

Substrate for Healthcare Reform

Anesthesia's Low-Lying Fruit

ANESTHESIOLOGISTS in the United States have had a fitful, if not hate and now love, relationship with sedation. In this issue of ANESTHESIOLOGY, Alharbi *et al.*[1] provide insights on our current relationship. However, to appreciate its possible implications, we must survey how our relationship with sedation developed.

Decades ago, struggling with a much less robust workforce, we somewhat begrudgingly made space among surgical cases for occasional requests for help with a difficult sedation, especially in patients with worrisome comorbidity. When healthcare insurers began to question our claims where no "anesthesia" had been given, we developed in 1986 a new billing category, Monitored Anesthesia Care, a distinct physician service comprised of monitoring the patient's vital signs and administering appropriate drugs, including those maintaining a desired level of (un)consciousness during a diagnostic or therapeutic procedure.‡§ However, in the 1980s our role in sedation remained muted as sedation by nonanesthesia personnel grew and spread to more sites within and soon beyond the hospital.

Seeds of change were sown with the introduction of midazolam in the mid-1980s. Compared with diazepam, it enjoyed a far steeper dose-response curve, much greater potency, and faster onset. Unfortunately, these advantages resulted in more than 80 early deaths when used by proceduralists accustomed to rapid bolus administration in darkened rooms with little or no patient monitoring.[2] Those deaths and a growing awareness that sedation by nonanesthesia personnel, particularly in combination with narcotic drugs, posed substantial morbidity and mortality risks,[2,3] prompted the Joint Commission on Accreditation of Healthcare Organizations in the early 1990s to promulgate explicit sedation standards. Recognizing that no catastrophes had involved anesthesia personnel and that care throughout an institution must hew to the same high level (comparable care mandate), Joint Commission on Accreditation of Healthcare Organizations sedation standards required processes inherent in Monitored Anesthesia Care (*e.g.*, presedation assessment, intraprocedure patient monitoring, discharge criteria), as well as monitoring and evaluation of sedation practices throughout the hospital by the anesthesia department. We had the expertise, but we lacked sufficient staff to be more than advisory to our colleagues, creating an increasingly awkward situation as the growth in number and diversity of sedation procedures accelerated.

Our relationship with sedation became more challenging in the past decade, as we began using the anesthesia-induction agent propofol. Its rapid onset, ease in maintaining the required depth of sedation, and rapid clearance made it ideal for short outpatient procedures, particularly gastrointestinal endoscopies; yet, its narrow therapeutic index and lack of an antidote dissuaded most (but not all) nonanesthesia personnel from using it. Gastroenterologic endoscopists became solicitous of our presence because our expertise, coupled with propofol's rapid recovery, made their settings more efficient, and enabled greater patient throughput as their reimbursement declined. In yet other sites, nurses have been trained to use propofol or nurse anesthetists have been hired. These varied arrangements to support sedation now beg the question, "What is the appropriate role for anesthesiologists in sedation?"

While providing nowhere near an answer, Alharbi *et al.*[1] offer insights from an exploration of nonpayer factors associated with use of anesthesiologists in adult colonoscopy. Eliminating confounding influences of regional insurers prevalent in the United States, they used medical claims data from Ontario, a Canadian province where propofol is administered only by anesthesiologists (or rural family practitioners with formal anesthesia training who bill as anesthesiologists), there are no nurse anesthetists, and the single-payer healthcare system pays all claims without restrictions. The number of colonoscopies performed almost quadrupled to 264,304 during the study period, 1993 to 2005, with the proportion involving anesthesiologists increasing from 8.4 to 19.1%, probably largely reflecting the rapid diffusion of propofol into practice.

Using fiscal-year 2005 data, they modeled the involvement of an anesthesiologist with a hierarchical logistic regression that recognized the nesting in the data set: patients were treated by specific endoscopists who worked in specific facilities. Anesthesiologist involvement was not associated with patient age, gender, income, or comorbidity (using a validated ambulatory-care

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‡ Cohen NA, McMichael JP. Definitions of Monitored Anesthesia Care. *ASA Newsletter* 2004; 68. Available at: http://www.asahq.org/Newsletters/2004/06_04/whatsNew06_04.html; accessed July 3, 2009.

