0148-6071/06/3001-0S94$03.00/0
JOURNAL OF PARENTERAL AND ENTERAL NUTRITION
Vol. 30, No. 1
Printed in U.S.A.

Consensus

Consensus Statements Regarding Optimal Management of Home Parenteral Nutrition (HPN) Access

Ezra Steiger, MD, FACS, CNSP and the HPEN Working Group

General Surgery, Head, Intestinal Rehabilitation Program, Nutrition Support and Vascular Access Department, Cleveland Clinic Foundation, Cleveland, Ohio

HPN Clinician Responsibilities for Vascular Access Devices (VADs)

- Clinicians taking care of HPN patients should be familiar with VADs and their complications. These include but are not limited to catheter-related bloodstream infection, exit-site and tunnel infections, port pocket infections, catheter obstruction, catheter-related venous thrombosis, catheter tip migration, catheter leaking, catheter breakage, and catheter kinking.
- Anyone who is responsible for inserting or managing a patient with a VAD should be familiar with the Hospital Infection Control Practices Advisory Committee Guidelines from the CDC.

Choice of VAD

- The VAD used for short-term PN (<60 days) can be given *via* a port, peripherally inserted central catheters (PICC), or tunneled, cuffed catheter.
- Clinician and patient should discuss the pros and cons of available VADs before their placement.

VAD Placement

- Consider patient anatomy and preferences for exit-site location. The patient, working in concert with the clinician, should participate in choosing the optimal exit site. Before placement of the catheter, the exit site should be marked on the patient's torso with indelible marker.
- All tunneled or port catheter access devices that are placed for HPN should be placed under sterile conditions or in interventional radiology under operating room conditions.
- PICC placement should be done under maximal infection barrier precautions.
- The use of image-guided technology (ultrasound, fluoroscopy) should be strongly considered in placing Hickman catheters or ports for HPN.

VAD Position

- The tip of a VAD for HPN should be positioned near the junction of the superior vena cava (SVC) and right atrium.
- Any tip in the upper third of the SVC should not be accepted for patients going home receiving PN.
- Any VAD tip pointing toward the sidewall of the SVC should not be accepted for patients going home receiving PN.

VAD Dysfunction

- When VAD occlusion or dysfunction occurs, mechanical causes should be ruled out and a history of recent infusions noted to rule out lipid, medication, or mineral precipitates as the cause of the dysfunction.
- Tissue plasminogen activator (tPA) is a useful modality for treating catheter obstruction or dysfunction related to thrombus. Seventy percent ethanol may be of value for occlusion related to lipid infusion, whereas 0.1-N hydrochloric acid or 0.1-N sodium hydroxide may be of value when the occlusion is due to mineral or drug precipitate.
- Heparin and saline are equally effective as a flushing agent for VADs.

VAD Infection

- Any patient suspected of having line sepsis should always have a set of blood cultures drawn before initiating antibiotic therapy, one from each lumen of the central catheter and one from a peripheral vein. If the peripheral venous blood is not obtainable, 2 samples should be obtained from each lumen of the VAD. The decision to admit a patient with possible catheter-related bloodstream infection to the hospital must be based on the patient's clinical presentation.
- The VAD should be removed when the patient presents with severe sepsis and no other obvious source is present. The VAD should also be removed when there is a tunnel infection, and in pregnant women in the presence of sepsis.
- Strong consideration should be given to removing any VAD in which *Staphylococcus aureus* or a fungus is the suspected infecting agent.

Received for publication April 25, 2005.
Accepted for publication October 3, 2005.
Correspondence: Ezra Steiger, MD, CNSP, Cleveland Clinic Foundation, Desk A-80, 9500 Euclid Avenue, Cleveland, OH 44195. Electronic mail may be sent to steigee@ccf.org.

VAD-Associated Thrombosis

- Any patient with suspected acute central vein thrombosis should be admitted to the hospital for treatment.
- Central vein thrombosis should be treated with anticoagulation therapy in the absence of contraindication.
- Prophylactic anticoagulation therapy should be considered for those patients who are hypercoagulable or at high risk for catheter-related venous thrombosis.

ACKNOWLEDGMENTS

These statements were developed as a consensus of the HPEN Working Group, January 2005.