

The fluid challenge (FC) aims at identifying patients in whom fluid administration improves hemodynamics” Messina et al (2017).

Abstract:

The fluid challenge (FC) aims at identifying patients in whom fluid administration improves hemodynamics. Although the FC has been extensively studied, the implementation and definition of improvement are not standardized. This systematic review of studies published between January 1, 1994 and December 31, 2014 characterizes these key components of the FC for critically ill adult patients, as described in the medical literature in the last 20 years. A literature search was performed using MEDLINE, Embase, and Cochrane.

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For each study, data were collected on study design, study size, study setting, patient population, and how the FC was administered. Eligibility criteria for FC were (1) the infusion of a definite quantity of fluid, (2) of a specific type, (3) in a fixed time period (expressed as either span or infusion rate), (4) with a defined hemodynamic variable as the target, and (5) for a predetermined threshold. One hundred fifty-seven full-text manuscripts were extracted from 870 potentially relevant studies. The inclusion criteria were met by 71 studies including 3617 patients. Sixty-six studies were from a single center and 45 were prospective observational in format. The most common amount infused was 500 cc, used by 55 (77.5%) studies. The most commonly infused fluids were colloids (62.0%). In 43 (60.5%) studies, the FC was administered between 20 and 30 minutes. A positive response to fluid administration was defined as an increase $\geq 15\%$ of cardiac index or cardiac output in 44 (62.6%) studies. Static or dynamic physiologic indices were utilized in a minority of studies (16.9%) and safety limits for interrupting the FC are adopted in 4 (5.6%) studies only. This systematic review indicates that the FC most commonly consists in infusing 500 mL of crystalloids or colloids in 20 to 30 minutes, and considered an increase in cardiac index $\geq 15\%$ as a positive response. However, definite standards for FC administration and evaluation remain undefined.

Reference:

Messina, A., Longhini, F., Coppo, C., Pagni, A., Lungu, R., Ronco, C., Cattaneo, M.A., Dore, S., Sotgiu, G. and Navalesi, P. (2017) Use of the Fluid Challenge in Critically Ill Adult



Patients: A Systematic Review. Anesthesia and Analgesia. May 12th. .

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