

Perioperative fluids and beyond



Chair: Dr. Manu Malbrain; Dr. Marlies Ostermann

Saturday 3rd of June 2023

1. HOW TO MONITOR VOLAEMIA STATUS?

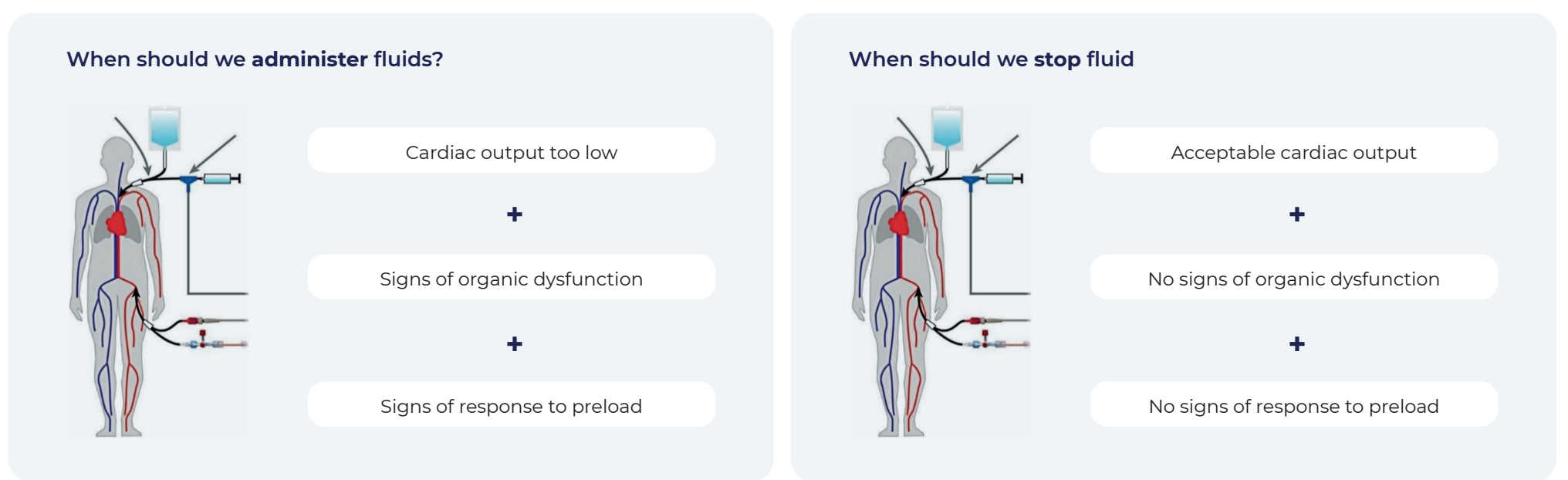
Marlies Ostermann, United Kingdom

Up to when should we administer volume?:

Fluid therapy should be administered during the Resuscitation and Optimization stages, following the ROSE model (Resuscitation, Optimization, Stabilization, and Evacuation), to prevent the harmful effects of using too much fluid!

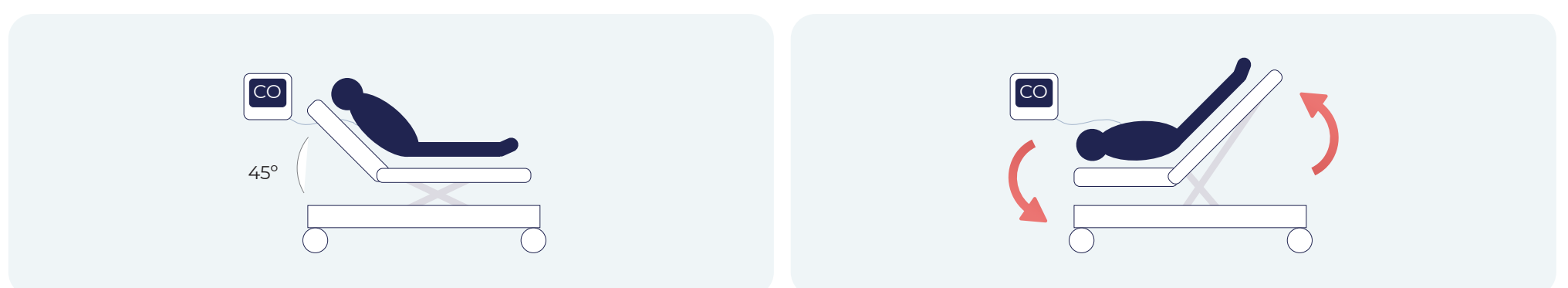
How much volume should we administer?:

