

Edwards Critical Care Education

Perioperative Goal-Directed Therapy Protocol Summary

Issue Date: March 2013



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Evidence-based, Perioperative Goal-Directed Therapy (PGDT) protocols

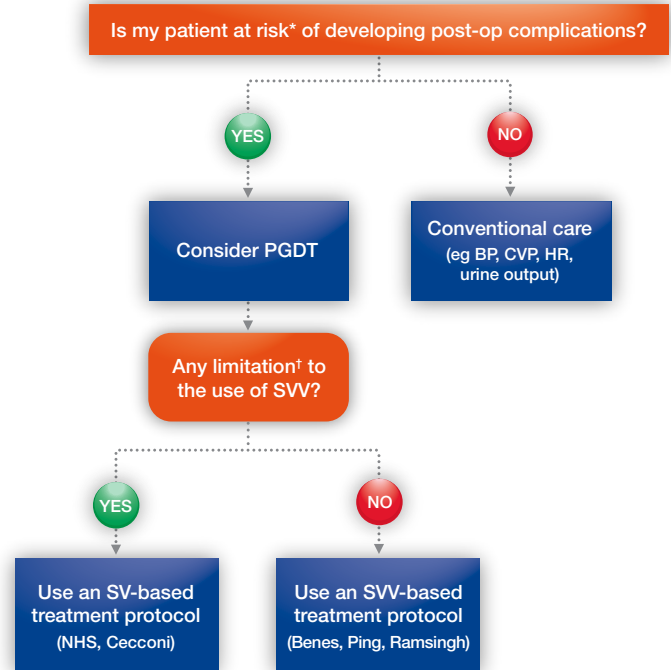
Note: This protocol summary is designed to help inform clinicians of key published protocols used to guide hemodynamic monitoring in high-risk surgery. **It is not intended to recommend a specific protocol, but to guide hemodynamic optimization through Perioperative Goal-Directed Therapy protocols that have been shown to reduce the number of peri- and postoperative complications, and improve patient outcomes.**¹⁻³ These protocols represent individual strategies to help physicians either titrate or tailor fluid therapy in an individual patient or clinical situation. Since every case is different, physicians must weigh the risks and benefits of initiating any specific protocol.

Please refer to Edwards Critical Care Education at Edwards.com/ccEducation for updates and additional information.

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Considering a protocol

The following algorithm is provided to help you select the most appropriate Perioperative Goal-Directed Therapy (PGDT) protocol for your patient. Your selection deserves careful consideration.



*At risk because of comorbidities or the surgical procedure itself.

†Limitations to the use of SVV: Spontaneous breathing, tidal volume <7 ml/kg, open chest, atrial fibrillation, right ventricular failure, and laproscopic surgery.

Abbreviations: **BP:** Blood Pressure; **CVP:** Central Venous Pressure; **HR:** Heart Rate; **SV:** Stroke Volume; **SVV:** Stroke Volume Variation.

Benes Protocol¹

OVERVIEW

Study Design Randomized controlled trial

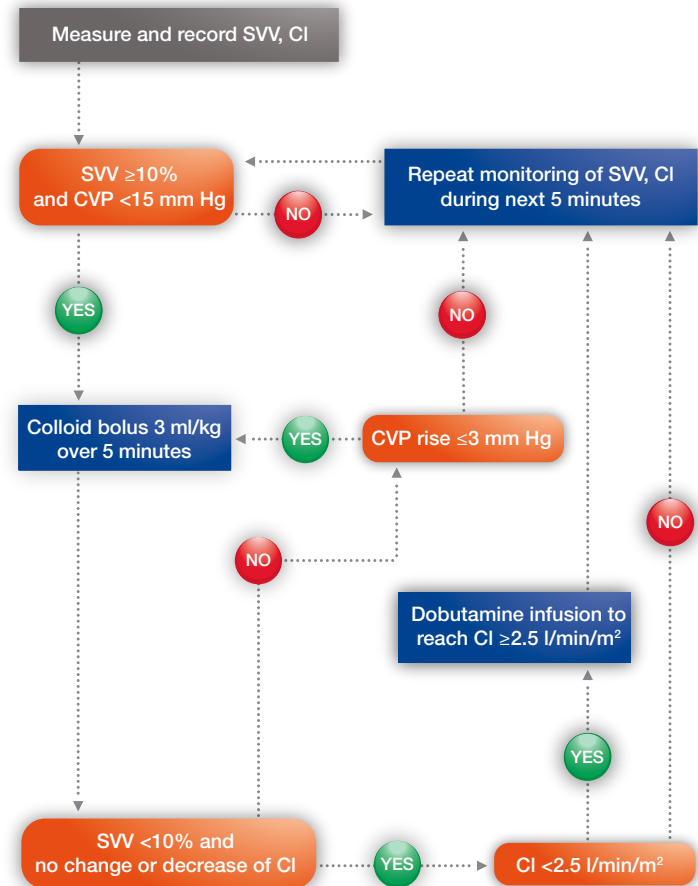
Patient Population Undergoing elective abdominal surgery >2 h with expected blood loss >1000 ml

