**Stroke volume optimization**

% Change in stroke volume (ΔSV) is a sensitive method for assessing preload responsiveness on all patients.

- Monitor stroke volume
- 200 – 250 ml fluid challenge over 5–10 min
  - Yes
  - SV increase >10%
  - Monitor stroke volume for clinical signs of fluid loss
  - No
  - SV reduction >10%

*Yes* No

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**Oesophageal Doppler-guided fluid management during major surgery: reducing postoperative complications and bed days.** NHS Technology Adoption Centre. January 2012.

*A passive leg raising maneuver over 1–2 min. can also be used as a fluid challenge Monnet X, Teboul JL. Passive Leg Raising. Intensive Care Med. 2008 Apr; 34 (4): 659-63.*

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**Frank-Starling curve**

Relationship between preload status and fluid-induced increases in stroke volume.

Increasing SV with fluid until the plateau of the Frank-Starling curve is reached has been shown to improve the outcome of high-risk surgery patients.

Stroke volume variation optimization
Stroke volume variation (SVV) is a reliable indicator of preload responsiveness on control-ventilated patients.

Not meeting perfusion requirements

Volume responsive SVV>13%

Yes

Volume challenge

SVI normal

Pressor

No

SVI low

Inotrope

SVI high

Diuretic


Stroke Volume Variation (on control-ventilated patients)
Variation in arterial pulsations caused by heart-lung changes during positive pressure ventilation.

\[
\%SVV = \frac{SV_{\text{max}} - SV_{\text{min}}}{SV_{\text{mean}}} \times 100
\]

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One Edwards Way, Irvine CA 92614 USA