Impact of Thromboelastography Workshop in Treating Coagulopathy by Trainees

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Learner Audience: Anesthesiology resident physicians

Background: The improper treatment of coagulopathy can harm patients, depletes the blood product supply, and is a financial burden. To appropriately use blood products, providers must accurately determine the patient's coagulation status. Conventional tests identify the quantitative function of coagulation factors and are time-consuming. Thromboelastography (TEG), a method of qualitatively determining whole blood coagulation, is performed in the operating room with results available in minutes.

Needs Assessment: In complex surgeries such as liver transplantation, major trauma, and vascular cases, patients may require massive blood transfusions. Quick and accurate diagnosis of coagulopathy and frequent monitoring are critical to optimal management. When performing a TEG, error can be introduced at each step. Flawed results may lead to improper treatment, thus comprehensive training of the device operators is necessary.

Hypothesis: We hypothesize that by attending the TEG workshop, trainees will be more willing to perform TEG, correlate TEG findings to the clinical scenario, and administer blood products based on evidence rather than empirically.

Curriculum Design: Since simulation is commonly utilized to teach and assess skills at our institution, we developed a simulation workshop to teach TEG. After obtaining an IRB-exemption, CA-1, CA-2, and CA-3 residents attended a 90-minute workshop conducted by an attending anesthesiologist and a resident: a 15-minute introductory lecture followed by a 75-minute hands-on experience operating the TEG machine. Trainees received a manual of problem-based scenarios utilizing TEG, created by the resident leading the workshop. Pre- and post-course quizzes (10 questions) were given to ascertain knowledge of coagulation cascade, thromboelastography, and transfusion therapy. Trainees also assessed their confidence in using TEG (score range from 0-30) to diagnose and treat coagulopathy. Workshop feedback was reviewed.

Outcome: Twenty-nine residents completed the TEG workshop, pre-and post-course quizzes, and pre- and post-course self-confidence evaluations. Resident feedback was extremely positive. The average pre-course quiz score increased from 8.28 to 9.54 post-course. The average confidence score increased from 16.7 pre-course to 20.8 post-course.