

**Therefore, following the initial fluid resuscitation, it is important to identify which patients will benefit from further fluid administration” Bentzer et al (2016).**

Abstract:

**IMPORTANCE:** Fluid overload occurring as a consequence of overly aggressive fluid resuscitation may adversely affect outcome in hemodynamically unstable critically ill patients. Therefore, following the initial fluid resuscitation, it is important to identify which patients will benefit from further fluid administration.

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**OBJECTIVE:** To identify predictors of fluid responsiveness in hemodynamically unstable patients with signs of inadequate organ perfusion.

**DATA SOURCES AND STUDY SELECTION:** Search of MEDLINE and EMBASE (1966 to June 2016) and reference lists from retrieved articles, previous reviews, and physical examination textbooks for studies that evaluated the diagnostic accuracy of tests to predict fluid responsiveness in hemodynamically unstable adult patients who were defined as having refractory hypotension, signs of organ hypoperfusion, or both. Fluid responsiveness was defined as an increase in cardiac output following intravenous fluid administration.

**DATA EXTRACTION:** Two authors independently abstracted data (sensitivity, specificity, and likelihood ratios ) and assessed methodological quality. A bivariate mixed-effects binary regression model was used to pool the sensitivities, specificities, and LRs across studies.

**RESULTS:** A total of 50 studies (N = 2260 patients) were analyzed. In all studies, indices were measured before assessment of fluid responsiveness. The mean prevalence of fluid responsiveness was 50% (95% CI, 42%-56%). Findings on physical examination were not predictive of fluid responsiveness with LRs and 95% CIs for each finding crossing 1.0. A low central venous pressure (CVP) (mean threshold 15%) predicted fluid responsiveness in a subgroup of patients without spontaneous respiratory efforts (positive LR, 5.3 [95% CI, 1.1-27]; pooled specificity, 85%). Patients with less vena cava distensibility were not as

likely to be fluid responsive (negative LR, 0.27 [95% CI, 0.08-0.87]; pooled sensitivity, 77%). Augmentation of cardiac output or related parameters following passive leg raising predicted fluid responsiveness (positive LR, 11 [95% CI, 7.6-17]; pooled specificity, 92%). Conversely, the lack of an increase in cardiac output with passive leg raising identified patients unlikely to be fluid responsive (negative LR, 0.13 [95% CI, 0.07-0.22]; pooled sensitivity, 88%).

**CONCLUSIONS AND RELEVANCE:** Passive leg raising followed by measurement of cardiac output or related parameters may be the most useful test for predicting fluid responsiveness in hemodynamically unstable adults. The usefulness of respiratory variation in the vena cava requires confirmatory studies.

Reference:

Bentzer, P., Griesdale, D.E., Boyd, J., MacLean, K., Sirounis, D. and Ayas, N.T. (2016) Will This Hemodynamically Unstable Patient Respond to a Bolus of Intravenous Fluids? JAMA. 316(12), p.1298-1309.

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