

REGULATORY MEMO TO FILE

Letter to File May 5, 2008: Saline Flush Recommendation for CLAVE[®] NeedleFree Connector

Document Review:

- **FDA Guidance for Industry on General/Specific Intended Use,** Published November 4, 1998. Section 513(i)(1)(F) Federal Food and Cosmetic Act (The Act).
- 510K 970855 CLAVE Connector



Background

ICU Medical intends to update the directions for use on the CLAVE Connector to specify a saline flush. The CLAVE is a standard needlefree connector which has minimal blood reflux in the catheter lumen upon disconnection of a luer. Traditional flushing procedures might typically include the use of heparin to help prevent thrombotic occlusion within the catheter, however if the reflux is such that the volume is small enough not to contribute to thrombotic occlusion, then the use of heparin is unnecessary. Thrombotic occlusion in catheters is primarily due to substantial reflux; more than 0.05cc, or poor flushing technique. The CLAVE reflux volume is less than 0.02cc and has been proven in beta site studies to not contribute to thrombotic occlusion.

Recent concerns about the use and availability of heparin has caused a crisis in the United States and abroad. There are substantial risks associated with the use of heparin such as Heparin Induced Thrombocytopenia which may occur in as many as 0.2% of patients.¹ Safety Alerts have been issued as far back as 2006 regarding fatal dosing errors involving Heparin.² Furthermore, in February 2008, a worldwide recall of Heparin was initiated by the largest supplier, Baxter Healthcare, which has resulted in global shortages. Below is an excerpt from the February 11, 2008 United States Food and Drug Administration (FDA) statement regarding the Baxter recall.

About 350 adverse events associated with the Baxter product have been reported since the end of last year compared to less than 100 reports in 2007. While most of the reports involve multiple-dose vials, several cases include patients who received a bolus dose after their health care professional combined heparin from single-dose vials. (FDA News; February 11, 2008).³

Clinical Review:

In an effort improve patient outcomes by eliminating the use of heparin when flushing central lines with the CLAVE, clinical beta sites were identified and studies were done to show that the use of saline flush was effective at maintaining or reducing current thrombotic occlusion rates. All beta sites reported positive experiences with CLAVE and Saline Flush protocol.

Regulatory Assessment

A review of the FDA Guidance Document and the CLAVE 510K documents determines that an update to indicate saline flush recommendation does not affect the safety or efficacy of the device and therefore does not require a new submission. ICU further recognizes the potential safety risks involved with heparin flushing of catheters and intends to update the CLAVE directions for use to further clarify that the use of saline flush with CLAVE is a safe and effective practice.

Recommendation

All CLAVE device labeling will be immediately modified to incorporate the new saline flush claim. ICU recommends that when employing a saline flush that a facility maintains their flush volume and frequency rate, with the only modification being the elimination of the heparin component.