

Using Fluid Optimization to Improve Hemodynamics

FloTrac Sensor

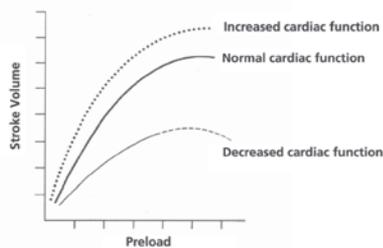
Too Wet or Too Dry?

Clinicians understand the vital role of fluid balance in critically ill patients: Too much fluid can result in edema, respiratory insufficiency or acute coronary syndrome, while too little fluid can place a patient at risk for circulatory disturbances, shock or pre-renal failure. Some patients who would benefit from fluid receive too much inotropic support, which can result in tachycardia or other complications. In addition, the ongoing management of these patients is often handled by less experienced members of the critical care team who do not have adequate understanding of fluid optimization.

Insight into the Frank-Starling Curve

Successful fluid optimization has been shown in numerous clinical studies to lead to improved patient outcomes, including reduced morbidity and shorter hospital stays¹.

The studies are typically based on the physiological principles outlined by the Frank-Starling curve, which states that an increase in preload or volume will lead to cardiac flow-related improvement (e.g., better stroke volume) up to a certain point, after which the “law of diminishing returns” applies. With compelling evidence that fluid optimization leads to better outcomes, the challenge then becomes: what is the best method for assessing fluid balance?



The FloTrac System Enables Precise Management to Fluid Optimization

The FloTrac system equips clinicians with a set of tools to assess both dimensions of the Frank-Starling curve. First, the algorithm of the FloTrac system utilizes advanced waveform processing to adjust dynamically for vascular tone (resistance and compliance) in addition to patient specific variables (age, gender, body surface area, etc.)

in order to calculate the key flow related parameters stroke volume and cardiac output. The result is an enhanced ability to determine the adequacy of cardiac flow, which comprises the Y-axis of the Frank-Starling Curve. Second, the FloTrac system measures preload responsiveness for the X-axis of the Frank-Starling curve through one of three distinct, practical methods:

- Stroke Volume Variation (SVV): For control-ventilated patients, SVV has been proven to be a highly sensitive and specific indicator for preload responsiveness². As a dynamic parameter, SVV has the advantage of predicting whether a patient will benefit from volume before the fluid is given.
- Passive Leg Raising (PLR): In situations where it is not possible to use SVV (i.e., during arrhythmias, when patients are not on control-mode of ventilation, or in patients at risk of complications from fluid loading), simply raising the legs has been proven clinically to act like a “self volume challenge” to indicate the patient’s status on the Frank-Starling curve³. If the patient is fluid-responsive, SV will increase substantially.
- SV Fluid Challenge: In the rare case when neither SVV nor PLR is feasible, the FloTrac system provides a highly efficient method for assessing fluid responsiveness via a standard fluid challenge⁴⁻⁶. The administration of a small volume of fluid (e.g., 250-500 mL) and observance of the corresponding change in SV and/or CO can indicate whether further volume will improve cardiac performance.

The FloTrac system’s ability to adequately assess multiple flow-related parameters instills confidence that you are choosing the right therapy and delivering it at the right magnitude. At Edwards Lifesciences, our commitment to ongoing innovation through the FloTrac system has provided you with an easier, faster, more efficient way to optimize your patient’s fluid balance.

For further information on the FloTrac sensor please visit [Edwards.com/FloTrac](https://www.edwards.com/FloTrac)



**Helping to advance the care of the critically ill for 40 years,
Edwards Lifesciences seeks to provide the valuable
information you need, the moment you need it.
Through continuing collaboration with you, ongoing
education and our never-ending quest for advancement,
our goal is to deliver clarity in every moment.**

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