Implementing a Passive Leg Raise Maneuver to Assess Fluid Responsiveness in Adult Septic Critical Care Patients

by

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Abstract

Background: The focus from fluid administration in the resuscitation of critically ill patients is being shifted to focusing on fluid responsiveness prior to administration of fluid. Overwhelming evidence exists to support the notion that if volume loading a patient does not increase their cardiac output, continued fluid administration serves no purpose and subsequently could be harmful. In general, septic patients have a mortality rate of 25%. A large southeast hospital system faced with above average sepsis mortality rates, could potentially benefit from a standardized nurse-driven assessment for fluid responsiveness.

Methods: A quality improvement study was designed and implemented to standardize evaluation of fluid responsiveness in septic patients utilizing a passive leg raise as a fluid challenge technique in conjunction with the Edwards Life Science FloTrac for hemodynamic monitoring. Retrospective data collection on two independent pre- and post-intervention samples were retrieved and analyzed.

Results: While data did not show statistical significance, there was a reduction in incidence in every category measured. These include reduction in measured outcomes of mortality (6%), pulmonary edema (14%), respiratory failure (11%), pulmonary edema AND respiratory failure (15%), acute renal failure (10%), fluid overload (13%), and acute renal failure AND fluid overload (4%).

Conclusions: Utilization of a passive leg raise with cardiac output monitoring to assess fluid responsiveness for continued volume resuscitation efforts has been validated in the literature. The implementation of a standard nurse guided method to assess fluid responsiveness is a feasible option when compared to more advanced and/or invasive approaches. Anecdotal feedback by registered nurses regarding the maneuver was it was efficient and easy while
providing another guiding point when discussing hemodynamics and further management with providers. The results showed a decrease in proportions for a majority of major categories of complications. Due to the elevated mortality rates and complications associated with sepsis, and the above average rates at this institution, any mortality benefit and decrease from avoidable complications of excessive fluid resuscitation is efficacious.