Commentary: The Never Ending Search for a Decent Night’s Sleep

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Conflicts of interest: none

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Central Message: Does excess fluid cause bleeding, or do bleeding patients just receive more fluid? Causation or association?

Central Picture: Dr. Jonathan Haft

It’s 10:45 PM and your head has finally hit the pillow after a long day. The phone rings, it’s the senior resident. Your second case is wet, 250 per hour for the first couple, and now a sustained 3-400 per hour. Vasopressors are up, it’s time to go back. Four letter word, long sigh, another four letter word. Who’s to blame? The patient is an easy choice, tissues were friable and inflamed, perhaps the liver was congested from heart failure. Of course you can blame the ICU, as we often do. Was the blood pressure initially too high causing the once secure suture lines to start weeping? Had they not adequately resuscitated with factors and platelets? Sometimes the cardiologist absorbs the blow, insisting on urgent operation despite dual antiplatelet therapy and inadequate preoperative optimization. And now we can also blame anesthesia for giving too much crystalloid.

Shou and colleagues examined 4037 on pump cardiac surgery patients at a single tertiary care center and identified that the volume of intraoperative crystalloid infusion and first temperature on ICU arrival were associated with increased odds of return to OR for bleeding1. Efforts to understand factors contributing to postoperative bleeding are essential to reduce perioperative morbidity as well as institutional resource consumption. This was an observational analysis of unselected cohorts, 3.7% of which required re-exploration, the remainder did not. Patients that were re-explored were more likely to be immunocompromised or on dialysis, had endocarditis, required urgent or emergent surgery, or were having aortic surgery or a cardiac reoperation. Their procedures were more complex as evidenced by longer cardiopulmonary bypass and clamp times, and required more intraoperative transfusions. While these important differences were adjusted for in the multivariable statistical modeling, there are likely unmeasured variables associated with the inherent cohort differences contributing to the findings. Did the fluid cause the bleeding, or did the bleeding patients receive more fluid? Is there enough evidence that we should fluid restrict and more aggressively warm our patients?

Cardiac surgery is a team sport. We rely upon seamless interplay among surgeons, anesthesiologists, critical care physicians, perfusionists, nursing and advanced practice players. Within that complex web are a myriad of protocols and practices that should be continuously investigated for opportunities to improve. If crystalloid volume can influence coagulation and reduce bleeding, we should adopt. However, most of the time postoperative bleeding is a surgical problem. To be clear, my personal take back rate is no better than anybody else’s. Every time I come back in at night I enter the operating room grumpy and irritable, but I usually leave thinking there was something I could have done differently which may have avoided this. Strategies to reduce coagulopathy are welcome for sure, but let’s also be certain the patient is dry before we close. All surgical residents are aware of the P’s of hemostasis: prolene, protamine, packing, pressure, products, and patience, with profanity and prayer PRN for emergencies. It is still to be determined if we should add parched and pyretic.