

Hemodynamic Optimization through Perioperative Goal-Directed Therapy 14 Meta-Analyses Confirm Benefit

References	Reduction In	Average odd or risk ratios (confidence interval)	Number of studies
Arulkumaran N, Corredor C, Hamilton MA, et al. Cardiac complications associated with goal-directed therapy in high-risk surgical patients: a meta-analysis. <i>British Journal of Anaesthesia</i> 2014 Apr;112(4):648-59.	Cardiovascular complications	0.54 (CI: 0.38-0.76)	22
	Arrhythmias	0.54 (CI: 0.35-0.85)	
Grocott MP, Dushianthan A, Hamilton MA, et al. Perioperative increase in global blood flow to explicit defined goals and outcomes after surgery: a Cochrane systematic review. <i>British Journal of Anaesthesia</i> 2013;111(4):535-548.	Acute kidney injury	0.71 (0.57-0.90)	31
	Surgical site infection	0.65 (0.50-0.84)	
	Respiratory failure	0.51 (0.28-0.93)	
	Total morbidity rate	0.68 (0.58-0.80)	
Aya HD, Cecconi M, Hamilton M, et al. Goal-directed therapy in cardiac surgery: a systematic review and meta-analysis. <i>British Journal of Anaesthesia</i> , 2013 Apr;110(4):510-7.	Postoperative complications	0.33 (CI: 0.15-0.73)	5
	Hospital length of stay	-2.44 (CI: -4.03 to -0.84)	
Cecconi M, Corredor C, Arulkumaran N, et al. Clinical review: Goal-directed therapy - what is the evidence in surgical patients? The effect on different risk groups. <i>Critical Care Medicine</i> 2013, 17:209.	Complications	0.45 (CI: 0.34-0.60)	32
Corcoran T, Rhodes JE, Clarke S, et al. Perioperative Fluid Management Strategies in Major Surgery: A Stratified Meta-Analysis. <i>Anesthesia - Analgesia</i> 2012; 114(3): 640-651.	Acute kidney injury	0.67 (0.46-0.98)	23
	Pneumonia	0.74 (0.57-0.96)	
Dalfino L, Giglio MT, Puntillo F, Marucci M, Brienza N. Haemodynamic goal-directed therapy and postoperative infections: earlier is better. A systematic review and meta-analysis. <i>Critical Care Medicine</i> 2011; 15(3): R154.	Surgical site infection	0.58 (0.46-0.74)	26
	Urinary tract infection	0.44 (0.22-0.88)	
	Pneumonia	0.71 (0.55-0.92)	
Hamilton MA, Cecconi M, Rhodes A. A systematic review and meta-analysis on the use of preemptive hemodynamic intervention to improve postoperative outcomes in moderate and high risk surgical patients. <i>Anesthesia - Analgesia</i> 2011; 112: 1392-402.	Total morbidity rate	0.44 (0.35-0.55)	29
Gurgel ST, do Nascimento Jr. P. Maintaining Tissue Perfusion in High-Risk Surgical Patients: A Systematic Review of Randomized Clinical Trials. 2011 <i>International Anesthesia Research Society</i> . DOI: 10.1213/ANE.0b013e3182055384.	Mortality	0.67 (0.55-0.82)	32
	Organ dysfunction	0.62 (0.55-0.70)	
Srinivasa S, Taylor MH, Sammour T, et al. Oesophageal Doppler-guided fluid administration in colorectal surgery: critical appraisal of published clinical trials. <i>Acta Anaesthesiologica Scandinavica</i> 2011; 55(1): 4-13.	Tissue hypoxia	NA	5
Brienza N, Giglio MT, Marucci M, et al. Does perioperative hemodynamic optimization protect renal function in surgical patients? A meta-analytic study. <i>Critical Care Medicine</i> 2009; 37: 2079-90.	Acute kidney injury	0.64 (0.50-0.83)	20
Giglio MT, Marucci M, Testini M, et al. Goal-directed haemodynamic therapy and gastrointestinal complications in major surgery: a meta-analysis of randomized controlled trials. <i>British Journal of Anaesthesia</i> ; 2009;103(5):637-646.	Minor gastrointestinal complication	0.29 (0.17-0.50)	16
	Major gastrointestinal complication	0.42 (0.27-0.65)	
Phan T, Ismail H, Heriot AG, et al. Improving Perioperative Outcomes: Fluid Optimization with the Esophageal Doppler Monitor, a Metaanalysis and Review. <i>Journal of the American College of Surgeons</i> , 2008 Dec;207(6):935-41.	Length of stay	-2.34 (CI: -2.91 to -1.77)	9
	Postoperative morbidity	0.37 (CI: 0.27-0.50)	
Bundgaard-Nielsen M, Holte K, Secher NH, et al. Monitoring of peri-operative fluid administration by individualized goal-directed therapy. <i>Acta Anaesthesiologica Scandinavica</i> 2007 Mar;51(3):331-40.	Hospital length of stay	NA	9
	Post-op nausea & vomiting		
	Total morbidity rate		
Poeze M, Willem M Greve J, Ramsay G. Meta-analysis of hemodynamic optimization: relationship to methodological quality. <i>Critical Care</i> 2005, 9:R771-R779.	Mortality rate	0.61 (0.46-0.81)	30

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