

# Can the Anesthesiologist Make a Difference to Important Postoperative Outcomes?

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During the last decades, the risks associated with anesthetic care have been substantially reduced; it is now estimated to be 1/100,000 cases. While anesthesia services are central to acute healthcare services, anesthesia-specific risks cannot nor should not be isolated from interventional risks. Both surgery and anesthesia contribute to patient harm and are a shared responsibility.

Slogoff and Keats demonstrated the link between individual anesthesia provider and patients' outcomes in their seminal 1985 article. This study examined the association between myocardial ischemia and myocardial infarction during CABG surgery. Specifically, rates of tachycardia, ischemia, and infarction were significantly higher among patients managed by one specific anesthesiologist, infamously designated as anesthesiologist 7. Anesthesiologists acknowledge, amongst themselves, some are considered more skilled and adept than others. These are the same individuals typically are asked to provide anesthetic care to a loved one undergoing major surgery, assist in difficult technical procedures, or advise during emergencies. It was therefore a little surprising that Glance and colleagues created such controversy by suggesting that patients managed by high-performance anesthesiologists experienced lower postoperative complications or death than patients managed by low-performance anesthesiologists. After much debate this article was withdrawn citing due analytic errors. Importantly, it was withdrawn because the variability between anesthesia providers that they demonstrated did not achieve statistical significance on re-analysis. But variability exists and we are charged with reducing this spectrum.

Complications increase mortality. EuSOS documented a surgical mortality of 4% at 90 days with striking variability between the 28 participating countries. Large national US databases identify increasing trends of major in-hospital complications, with adverse surgical events representing over 40 % of these events. Most events are thought to be preventable. Hospital-acquired infections represented 47% of the surgical adverse events. Postoperative pneumonia, catheter-associated urinary tract infections, ventilator-associated pneumonia, bloodstream infections and surgical site infection are thought to be increasing. Perioperative adverse events contribute to 19 –52 % of unplanned ICU admissions. Effective strategies to reduce SSI include timely administration of the correct prophylactic antibiotic, maintenance of perioperative normothermia, appropriate transfusion strategies, hand hygiene, as well as bundles to prevent central venous access infections. However, there is little evidence that these strategies have been employed effectively. These patients care bundles need to be assessed as carefully as any other healthcare intervention regarding their effectiveness, potential direct and indirect undesired effects and cost-effectiveness.

Pulmonary complications appear to be increasing. Respiratory Risk indices have been proposed but have not been widely employed since there is a perception that there are no effective risk reduction agents. Residual Neuromuscular Paralysis occurs in about 30% of patients, may be clinically silent and has been associated with postoperative pulmonary complications. The detrimental effects of neuromuscular blocking agents were described more than 60 years ago. Anesthesiologists however, appear to be unaware of these potential adverse effects since the incidence is basically unchanged in the last 30 years. We submit that many of these complications could be easily prevented using a perioperative care bundle. At risk patients may benefit from preoperative chlorhexidine mouthwash. The use of an appropriate neuromuscular blocking agent, careful neuromuscular monitoring, and judicious use of reversal agents should be employed in all cases. Post-operative surveillance for residual effects in PACU as well as judicious adverse events reporting is required to fully appreciate the magnitude of this problem.

The findings of Surgical Safety Checklist elicited a plethora of individual studies and systematic reviews, which have raised concerns about the validity of the original findings. However, with the publication last year of a stepped wedge cluster randomized controlled trial, which has reproduced the findings of the original Checklist study, there are now 2 very high quality studies, that shows irrefutably, perioperative checklists are safe and efficient patient safety tools. Surgical checklists apparently improve surgical mortality and morbidity by facilitating teamwork, communication, and importantly compliance with safety measures.

Adverse events in the perioperative period continue to be frequent but largely preventable. Strategies to improve patient safety should target administrative, nursing, medical, (surgical, medical, anesthesia) and technical support services (lab, respiratory technology, blood bank). Team training, postoperative surveillance strategies, mandatory error reporting, root cause analysis and feedback are imperative. Important practical targets include perioperative infections, and respiratory management and cardio-vascular events. Future research should provide more high-quality evidence about the effectiveness of patient safety practices and surveillance to provide deeper insights into common patterns of preventable postoperative events.

## Suggested reading

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13. Haugen AS, Softeland E, Almeland SK, et al. Effect of the World Health Organization checklist on patient outcomes: a stepped wedge cluster randomized controlled trial. *Ann Surg* 2014; [Epub ahead of print].