Undetected Heparin Induced Thrombocytopenia

There are many medical devices on the market today that are pre-coated or coated pre-procedure with heparin to prevent the effects that occur when blood reacts with a foreign surface. The effects, which could hinder device performance, include platelet adhesion, platelet activation, fibrin production, thrombus formation, and other inflammatory responses. Examples of devices that are either manually or commercially coated with heparin include: vascular access catheters and guidewires; drainage, re-transfusion, or thermodilution catheters; devices used during cardiopulmonary bypass; oximetry probes; and some vascular stents and grafts.

Small doses of heparin on devices help to prevent occlusion, minimize infection, and prohibit clotting. However, even modest amounts of heparin can cause an immune-mediated response call heparin induced thrombocytopenia (HIT). HIT can result in serious thrombotic events such as deep vein thrombosis, pulmonary embolism, myocardial infarction, thrombotic stroke and limb occlusion, all of which may cause permanent disability and even death. Heparin used in devices may not be documented in the patient's medical record which could make diagnosis of HIT very difficult.

Health care providers should consider employing the following recommendations to mitigate the risk of patient adverse events due to HIT and other medication reactions:

- Compile a list of products that may expose patients to heparin or other medications including drug-eluting stents and commercially applied and/or user-applied medication-coated catheters.
- Establish a notification system when new products are purchased and update the product list. Identify a staff member who will be responsible for updating the list since these products will not go through the pharmacy.
- Prior to utilizing medication-coated or drug-eluting catheters or devices, ask the patient if they have any allergies or a history of HIT. Document the allergy in the patient's chart and work with information technology staff to generate an alert if heparin is prescribed (i.e. therapeutic or prophylactic doses).
- Collaborate with pharmacy and/or electronic health record staff to establish a system to document in the patient's record any exposure to heparin-coated catheters or guidewires, and/or medication-coated or drug-eluting devices and catheters.
- Educate staff on the signs and symptoms of an allergic reaction or HIT response, particularly for those caring for patients exposed to medication-coated or drug-eluting devices.
- Search for hidden sources of medications when symptoms of possible HIT, allergic reaction, or other drug reaction occurs. Work-up patients for HIT who exhibit signs of thrombocytopenia and other risk factors (i.e. decreased platelet count 5 – 10 days after starting heparin or sooner if thrombosis occurs).
- Discontinue all sources of heparin if HIT is suspected or diagnosed, including heparin-coated catheters and heparin flushes.
- Document adverse reactions and place prominent alerts on the patient's medical record to warn staff to avoid administration of the culprit medication.
- Regularly assess the need for medication-coated devices and catheters to reduce unnecessary exposure.

References

1. Institute for Safe Medication Practices. (2017). *Nurse Advise-ERR.* Retrieved from Institute for Safe Medication Practices: http://www.ismp.org/newsletters/nursing/issues/NurseAdviseERR201709.pdf