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## Advance in perioperative fluid therapy: From fixed volume to individual approach, from individual practices to decision-support and closed loop systems

**Audrius Andrijauskas**  
Vilnius University, Lithuania

Outcomes after major surgery are highly dependent on perioperative patient optimization. Maintaining appropriate blood pressure is very important. Fluid bolus is conventionally for treatment of hypotension. However, brisk administration of crystalloids may lead to edema and worsen outcomes. Surprisingly, despite lower volume requirement, administration of colloids may show no clinical benefit compared to maintaining zero fluid balance. Even more, colloids may cause edema by facilitating interstitial accumulation of co-administrated crystalloids. That may explain why the goal directed therapy (GDT) guided by hemodynamic parameters is sometimes related to worse outcomes. Since benefits of GDT remains controversial, the historic debate over liberal vs. restrictive strategy continues. However, even consensus fluid volume attributable to these strategies is missing. Thus, research is currently focusing on individual and surgery specific approaches. A brand new trend follows an objective to noninvasively determine a threshold when the necessary fluid accumulation turns into edema. The mini Volume Loading Test (mVLT) was proposed for that purpose. Preliminary validation data are available from studies in healthy volunteers and major orthopedic surgery patients. Since GDT and mVLT fluid protocols are similar, we postulate that infusion should follow hemodynamic targets until signs of imminent edema are detected. Other measures should be applied for hemodynamic endpoints thereafter. Such clinical protocols are labour-consuming and require simultaneous evaluation of numerous parameters. Thus, we proposed a decision-support system and applied it in a prototype semi-closed loop infusion system. Preliminary data are available from the RCT investigating its safety and efficacy. Can we trust robotics? Shall we?

### Biography

Audrius Andrijauskas has completed PhD at the age of 46 from Vilnius University Faculty of Medicine, Lithuania. He is Associate Professor of anesthesiology and intensive care. In last 5 years, he has published 13 papers in peer-reviewed journals, also delivered 20 oral presentations during international scientific events including 32<sup>nd</sup> SSAI Congress (Finland, 2013), 3<sup>rd</sup> World Congress of TIVA-TCI (Singapore, 2011), International Conference on Drug Discovery and Therapy (UAE, 2012), Baltic Transfusion Practice Conferences (1<sup>st</sup>-5<sup>th</sup>), International Baltic Congresses of Anesthesiology and Intensive Care (2<sup>nd</sup>-6<sup>th</sup>). He is an inventor on US Patent 7,788,045\_B2, non-provisional US patent application 2011/057,362 and International application US/EU61/692,904.

[audrius.andrijauskas@mf.vu.lt](mailto:audrius.andrijauskas@mf.vu.lt)