

Seamless Anesthesia Care

The Handover Process

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IN this issue of the Journal, Saager *et al.*¹ report on a single-institution, retrospective study of care transitions (“handovers”) during intraoperative anesthesia care. Using propensity matching to control for the effects of patient variables, surgical complexity, time of day, and surgical duration, they found a significant incremental increase in the risk for an adverse postoperative outcome (mortality or major morbidity) associated with each care transition. This amounted to a 7% increase in risk for each attending anesthesia handover and an additional 7% increase for each handover among supervised providers (residents and nurse anesthetists). Publication of this finding is likely to increase the pressure on anesthesia practices to limit the number of handovers per case, potentially enforced by reduction in payment. Before dispatching the baby with the bath water, however, it would be well to contemplate the findings and implications of this study in greater detail.

The first, and most obvious, observation is that these data come from a tertiary care, academic medical center in which student, resident, and fellow trainees are expected to participate in most cases. The Cleveland Clinic case mix includes longer operations on sicker patients than a typical community practice, and even comparable cases are likely to take longer because of the commitment to teaching. The mean case time in this study was 3 h as compared with 90 min for all surgical cases in the National Anesthesia Clinical Outcomes Registry.* Longer cases are clearly more likely to include handovers. To the extent that case duration is related



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to patient or procedural complexity, longer cases are more apt to be associated with adverse outcomes. Cases starting late in the day or night involve higher-risk patients and are more likely to include handovers. The authors addressed these potential confounders using the best available statistical tools, including multivariable analysis and a carefully constructed propensity comparison, but the concern remains (as for any retrospective study) that the association found between handovers and patient outcome is the result of unmeasured confounding variables, rather than cause and effect.

The outcomes themselves are worthy of comment. To achieve sufficient statistical power for analysis, the authors grouped all serious postoperative events together. In a diligent university hospital such as theirs, it is likely that most such events are captured and coded, which should encourage us to believe these data. However, there was no weighting for the severity of events and no counting of total events; a patient with a transient wound seroma requiring local drainage at the bedside would exert just as much influence as a patient who succumbed to multiple organ system failure with the presence of multiple postoperative complications.

Which raises the crucial argument for cautious interpretation of this study. Although the idea that increased handovers increases patient risk has strong face validity, the magnitude of this effect is relatively small and must be weighed against the consequences of NOT having a handover. These include the obvious need for providers to stay longer than their assigned duty hours, something that itself will decrease vigilance and

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* National Anesthesia Clinical Outcomes Registry Participant User File. Available at: http://www.aqihq.org/puf_application.aspx. Accessed February 3, 2014.

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increase the risk for errors.² Advocates for the 80-h workweek have made a strong and evidence-based case for the appropriate relief of residents (and indeed all physicians) when duty hours become excessive. One potential solution would be to not assign at-risk personnel to cases that might run late, but this has obvious implications for both the cost and efficiency of staffing and the accumulation of experience by trainees. Another solution might be to not do the case at all, or to delay it until daylight hours. Although this is doubtless reasonable in some cases, in others it might create a barrier to timely care that directly affects patients.

The reasonable and balanced solution, of course, is to learn how to manage handovers better. Handovers are not unique to health care, and there is a world of experience to draw from in improving the process. Nuclear power plants and air-traffic control towers must periodically handover complex real-time responsibilities from one operator to another, in environments where bobbles will have dire consequences. Navy watch-standers draw on centuries of history to keep the ship off the rocks when changing duty crews. In these activities, a culture has evolved in which the handover participants recognize the risks of the process and engage in a structured and systematic activity to insure the accurate transmission of relevant data. We should do no less in the operating room. Anesthesia residents should be trained in a

team-oriented, checklist-driven handover process from their first day in the operating room, guided by the commitment of their grizzled seniors in a team-based culture that emphasizes the best possible outcome for the patient.

Vigilance remains the watchword of anesthesiology. Saager *et al.* have spotlighted an area where we can learn to do better. Our goal should be a future state in which we can proudly cite evidence showing our ability to manage handovers without imperiling patient care.

Competing Interests

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