Inclusion Criteria One or more of the following: Ischemic heart disease or severe heart dysfunction, moderate to severe chronic obstructive pulmonary disease, aged 70+, ASA III or more

Target Parameters Central Venous Pressure, Stroke Volume Variation, Cardiac Index

Intervention Fluid (Colloid), Dobutamine

Primary Outcomes Decrease in 30-day postoperative complications (56%), decrease in hospital length of stay (10%)



Abbreviations: CI: Cardiac Index; CVP: Central Venous Pressure; SVV: Stroke Volume Variation.

Cecconi Protocol²

OVERVIEW

Study Design Randomized controlled trial

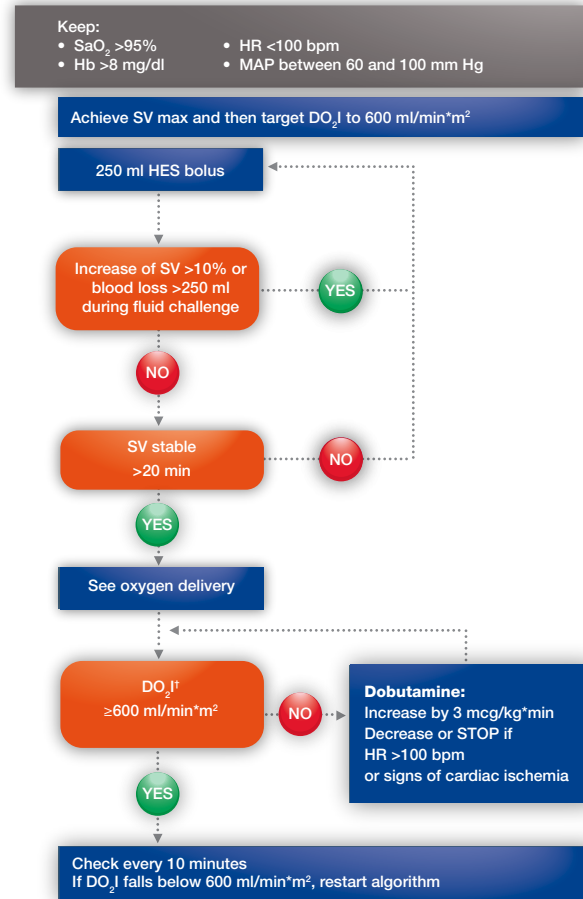
Patient Population Undergoing elective total hip replacement under regional anesthesia

Inclusion Criteria ASA II

Target Parameters Stroke Volume, Oxygen Delivery

Intervention Fluid (Colloid), Dobutamine

Primary Outcomes Decrease in postoperative complications (20%)



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

[†]Resuscitation to achieve a DO₂I value of 600 is presented as a goal and not intended to be a hard target. This protocol is intended as guidance, and healthcare professionals should use sound clinical judgment and individualize therapy to each specific patient care situation.

Modified from Cecconi, et al. *Crit Care*. 2011;15:R132. Based upon Shoemaker³ protocol.

OVERVIEW

Study Design Quality improvement program (before-after comparison)

