



PERIOPERATIVE GOAL- DIRECTED THERAPY PROTOCOL SUMMARY

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**

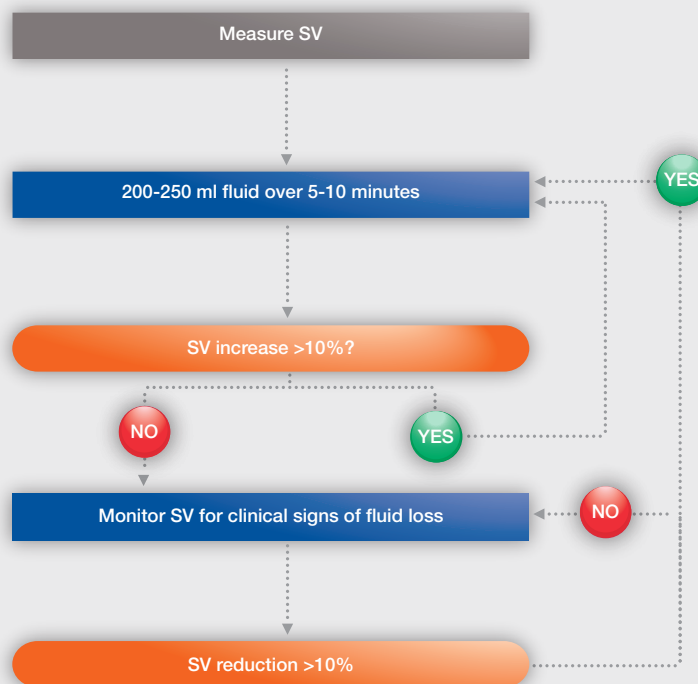
This summary does not recommend the use of any specific medical device, and the choice of the treatment protocol is left at the discretion of the anesthesiologist in charge.

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 trials⁶⁻¹² and a multicentre quality improvement program,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 Anaesthesiology & Intensive Care (SFAR).



From Kuper et al.¹³

Abbreviation: SV: Stroke Volume.

