# Accessing and Deaccessing Ports: Where Is the Evidence?

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Since the 1980s, tremendous use of intravascular drugs and fluids has increased the need for reliable venous access. Implantable ports have provided reliable access that can be used for IV fluids, medications, and blood products as well as a means to obtain blood samples (see Figure 1). Implanted ports require minimal site care and flushing and permit easy venous, arterial, epidural, or peritoneal access. About five million central venous catheters are placed per year (Putigna & Solenberger, 2009). Many implantable ports of varying size, shape, reservoir size, portal body material, and profile are used in clinical practice. Several types of complications can occur with implantable ports, including occlusion, infection, catheter migration, and catheter separation from portal body. This article focuses on infection.

## Background

Although implantable port infections are reported to occur in 2%–40% of patients, the true incidence is difficult to measure (Aldrighetti et al., 2000; Fischer et al., 2008; Jordan et al., 2008; O'Grady et al., 2002; Sehirali et al., 2005). Variations in terms describing port infections and diagnostic tests lead, in part, to indeterminate measures. In general, a steady increase in gram-positive infections has occurred, with most bacteremias caused by gram-positive cocci (Huang, Chen, Su, Yen, & Tsao, 2004). A common source of port infection is contamination of the portal body or within the catheter lumen. Accessing the implantable port also is known to be a means for introducing organisms into the portal body and catheter (Huang et al.). Organisms may adhere to and multiply on the surface of the catheter or the skin, causing a catheter-related infection within the port pocket, exit site, or the bloodstream (see Figure 2). The presence of fibrin or thrombus at the catheter tip, where organisms can colonize and become a constant source of seeding to the bloodstream, also is a source for infection (Vescia et al., 2008).

Clinically, an infection can manifest as local tenderness, pain, erythema, induration, and edema at the port insertion site, at the exit site, or over the port pocket. Purulent or serous drainage may be present at the insertion or exit site. Systemic infections usually present with fever and chills and may or may not include the signs mentioned previously (Camp-Sorrell, 2004). Patients who are immunosuppressed may not exhibit signs of infection, such as swelling, drainage, erythema, or tenderness because of low white blood cell count. Fever may be the only response an immunosuppressed patient has to signify infection.

One way to prevent port infections is using aseptic technique in dressing changes, using accessing and deaccessing procedures, and keeping the exit site clean of potential infectious sources. Although ports have been used for more than 30 years to date, controversy still exists regarding maintenance care. Maintenance care often is based on manufacturer recommendations and institutional tradition instead of research or evidence. A particular area that remains controversial is the procedure used to access and deaccess ports.

To date, only one study (Schulmeister, 1987) has evaluated the use of nonsterile versus sterile gloves for port access.

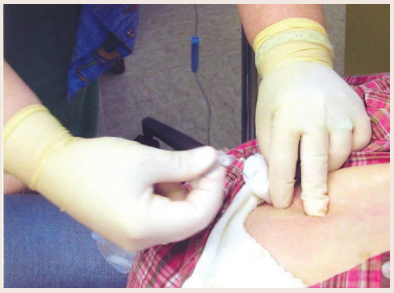

**Figure 1. Port Accession**

*Note.* Photo courtesy of Hematology Oncology Associates of Alabama, LLC. Used with permission.

**Exit site:** Erythema, warmth, or drainage occurs over the port implantation site.

**Port pocket:** Infectious material is present within the port pocket, which may or may not have signs of erythema, warmth, or drainage of exit site.

**Systemic:** Blood cultures from the port are positive.

**Figure 2. Implantable Port Infections Definitions**

*Note.* Based on information from Camp-Sorrell, 2004.

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