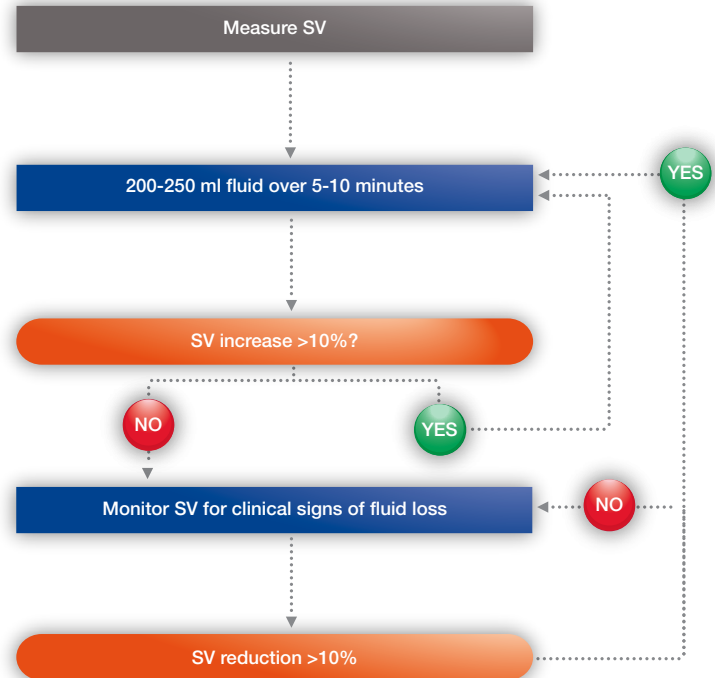
Patient Population Undergoing emergency and elective abdominal, orthopedic, gynecologic, urologic, and vascular surgery

Inclusion Criteria Three cohorts of patients aged ≤ 60 , 61-71, and ≥ 71 years with ASA > 1

Target Parameters Stroke Volume

Intervention Fluid

Primary Outcomes 3.7-day decrease in hospital length of stay (25%)



Ping Protocol¹⁴

OVERVIEW

Study Design Randomized controlled trial

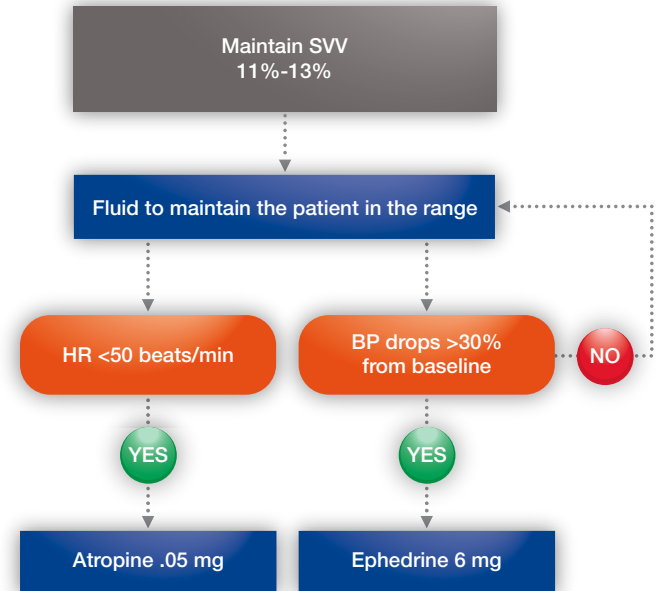
Patient Population Undergoing radical gastrectomy, colon cancer resection, rectal cancer, and Whipple surgery

Inclusion Criteria ASA I or ASA II

Target Parameters Stroke Volume Variation

Intervention Fluid

Primary Outcomes Faster recovery time to normal diet (16%), decrease in hospital length of stay (19%)



Abbreviations: BP: Blood Pressure; HR: Heart Rate; SVV: Stroke Volume Variation.

Ramsingh Protocol¹⁵

OVERVIEW

Study Design Randomized, single-blinded controlled trial

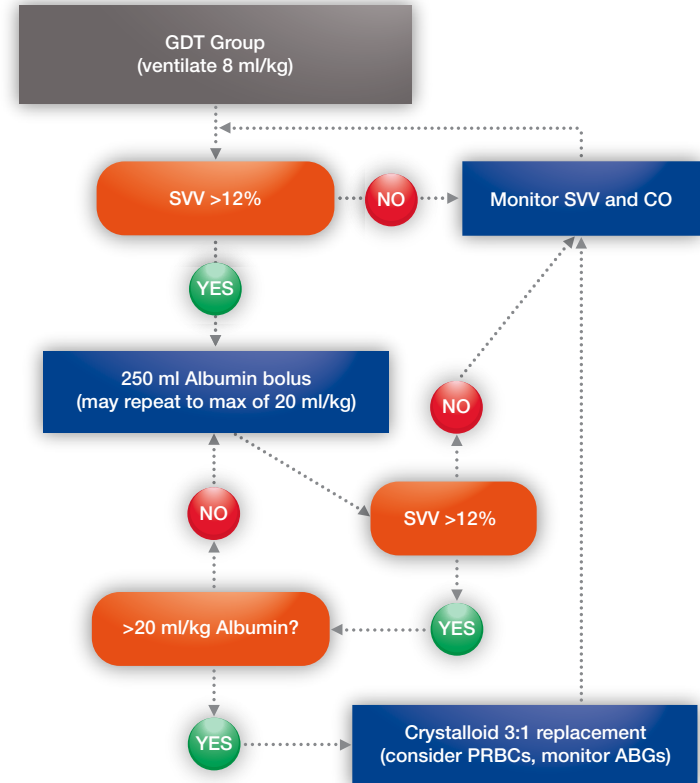
Patient Population Undergoing major abdominal surgery, urologic, gastrointestinal or gynecologic cancer resection, and Whipple surgery