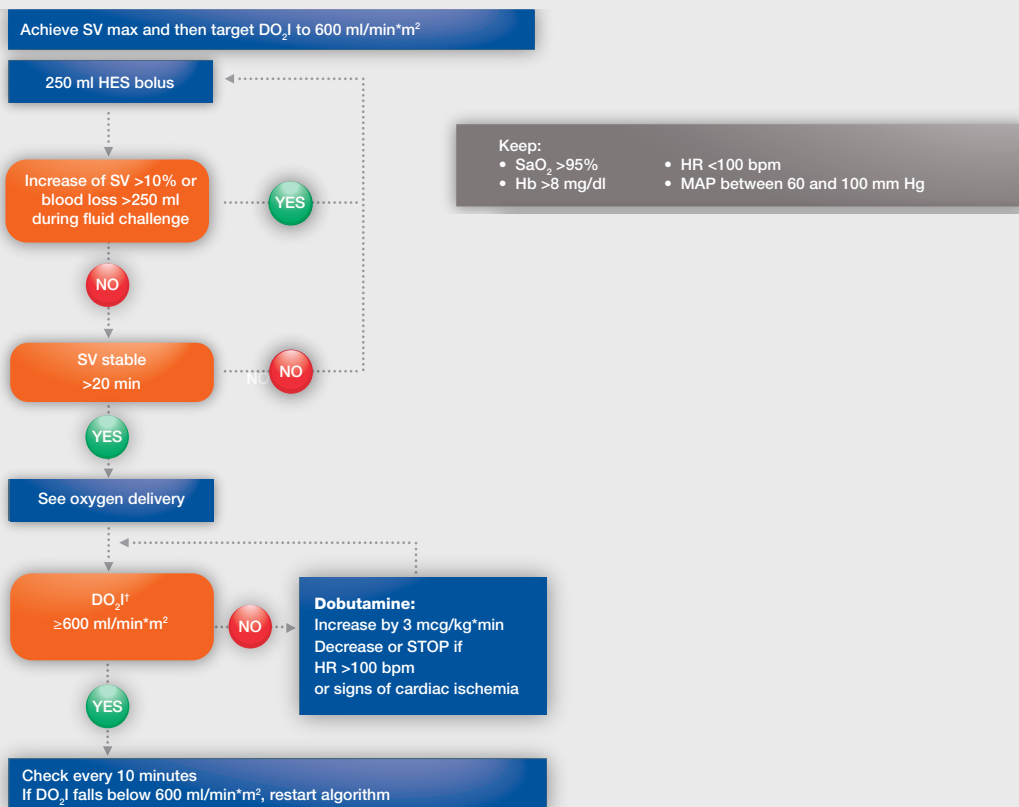
Overview

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



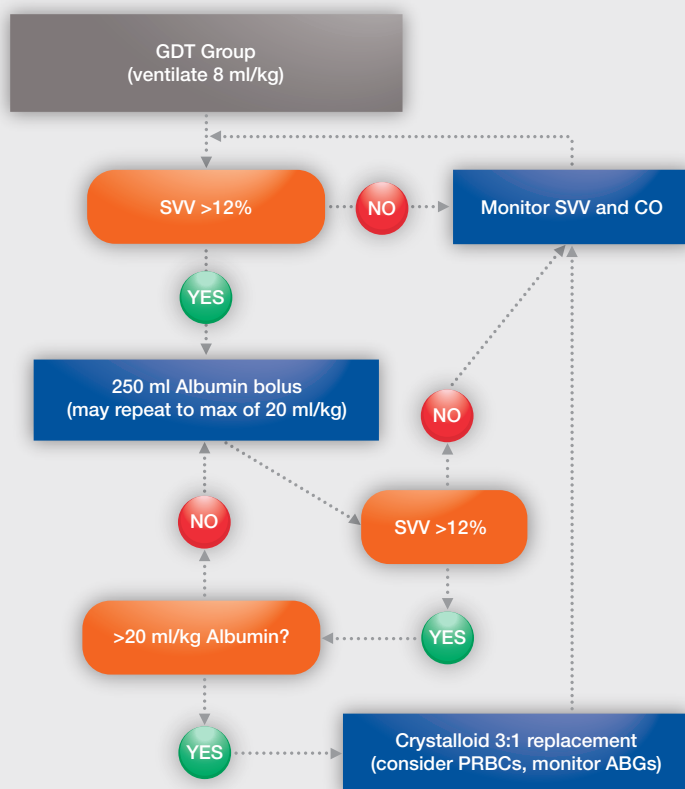
From Cecconi et al.¹⁹

Abbreviations: DO₂I: Oxygen Delivery Index; Hb: Hemoglobin; HES: Hydroxyethyl Starch; HR: Heart Rate; MAP: Mean Arterial Pressure; SaO₂: Oxygen Saturation; SV: Stroke Volume.

Overview

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.²⁰⁻²⁴



From Ramsingh et al.²⁴

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.

Meta-analysis

1. Brienza et al. Crit Care Med 2009
2. Giglio et al. Br J Anaesth 2009
3. Dalfino et al. Crit Care 2011
4. Hamilton et al. Anesth Analg 2011
5. Corcoran et al. Anesth Analg 2012

SV protocol studies

6. Sinclair et al. BMJ 1997
7. Venn et al. Br J Anaesth 2002
8. Gan et al. Anesthesiology 2002
9. Conway et al. Anaesthesia 2002
10. Wakeling et al. Br J Anaesth 2005
11. Noblett et al. Br J Surg 2006
12. Pillai et al. J Urology 2011
13. Kuper et al. BMJ 2011

iD02 protocol studies

14. Shoemaker et al. Chest 1988
15. Boyd et al. JAMA 1993
16. Wilson et al. BMJ 1999
17. Lobo et al. Crit Care Med 2000
18. Pearse et al. Crit Care 2005
19. Cecconi et al. Crit Care 2011

PPV/SVV protocol studies

20. Lopes et al. Crit Care 2007
21. Benes et al. Crit Care 2010
22. Ping et al. Hepatogastroenterology 2012
23. Zang et al. Clinics 2012
24. Ramsingh et al. J Clin Monit Comput 2012

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