No current monitoring technique offers that information accurately. Current techniques can only estimate volumes and pressures, and they can be altered by cardiac function, capillary permeability, or intrathoracic pressures. This is why they should be interpreted within the clinical context of each patient. Therefore, there is a pressing need to include new techniques to assess the volemic status. What are currently the tools available?:



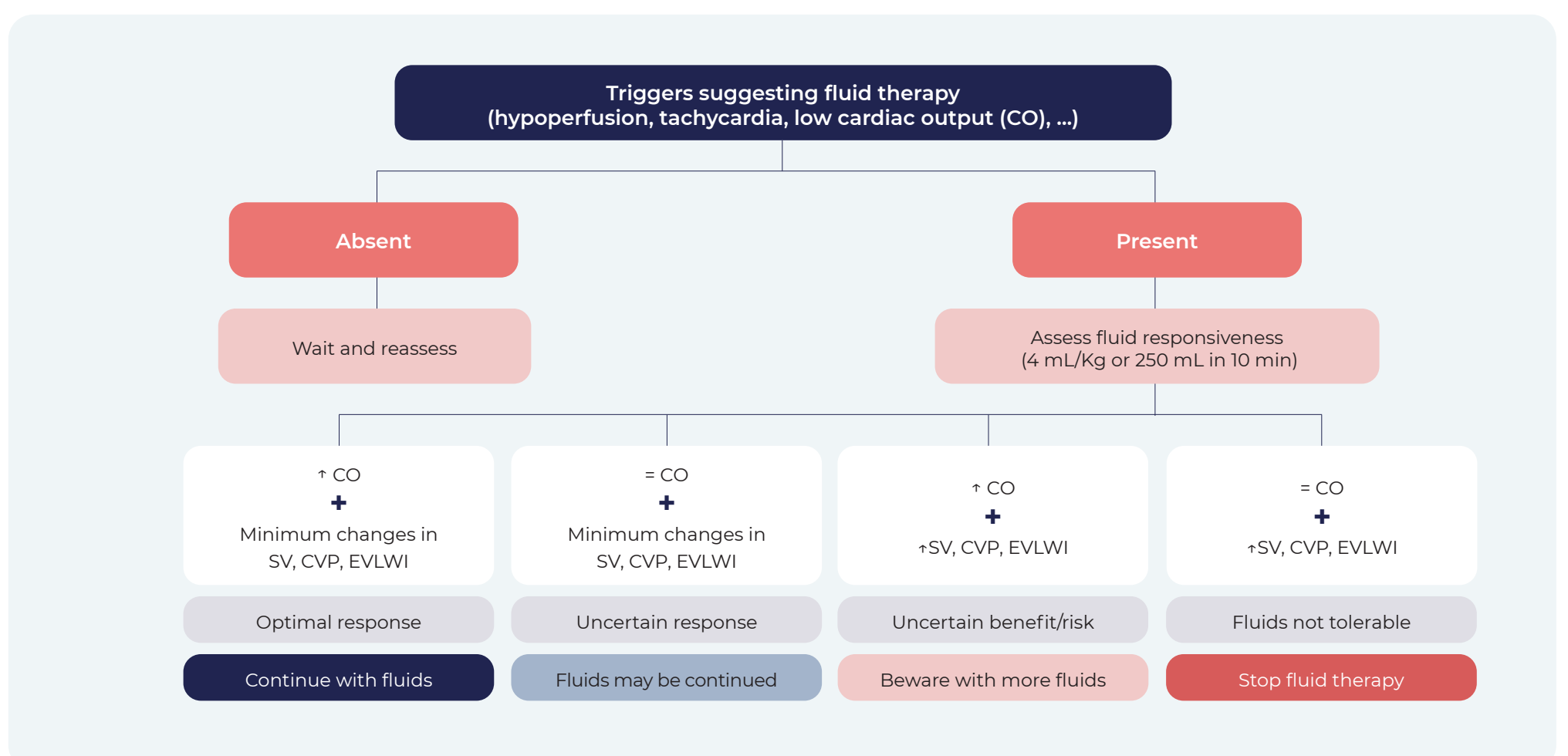
What are currently the tools available to know whether a patient will respond to fluid therapy?⁴

- 1. Patient in spontaneous ventilation:** Respiratory variations >50% in the diameter of the inferior vena cava.
- 2. Intubated patient with mechanical ventilation:** Respiratory variations >21% in the diameter of superior vena cava, presenting a triangular morphology, or respiratory variations >8% in the diameter of inferior vena cava inferior, or respiratory variations > 8% in the aortic flow.
- 3.** The test that has provided the most evidence so far in the assessment of the response to preload is the **lower extremity passive elevation test**, which would amount to an autotransfusion of about 300 mL of blood. It must be applied as follows², and cardiac output should be monitored (CO), not blood pressure.