§ Distinguishing Monitored Anesthesia Care ("MAC") from Moderate Sedation/Analgesia (Conscious Sedation). Approved by the ASA House of Delegates on October 27, 2004 and updated on September 2, 2008. Available at: http://www.asahq.org/publicationsAndServices/standards/20.pdf; accessed July 3, 2009.

comorbidity metric), but it was almost twice as likely if the endoscopist was a surgeon rather than a gastroenterologist. The "facility" was the strongest and most varied determinant of anesthesiologist presence during colonoscopy, with the volume of all procedures (not just colonoscopy) performed in the given institution used as a proxy for size and resource consumption. Compared to low-volume hospitals, anesthesiologist involvement was about one-third as likely in medium-volume hospitals and nonhospital settings, and one-fifth as likely in high-volume hospitals. So rarely were anesthesiologists involved in colonoscopy in academic hospitals (<1%) that they were excluded from the regression analysis!

Before considering possible United States implications of these Canadian results, we must recognize a salient difference between the healthcare systems: the way rationing occurs. Whereas demand for healthcare is infinite, resources are limited, so rationing is universal in healthcare systems. In the United States, *de facto* rationing is reflected by persons not having employer-based insurance or sufficient disposable income to cover the deductible portion of a medical payment. In Ontario, secondary rationing occurs when the provincial health system decides to moderate healthcare cost escalation by spending less for resources. Fewer services can be provided, and, hence, those infamous waiting lists form. At the time of this study, an anesthesiologist shortage had developed in Ontario, limiting availability of anesthesia services,[4,5] which (rather than some mysterious "cultural" or unknown institutional factor suggested by the authors) may explain the observed graded likelihood of an anesthesiologist participating in sedation. Anesthesiologists' first priority is always the operating suite. Hence, they likely had time for sedation cases in the low-volume hospitals, but as facility volumes (mostly surgical) increased, anesthesiologists may well have been increasingly preoccupied with surgery. In the extreme example, anesthesiologists in academic hospitals were presumably occupied by patients with much comorbidity having more complex procedures. Preoccupied with surgery, anesthesiologists participating in sedation were more likely to work with a surgeon, their colleague in the operating room, than a gastroenterologist.

Whether any *specific* findings in the Ontario study are generalizable to the United States is uncertain. The study documented marked variation in anesthesiologist participation in colonoscopy sedation across practice settings; small, low-response surveys also suggest United States practice variation among sites.[6,7] The Ontario variation seems related to secondary rationing, whereas United States variation remains unexplored but likely related to regional insurer restrictions (hypothesis prompting this study). Alharbi *et al.*[1] also suggest that the low likelihood of finding anesthesiologists involved in sedation in larger hospitals is evidence that facilities do not believe such practice enhances efficiency; however, we believe that a more plausible explanation is that anesthesiologists were preoccupied with surgery. Most troubling is the finding that anesthesiologist involvement was not associated with patient acuity. If this phenomenon also prevails in the United States (as anecdotes suggest), then arguably anesthesiologist involvement (with propofol) in colonoscopy sedation confers no major patient benefit over sedation provided by other personnel (using older, less preferred drugs). Note that this consideration is independent of drug choice and is also unrelated to the current United States controversy relating to nurses administering propofol.[8]

Anesthesiologist involvement in colonoscopy sedation in the absence of medical indication (*e.g.*, severe comorbidity) may be one vignette among myriad throughout United States healthcare in which low-benefit services and procedures result in disproportionate expenditures.‖ In total, the prevalence of such low value helps to explain how the United States can spend more per capita than other developed countries, yet have clinical outcomes no better (or worse) than countries spending two-thirds as much. Low-value practices are ideal substrate for healthcare reform.[9,10]

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