included on the Canadian Patient Safety Institute (CPSI) Safer Healthcare Now! website.¹⁴</p>	

References

1. Pennsylvania Safety Authority. Central-Line-Associated Bloodstream Infection: Comprehensive, Data-Driven Prevention. Pennsylvania Patient Safety Advisory. Sep 2011. Accessed Jul 23, 2013. [http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2011/sep8\(3\)/Pages/100.aspx](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2011/sep8(3)/Pages/100.aspx).
2. Shapey IM, et al. Central venous catheter-related bloodstream infections: Improving postinsertion catheter care. *J Hosp Infect*. 2009 Feb;71(2):117–122. Epub 2008 Nov 14.
3. O'Grady NP, et al.; Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for the prevention of intravascular catheter-related infections. *Clin Infect Dis*. 2011 May;52(9):e162–193. Epub 2011 Apr 1.
4. Pratt RJ, et al. epic2: National evidence-based guidelines for preventing healthcare-associated infections in NHS hospitals in England. *J Hosp Infect*. 2007 Feb;65 Suppl 1:S1–64.
5. O'Grady NP, et al. Guidelines for the prevention of intravas