The dynamic evaluation of the response to fluids should be part of the routine clinical assessment, since it has been proven to decrease mortality, ICU stays, and the duration of mechanical ventilation^{3,4}.

Example of **fluid therapy management** according to Backer et al⁴ adapted:



SV: Systolic Volume; CVP: Central Venous Pressure; EVLWI: Index extravascular lung water



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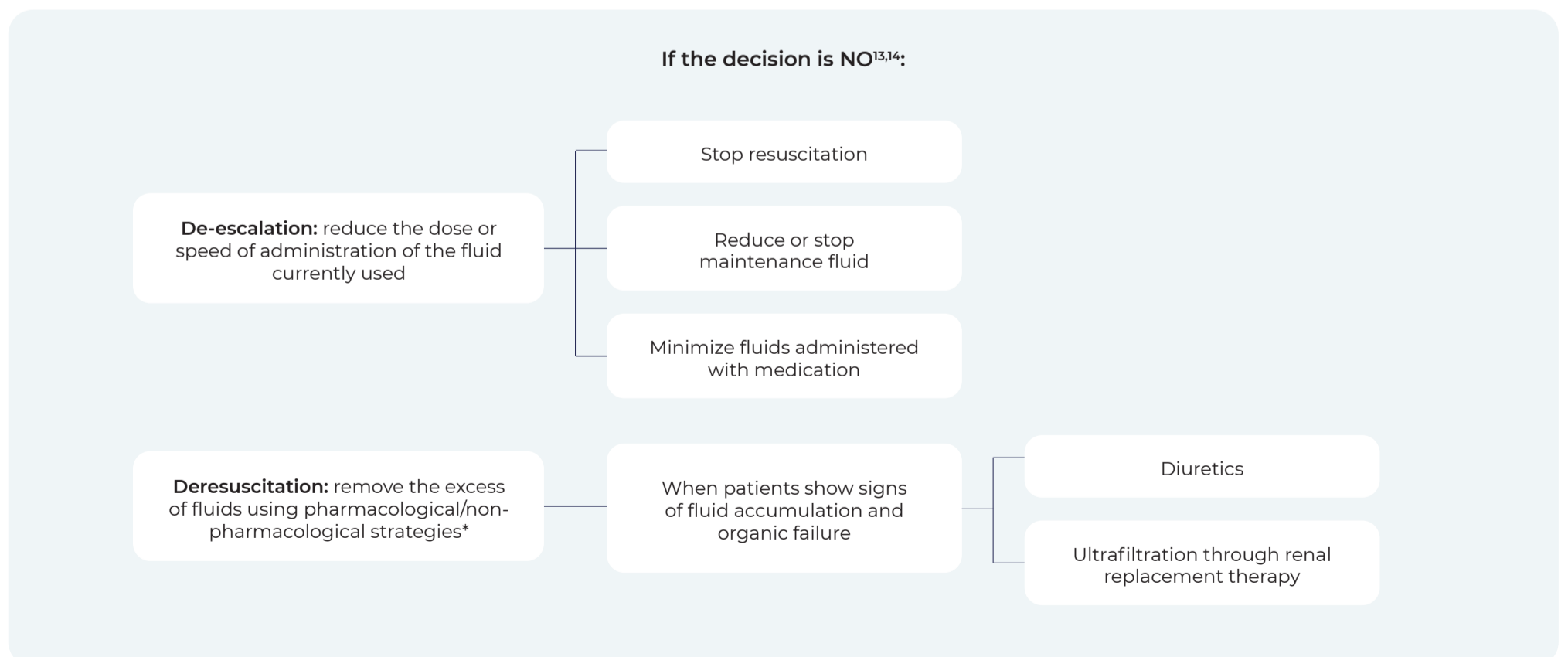
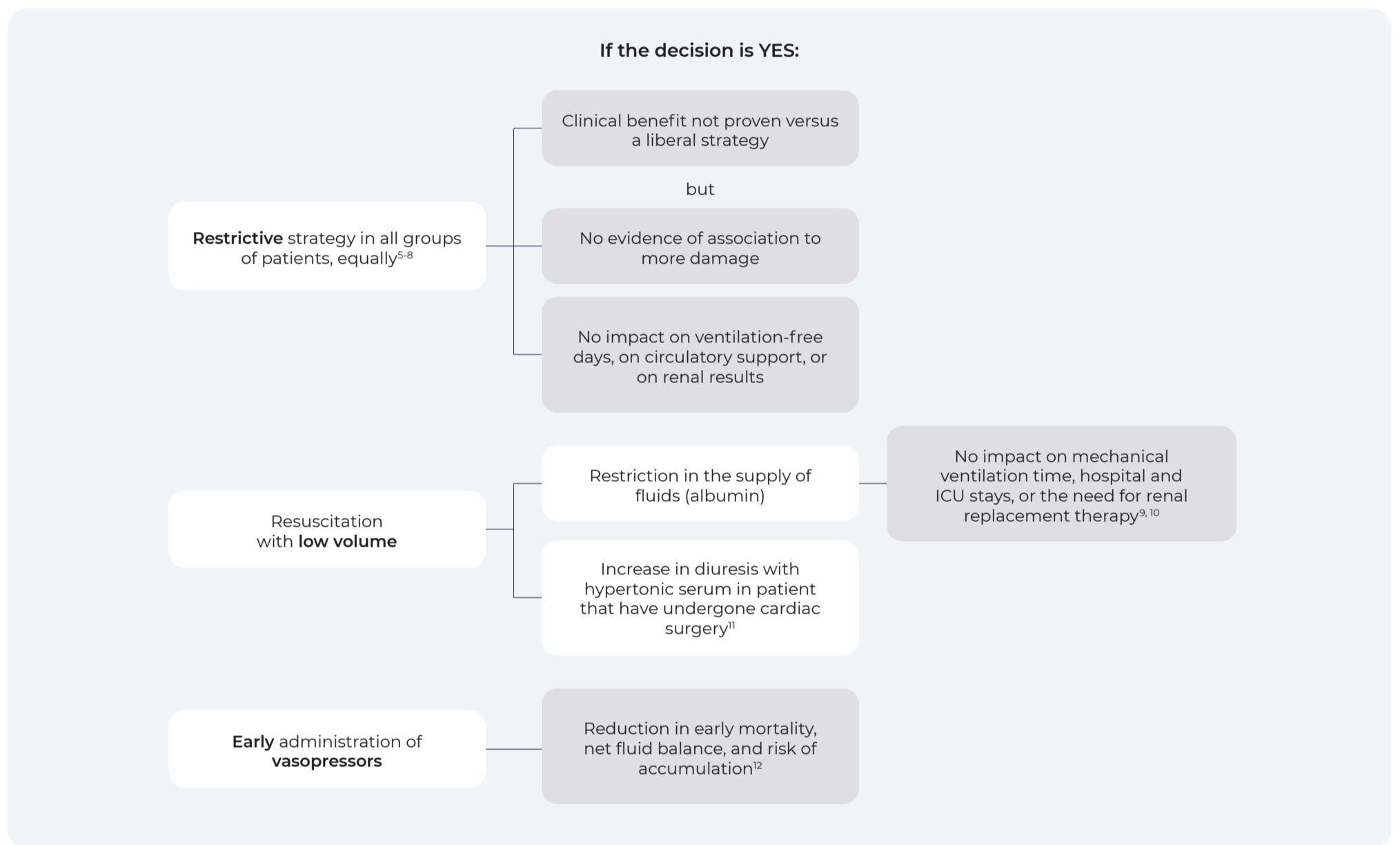
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2. IS LESS MORE? DISCUSSION OF THE RECENT EVIDENCE

