

LETTER

The burden of high-risk surgery and the potential benefit of goal-directed strategies

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See related research by Cannesson *et al.*, <http://ccforum.com/content/15/4/R197>

The survey by Cannesson and colleagues [1] in the previous issue of *Critical Care* shows that only around 16% of anesthetists (5.4% of 210 US respondents and 30.4% of 158 European respondents) use a specific treatment protocol (that is, follow a goal-directed strategy) for the peri-operative hemodynamic management of patients undergoing high-risk surgery. In 2008, Weiser and colleagues [2] estimated the global volume of surgery to be 234.2 million procedures a year. According to Pearse and colleagues [3], high-risk surgical procedures represent around 12.5% of this total. A meta-analysis of the 29 randomized controlled trials investigating the value of peri-operative goal-directed strategies reported an average mortality rate of 9.4% in control groups and a significantly reduced mortality rate of 5.9% when a goal-directed strategy was adopted [4]. When putting all the pieces of this puzzle together, one can estimate that around 860,000 lives could potentially be saved every year (the equivalent of one life every 37 seconds) if such strategies became the standard of care around the world (Table 1).

In addition, millions of post-operative complications could be avoided. Indeed, the meta-analysis by Hamilton and colleagues [4] suggests that the post-operative complication rate could be reduced from 29.8% to 18.0% with goal-directed strategies. Given the potential volume of complications after high-risk surgery (Table 1), the direct costs of treating these complications as well as the indirect costs related to prolonged hospital length of stay

are difficult to quantify precisely but without question are astronomically high. It may be time for health-care systems and governments to consider peri-operative goal-directed strategies as part of quality improvement programs and as national priorities.

Competing interests

The author is a vice president of global medical strategy at Edwards Lifesciences (Irvine, CA, USA). The statements in this letter do not support the use of a specific treatment protocol or of a specific medical device for peri-operative goal-directed strategies.

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References

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Table 1. Estimates of the potential worldwide benefit of peri-operative goal-directed strategies

	Yearly estimation	Reference
All surgical procedures	234,200,000	Weiser <i>et al.</i> [2]
High-risk surgical procedures (12.5%)	29,275,000	Pearse <i>et al.</i> [3]
High-risk procedures without GDS (84%)	24,591,000	Cannesson <i>et al.</i> [1]
Deaths without GDS (9.4%)	2,311,554	Hamilton <i>et al.</i> [4]
Deaths if GDS were to be adopted (5.9%)	1,450,869	Hamilton <i>et al.</i> [4]
Lives potentially saved if GDS were to be adopted	860,685	-
Complications without GDS (29.8%)	7,328,118	Hamilton <i>et al.</i> [4]
Complications if GDS were to be adopted (18.0%)	4,426,380	Hamilton <i>et al.</i> [4]
Complications potentially avoided if GDS were to be adopted	2,901,738	-

GDS, goal-directed strategies.