

recommended (refer to Standard 62, *Transfusion Therapy*)

5. Use steel winged devices only for single-dose administration. The device is not left in place.^{1-3,5} (IV)

II. Midline Catheters

A. Choose a midline catheter as follows:

1. Consider infusate characteristics in conjunction with anticipated duration of treatment (eg, 1-4 weeks).^{1-3,5} (IV)
2. Consider a midline catheter for medications and solutions such as antimicrobials, fluid replacement, and analgesics with characteristics that are well tolerated by peripheral veins.¹¹⁻¹⁴ (V)
3. Do not use midline catheters for continuous vesicant therapy, parenteral nutrition, or infusates with an osmolality greater than 900 mOsm/L (see Standard 61, *Parenteral Nutrition*).^{1-3, 6,11} (V)
4. Use caution with intermittent vesicant administration due to risk of undetected extravasation. The administration of vancomycin for less than 6 days through a midline catheter was found to be safe in 1 study.^{1-3,15} (IV)
5. Avoid the use of a midline catheter when the patient has a history of thrombosis, hypercoagulability, decreased venous flow to the extremities, or end-stage renal disease requiring vein preservation.^{1,16-17} (IV)

III. Central Vascular Access Devices (CVADs) (Nontunneled, Tunneled, Implanted Ports)

A. Use CVADs to administer any type of infusion therapy.^{3,6,17} (V)

B. To minimize unnecessary CVAD placement, identify an evidence-based list of indications for CVAD use including, but not limited to¹⁸: (IV)

1. Clinical instability of the patient and/or complexity of infusion regimen (multiple infusates).
2. Episodic chemotherapy treatment anticipated for more than 3 months.
3. Prescribed continuous infusion therapy (eg, parenteral nutrition, fluid and electrolytes, medications, blood or blood products).
4. Invasive hemodynamic monitoring.
5. Long-term intermittent infusion therapy (eg, any medication including anti-infectives in patients with a known or suspected infection).
6. History of failed or difficult peripheral venous access, if use of ultrasound guidance has failed.

C. Recognize risks with peripherally inserted central catheters (PICCs), including venous thrombosis and an increased risk for central line-associated bloodstream infection (CLABSI) in hospitalized patients.

1. Use a PICC with caution in patients who have cancer or are critically ill due to venous thrombosis and infection risk.^{19,20} (III)

2. Measure the vein diameter using ultrasound before insertion and consider choosing a catheter with a catheter-to-vein ratio of 45% or less (refer to Standard 52, *Central Vascular Access Device [CVAD]-Associated Venous Thrombosis*).

3. Do not use a PICC as an infection prevention strategy.^{18,20} (III)

D. Collaborate with the interprofessional team to consider anti-infective CVADs in the following circumstances, as anti-infective CVADs have shown a decrease in colonization and/or CLABSI in some settings.^{5,18} (I)

1. Expected dwell of more than 5 days.
2. CLABSI rate remains high even after employing other preventive strategies.
3. Patients with enhanced risk of infection (ie, neutropenic, transplant, burn, or critically ill patients).
4. Emergency insertions.
5. Do not use anti-infective CVADs in patients with allergies to the anti-infective substances, such as chlorhexidine, silver sulfadiazine, rifampin, or minocycline.

E. Consider an implanted vascular access port for patients who are anticipated to require intermittent long-term infusion therapy (eg, antineoplastic therapy). When used intermittently, ports have a lower incidence of catheter-related bloodstream infection (CR-BSI); however, continuous port access has infection rates that are similar to other long-term CVADs.^{3,6,21-23} (IV)

1. Contraindications to vascular access port insertion include severe uncorrectable coagulopathy, uncontrolled sepsis or positive blood culture, and burns, trauma, or neoplasm that preclude chest wall placement.²²⁻²³ (V)
2. Radiologically guided insertion of implanted vascular access ports in the forearm may be an alternative site for patients in whom chest ports cannot be implanted.²⁴ (IV)
3. The implanted vascular access port, when not accessed, has the advantage of allowing for ease of bathing and swimming and is associated with an improved patient self-image.^{2,17} (V)

F. Consider a cuffed, tunneled CVAD for patients who are anticipated to require intermittent or continuous long-term infusion therapy (eg, antineoplastic therapy, parenteral nutrition).^{6,17,25} (V)

G. Consider the need for a CVAD that is designed for power injection and know the pressure limits and other limitations (eg, maximum number of power injections) of the device and all attached or add-on devices (eg, implanted port access needle, extension