Inclusion Criteria P-POSSUM mean predicted mortality rate of 1.4*

Target Parameters Stroke Volume Variation

Intervention Fluid (Colloid)

Primary Outcomes Faster return of GI function (3 vs 4 days), faster return of PO intake (4 vs 5 days), and a 2.5-day decrease in hospital length of stay (33%)



*No differences other than age were statistically significant. P-POSSUM scores predicted mortality and showed no difference between the groups.

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.

OVERVIEW

Study Design Multicenter randomized controlled trial

Patient Population Undergoing elective abdominal extensive surgery or abdominal aortic surgery

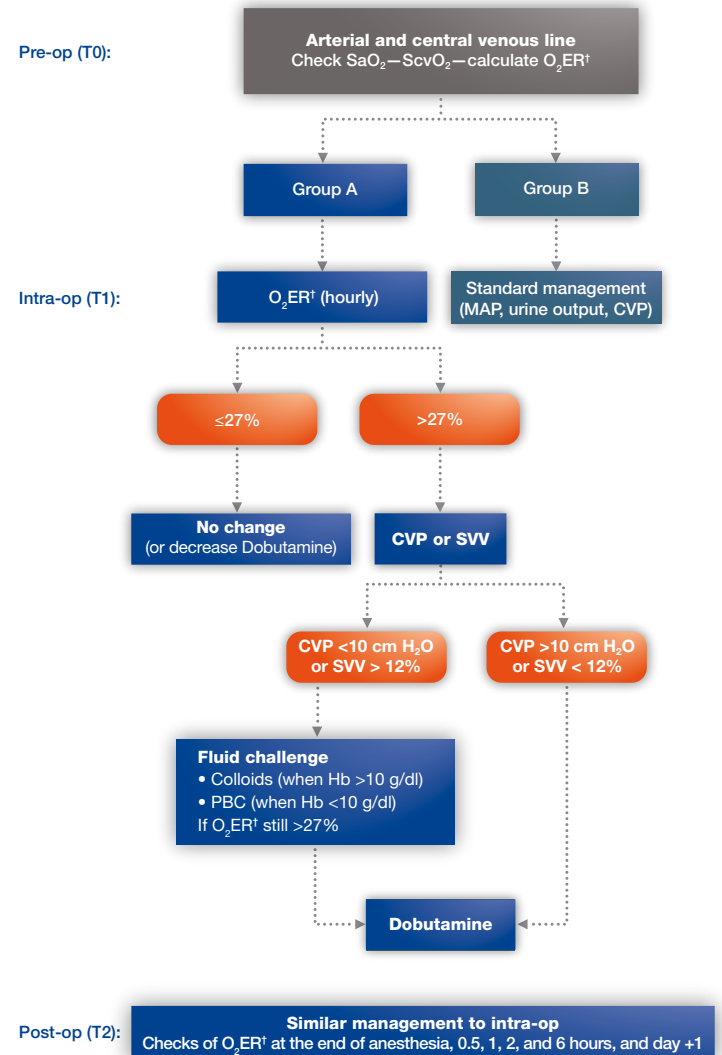
Inclusion Criteria ASA II

Target Parameters Central Venous Pressure, Oxygen Extraction Ratio

Intervention Fluid (Colloid), Dobutamine

Primary Outcomes Decrease in postoperative complications (60%), decrease in hospital length of stay (16%)

Abbreviations: **CVP:** Central Venous Pressure; **Hb:** Hemoglobin; **MAP:** Mean Arterial Pressure; **O₂ER:** Oxygen Extraction Ratio; **SaO₂:** Oxygen Saturation; **ScvO₂:** Central Venous Oxygen Saturation.



Modified Donati Protocol: Donati A, et al. *Chest*. 2007;132:1817-1824.
[†]O₂ER is estimated based on use of ScvO₂.

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