Carmen Pfortmüller, Switzerland

The decision to administer fluids should be **personalized** for each patient.



*Further randomized clinical trials are required because the evidence is low

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3. HOW BIG DATA CAN HELP GUIDING FLUID STEWARDSHIP

Manu Malbrain, Belgium

Fluid optimization can be defined as a series of coordinated interventions applied for the purpose of selecting the optimal fluid, dose, and duration to obtain the best clinical results, preventing adverse effects and cutting down costs.¹⁶

Fluid optimization programs result in^{17,18}:

- Reduction in the daily consumption of fluids
- Reduction in the use of saline solution 0.9%
- Increase in the use of balance crystalloids

EDHEN Consortium is a European initiative promoted by universities, organizations, private businesses, and other stakeholders with the following goal:

Obtaining a database with 100,000.000 records or European patients, aimed at extracting and publishing interesting observational data.

How?

By means of the Observational Medical Outcomes Partnership (OMOP).

Why?

- The average score obtained in an international survey about the knowledge on fluid therapy and anesthesiology, intensive medicine, and surgery, did not attain 50 %¹⁵.
- It allows for a comparison between different centers to check whether national standards are met: **< 4 L/patient admitted and < 0.4 L/day in hospital¹⁷.**
- It allows monitoring and comparing key indicators: resuscitation, maintenance, *fluid creep*, use of colloids.

The future lies in predictive models obtained from clinical practice real data (big data) treated by biomedicine and artificial intelligence

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