

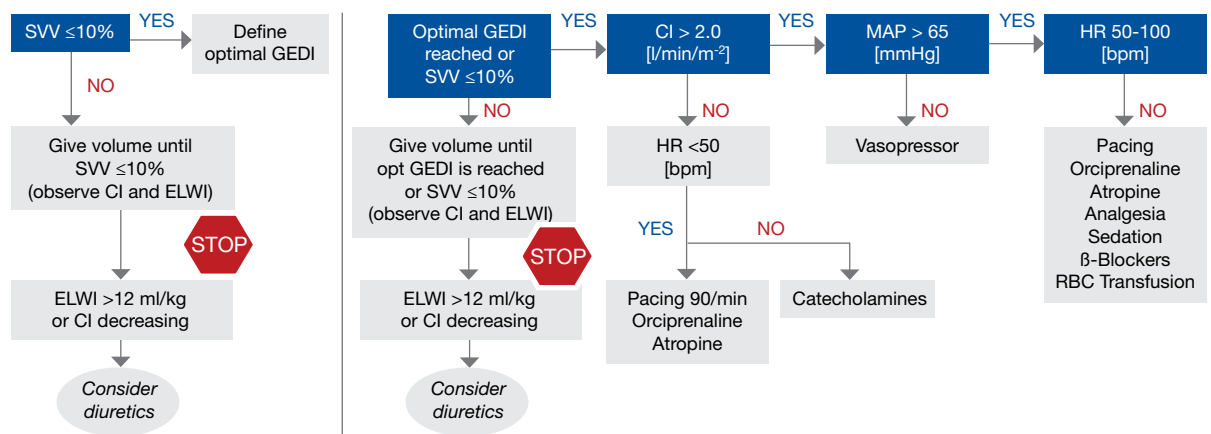
## Individually optimized hemodynamic therapy reduces complications and length of stay in the intensive care unit: a prospective, randomized controlled trial.

Goepfert MS, Richter HP, Zu Eulenburg C, et al. *Anesthesiology*. 2013 Oct;119(4):824-36.

**Objective:** A prospective, randomized controlled trial performed at Hamburg-Eppendorf, Germany, to study this hypothesis: Goal-directed hemodynamic therapy, based on the combination of functional and volumetric hemodynamic parameters, improves outcome in patients with cardiac surgery.

**Study Design:** Performed Coronary Artery Bypass Grafting (CABG), Aortic Valve Replacement (AVR), and CABG + AVR surgeries using PiCCO®-Monitor with PiCCO-Catheter (femoral artery). Study Group (SG) was composed of 50 patients, with Goal Directed Therapy (GDT) parameters: Stroke Volume Variation (SVV), Global End-Diastolic Volume Index (GEDI), Extravascular Lung Water Index (ELWI), Cardiac Index (CI), and Mean Arterial Pressure (MAP). Control Group was composed of 50 patients, with Goal Directed Therapy (GDT) parameters: Mean Arterial Pressure (MAP), Central Venous Pressure (CVP), and Heart Rate (HR).

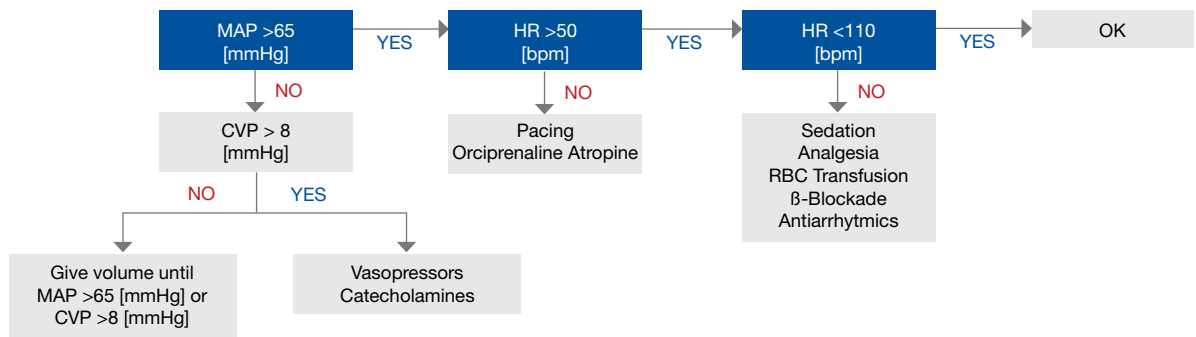
### Study Group



Algorithm 1: SVV was used to optimize preload. After volume optimization, GEDI was measured and noted as optGEDI.

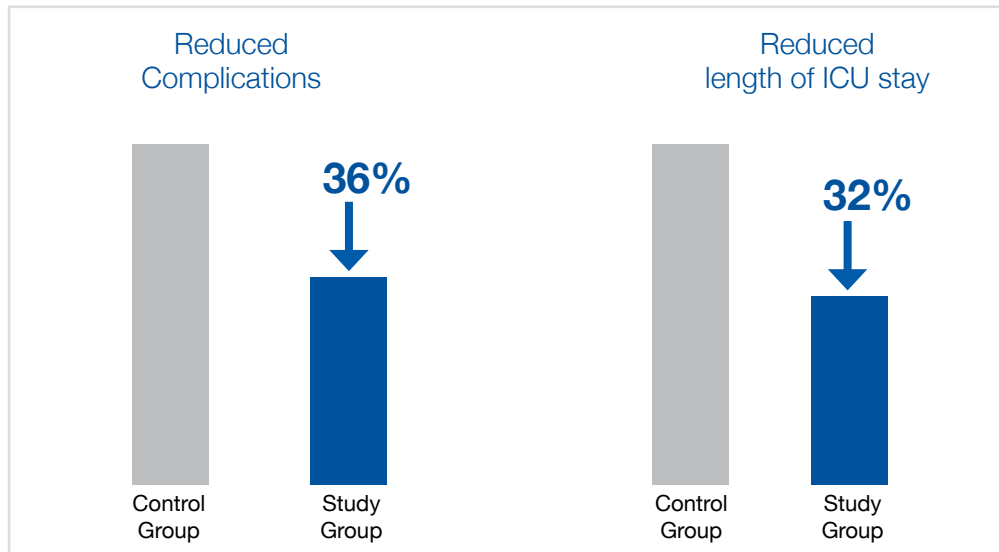
Algorithm 2: The individually titrated optGEDI served as the goal for preload optimization in clinical situations where SVV was not feasible.

## Control Group



Algorithm 3: Hemodynamic algorithm for patients in the control group.

- Take-aways:
- Early goal-directed therapy reduces intensive care stay after cardiac surgery
  - Extravascular Lung Water Index ELWI can serve as a warning parameter for volume overload
  - Fluid management—timing is everything
  - Individualized treatment



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