**ANTITHROMBIN SUPPLEMENTATION TO CORRECT HEPARIN RESISTANCE IN ADULT PATIENTS UNDERGOING CARDIAC SURGERY WITH CARDIOPULMONARY BYPASS**

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To achieve anticoagulation in patients undergoing cardiac surgery patients both plasma heparin concentrations and adequate antithrombin levels are required. The purpose of this study was to evaluate a protocol for administering concentrated AT to patients resistant to heparin.

A protocol for administering antithrombin was established that was triggered when heparin dosing exceeded 800 IU kg-1 body weight) and an activated clotting time (ACT) of > 500 seconds not reached. Following institutional review board approval, data from quality improvement records was assessed. Two groups of patients were identified as those receiving antithrombin (AT) and those not requiring AT (No-AT). Outcome measures included ACT, allogeneic transfusions and postoperative blood loss.

Consecutive adult patients undergoing CPB (n=140) were included in the study with 10 (7.1%) in the AT group. Patients in the AT group were more often receiving preoperative heparin therapy than those in the No-AT group (80.0% vs. 24.6%, p<.0001). Prior to CPB ACT values were significantly lower in the AT group (417.7+43.3 vs. 684.6+172.9, p<.005). The average AT dose administered was 1,029+164 IU with all patients reaching targeted ACT levels prior to CPB. AT patients had a lower heparin sensitivity index (0.54+0.2 vs. 1.06+0.5, p<.0005), received more total heparin (941.2 IU kg-1+130.9 IU kg-1 vs. 678.4 IU kg-1+194.5 IU kg-1, p<.0001), more CPB heparin (22,500 IU kg-1+10,300 IU kg-1 vs. 11,200 IU kg-1+13,200 IU kg-1, p<.01), and more post-CPB protamine (5.4+1.2 mg kg-1 vs. 4.1+1.1 mg kg-1, p<.05). Intraoperative allogeneic transfusion rate was higher in the AT group (70.0% vs. 35.4%, p<.05), but no difference was seen postoperatively. There were no differences in postoperative chest tube output, ICU stay or total length of stay.

Utilization of a protocol for the administration of concentrated antithrombin for correcting heparin resistance is effective in achieving adequate anticoagulation in patients undergoing cardiac surgery with CPB.