

Abstract

Fluid Volume Assessment of Emergency Department Patients Requiring an Intravenous Fluid Bolus

Primary Author: Wayne Schmedel BS, RN, CCRN, CEN

Purpose: A retrospective non-randomized pre-post study exploring any factors that may be significantly sensitive to intravenous fluid boluses and thus possibly predictive even if the sensitivity to fluid balance change is detected through a mathematical model of a combination of factors.

Background/Significance: The clinician's decision to give ED patients an IV bolus of fluid or the amount of fluid is not based on a quantifiable or even tangible variable, but rather on the chief complaint. If there were specific variables or the interaction of a set of variables that were sensitive to the change in fluid status then those variables may be useful in the prediction of not only the need for an IV fluid bolus but the amount of that bolus as well.

Methods: Several factors obtained from the electronic medical record were transferred into a statistical database for analysis. Sample size included 65 adult patients and multiple regression (MR) analysis regarding demographic as well as physiological variables and laboratory results were included in this study. The longitudinal aspect of the study included any revisits to the ED 30 days after the initial visit.

Results: Basic vital signs, serum chemistry, CBC, and UA pre-post univariate analysis had no statistically significant findings using Student's t-test where $p > 0.05$ for each test. Those patients admitted to the hospital had no statistically significant findings using Student's t-test where $p > 0.05$ for each test. Multiple regression analysis of each of these variables also had no statistically significant findings with $p > 0.05$.

Conclusions: Vital signs and basic lab tests were not sensitive to any IV fluid boluses nor were they predictive to the need for IV fluid boluses. The need for rapid assessment of fluid volume status is paramount in the ED, but current methods are unreliable for accurate assessment.