Evidence-based, perioperative Goal-Directed Therapy (GDT) protocols.

Several single centre randomized controlled trials, meta-analysis and quality improvement programs have shown that perioperative GDT decreases postoperative complications and hospital length of stay when compared to standard fluid management.1-5

This summary describes the three main perioperative GDT strategies which have been successfully used to decrease postoperative morbidity and length of stay:

- Stroke Volume (SV) optimization with fluid
- Oxygen Delivery Index (iDO₂) optimization with fluid and inotropes
- Pulse Pressure Variation (PPV) or Stroke Volume Variation (SVV) optimization with fluid

This summary does not recommend the use of any specific medical device, and the choice of the treatment protocol is left at the discretion of the anesthesiologist in charge.
**SV Protocol Overview**

Using the SV protocol consists in giving successive small (200-250 ml) fluid boluses until the SV reaches a plateau value (the plateau of the Frank-Starling relationship).

Many single centre randomized controlled trials\textsuperscript{6-12} and a multicentre quality improvement program,\textsuperscript{13} showing a decrease in post-operative complications or hospital length of stay in the perioperative GDT group, were based on this protocol.

This protocol is now officially recommended by the National Institute for Clinical Excellence in the UK and by the French Society of Anesthesiology \\& Intensive Care (SFAR).

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**Abbreviation:** SV: Stroke Volume.

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*From Kuper et al.\textsuperscript{13}*

**Abbreviation:** SV: Stroke Volume.
Overview

Using a iDO₂ optimization protocol consists first in optimizing SV with fluid, as described in the SV protocol.

Once SV has been optimized with fluid, iDO₂ is calculated. If iDO₂ is <600 ml/min/m² an inotrope (dobutamine or dopexamine) is introduced to achieve the iDO₂ goal of 600 ml/min/m².

Inotropes should not be used or must be discontinued (if already introduced) in case of tachycardia, cardiac arrhythmia or ischemia.

Several single centre randomized controlled trials, showing a decrease in post-operative complications or hospital length of stay in the perioperative GDT group, were based on this protocol.14-19

From Cecconi et al.19

Abbreviations: DO₂I: Oxygen Delivery Index; Hb: Hemoglobin; HES: Hydroxyethyl Starch; HR: Heart Rate; MAP: Mean Arterial Pressure; SaO₂: Oxygen Saturation; SV: Stroke Volume.
Using a PPV/SVV optimization protocol consists in giving fluid to maintain these dynamic parameters below a predetermined cutoff value.

Several single centre randomized controlled trials, showing a decrease in post-operative complications or hospital length of stay in the perioperative GDT group, were based on this protocol.\textsuperscript{20-24}

From Ramsingh et al.\textsuperscript{24}

**Overview**

**Abbreviations:** ABGs: Arterial Blood Gases; CO: Cardiac Output; P-POSSUM: Portsmouth Physiologic and Operative Severity Score for the Enumeration of Mortality and Morbidity Score; PRBCs: Packed Red Blood Cells; SVV: Stroke Volume Variation.
REFERENCES

**Meta-analysis**

**SV protocol studies**

**iDO2 protocol studies**
15. Boyd et al. JAMA 1993

**PPV/SVV protocol studies**
22. Ping et al. Hepatogastroenterology 2012
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