



Rx Update

January 2007

Editors: Joan Murhammer, R.Ph., Mary Ross, R.Ph. MBA, Kevin Bebout, R.Ph.

HEPARIN FLUSHES – ENSURE THE ORDER IS CURRENT BEFORE ADMINISTERING EACH DOSE

Heparin flushes are often used to maintain patency of a central venous catheter. However, use of heparin for this purpose is not necessarily safe. In some patients, use of heparin can result in the development of heparin-induced thrombocytopenia (HIT), an immunologic reaction causing platelet activation, accompanied by an intense hypercoagulable state. The paradox is that **HIT is not associated with bleeding, but rather it is associated with thrombosis**. Use of heparin precipitates the development of HIT and **continued use of heparin can cause severe sequelae such as death or amputation**. Exacerbation of HIT **can occur with any heparin exposure, including heparin flushes, the use of heparin-coated catheters, and heparin given via the intravenous or subcutaneous route**. In many cases, orders for “discontinue all heparin” are written because the patient has suspected HIT.

The initial suspicion of HIT is aroused by clinical events, usually a decreased platelet count that temporally is associated with heparin use or the occurrence of a blood clot in a patient who is receiving heparin. The incidence of HIT is estimated to be up to 5% in patients exposed to heparin. HIT generally occurs between 5 and 10 days after initiation of heparin therapy; however, the onset of HIT may be more rapid and occur within 12 hours of heparin exposure if the patient has been exposed to heparin previously within the past 100 days. HIT may also occur after heparin has been discontinued. This is known as “delayed-onset HIT” that generally occurs an average of nine days after heparin is stopped and is often accompanied by a thrombotic event. Delayed-onset HIT should be considered prior to heparin administration in patients who present with thromboembolism and have recently been hospitalized.

When HIT is suspected, all sources of heparin exposure must be discontinued, and it is usually necessary to begin alternative anticoagulation, as the risk of thrombosis with heparin discontinuation alone exceeds 50%. Direct thrombin inhibitors are considered the agents of choice for the treatment of HIT. Argatroban is the direct thrombin inhibitor on the UIHC Formulary. Argatroban should be continued until the platelet counts have fully recovered. **When a patient has an order for argatroban, all heparin orders on the patient’s record should be discontinued.**

When a diagnosis of HIT is suspected, it is important to ensure that heparin exposure from any source (including flushes) is completely avoided. **Reports in the literature and at UIHC have revealed use of heparin flushes and heparinized normal saline despite specific written orders to discontinue all heparin.** Due to the severe outcomes if a patient with HIT receives any form of heparin, the following safety measures must be followed to help prevent heparin from being administered to a patient with suspected HIT.

- **Prior to administering heparin, make sure a current physician order has been written for any administration of heparin; this includes all therapeutic heparin, heparin flushes, and heparinized normal saline.**
- **Prior to administering heparin, make sure that there are not orders to “discontinue all heparin,” especially if the patient is receiving argatroban.**
- **Use of all forms of heparin must be documented in the patient medical record for all patients so that the association of HIT with the use of heparin may be determined.**
- **Orders for all heparin products, including flushes, must be reviewed and dispensed by Pharmacy prior to administration.**
- **Heparin should only be removed from Pyxis as needed for a specific patient.**