

# Implanted Port Patency

## Comparing heparin and normal saline

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**BACKGROUND:** To maintain implanted port patency, clinicians can better determine the difference between the use of heparin and normal saline, including risk to patients, unnecessary cost to the healthcare system, and whether heparin is effective in maintaining port patency.

**OBJECTIVES:** The aim is to compare the effectiveness of saline to heparin for maintaining implanted port patency and to evaluate the cost differences.

**METHODS:** Data were collected from 56 patients enrolled in oncology clinical trials; 37 had paired data.

**FINDINGS:** Results showed that saline was as effective as heparin in maintaining implanted port patency. The difference in mean cost of saline versus heparin was statistically significant. Eliminating heparin when locking implanted ports did not increase catheter occlusion rates.

### KEYWORDS

implanted ports; implanted vascular access device; vascular access; catheter occlusion

### DIGITAL OBJECT IDENTIFIER

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**MAINTAINING IMPLANTED PORT PATENCY AND BRISK BLOOD RETURN** is essential when caring for the oncology population. Ports are used for long-term IV treatment, laboratory tests, and administration of drugs, which can be vesicants, such as chemotherapy. The policy at HonorHealth Medical Center in Scottsdale, Arizona, was to flush with 10 ml normal saline followed by 500 units of heparin as a locking solution prior to removing the port needle. The technique used in the oncology clinical trials infusion clinic at HonorHealth Medical Center is the push-pause method. Using 10 ml of normal saline with the push-pause method—pushing 1 ml about every 0.4 seconds, as opposed to a fluent motion—clears debris from central lines more efficiently (Goossens, 2015).

Other healthcare organizations have moved away from using heparin to lock central lines. Multiple studies have shown no significant difference in central line patency when saline alone was used to flush central lines, but authors also have stated that more research is needed (Bradford et al., 2016; Cates et al., 2017; Goossens, 2015; Infusion Nurses Society, 2016). Discontinuing the use of heparin when removing the needle from implanted port catheters can improve patient care by reducing the risk of heparin sensitivity, preventing delays in care due to falsely elevated coagulation laboratory results, and reducing costs related to the use of heparin.

### Background

Multiple studies have compared the use of heparin versus saline alone to maintain infusion line patency. None has shown a significant difference between the two solutions. In addition, the authors could not locate any research exclusive to implanted ports. It is important to study the difference between the use of heparin and normal saline for several reasons, including risk to patients, unnecessary cost for healthcare organizations, and whether heparin is even effective in maintaining port patency.

Patients should not be exposed to a medication if it is not warranted. In an outpatient setting, patients may have a port needle removed as often as daily, requiring a heparin flush of 500 units per deaccess. Possible adverse events following multiple heparin flushes include heparin-induced thrombocytopenia (HIT), heparin hypersensitivity, and the risk of bleeding complications (Solinas et al., 2017). HIT and heparin sensitivity can occur