

siology resident). This study does not capture whether the anesthesiologist responded to pages about changes in the patient's condition or even face-to-face discussions between the anesthesiologist and anesthetist during periodic rounds. Often, initial therapies of physiologic changes can be directed immediately through this type of ongoing communication. Because of this deficiency in the retrospective data set, the statistical model identifies so-called "lapses" where none likely occurred.

In addition, we were dismayed that the peer-review process did not identify and correct some major terminology errors and choices in the publication. In the United States, "medical supervision" of anesthesia care by an anesthesiologist differs from "medical direction" of anesthesia care, and the U.S. government defines these differences in federal regulations. The requirements for medical supervision are much less than that for medical direction. Only medical direction requires the anesthesiologist participate in the "most demanding portions" of the anesthesia. Hence using "supervisory ratio" rather than "medical direction ratio" creates needless confusion in discussing and interpreting the results. In addition, as noted above, the medical direction requirements require participation in the "most demanding" parts of care including induction and emergence. The phrase "critical portion" is part of the regulations for teaching residents, but is not applicable to medical direction cases. This further reinforces the fact that the authors created their own definitions for this study. This misuse of these terms creates confusion among readers and the public and is being misinterpreted by some who either do not or choose not to recognize the limitations of this study.\*

Finally, the word "lapses" is misleading since really what the authors found were "overlaps" based on their self-defined critical portions. They did not demonstrate any lapses in care by the anesthesiologist or the team. They did not study what actually happened; rather they used their broad definitions to determine if potential overlaps would occur. In reality, sometimes a case may be delayed until the anesthesiologist is available to provide safe and quality care; anesthesiologists work as a team both with anesthesia providers in the specific OR but also among themselves to make sure each patient receiving medically directed anesthesia has an anesthesiologist personally participate in all demanding portions of the patient's care.

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## Reference

1. Epstein RH, Dexter F: Influence of supervision ratios by anesthesiologists on first-case starts and critical portions of anesthetics. *ANESTHESIOLOGY* 2012; 116:683-91

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\* <http://www.nurse-anesthesia.org/content.php/388-Journal-Anesthesiology-C>. Accessed April 10, 2012.

## Flawed Model Misrepresents the Impact of Anesthesiologists to Patient Safety in the Real World

*To the Editor:*

On behalf of the American Society of Anesthesiologists (ASA), we are writing to express our concern about the article titled "Influence of Supervision Ratios by Anesthesiologists on First-case Starts and Critical Portions of Anesthetics" by Epstein and Dexter.<sup>1</sup> All current officers of the Administrative Council have reviewed and endorsed the contents of this letter, and the Council is authorized to speak on behalf of the ASA.

It is unfortunate that this study was published in the premier journal of our specialty without proper context, is based on a methodologically suspect mathematical model, and included terminology that was confusing and acted to obfuscate a conclusion relevant to the study hypotheses. The article also contains a statement that is clearly at odds with the highest standard of anesthesia care espoused by ASA and practiced everyday in the United States.

Of paramount concern to us are two issues within the methodology: (1) the definition of "critical portions" of an anesthetic (see table 2 in the article), and (2) a requirement that the anesthesiologist cannot leave the first patient for which he or she induces general anesthesia under medical direction until the patient is "turned over to the surgical team" (mean anesthesia release time was 22.2 min in the study population). These proscriptive definitions and this requirement are not found in Centers for Medicare and Medicaid Services regulations, governing legislation, or any local Medicare Administrative Contractor determinations, and are not consistent with safe anesthesia care. The authors' overly broad definitions of the time periods requiring physician presence are a fundamental flaw in the methodology that create false and overstated "supervision lapses." Of note, the authors acknowledge this concern as "the principal limitations of our study. . ." in the article's Discussion.

We also are concerned with the authors' use of the term "supervision lapses." Unfortunately, the authors have entangled two very different scenarios into their use of this term. We believe that this terminology problem could be construed as derogatory by the public and be improperly assumed by readers to suggest potential regulatory compliance issues. Let's consider two scenarios as examples.

In a first scenario, an alleged "supervision lapse" could occur when the induction of an anesthetic is delayed for a few minutes while waiting for the medically directing anesthesiologist. This could occur from either an inaccurate, poorly designed schedule or an unplanned event in the perioperative preparation of the patient. At most, this delay would result in a possible inconvenience to the surgeon and a decrement in efficiency of perioperative resources. In a second scenario, a "supervision lapse" could occur during a potentially deleterious

physiologic event. This would be a patient safety concern. Disentanglement of these two distinct scenarios is essential, so proper focus can be given to our utmost concern: patient safety.

It was inappropriate to include anecdotal views regarding supervision in this article, especially when they are included without comment and qualification. Specifically, we cite the statement that “several of our colleagues offered feedback that they do not think that it is necessary for the supervising anesthesiologist to be physically present for induction or emergence in straightforward cases with experienced certified registered nurse anesthetists, as long as they are immediately available.” Except in the rarest of cases, hearsay should not be a part of a scientific article, and in this case it clearly does not reflect the standard of care by anesthesiologists in the United States. Such statements have a great potential to be misunderstood and misused by readers.

ASA remains supportive of care administered personally by an anesthesiologist as well as by an anesthesia care team. We particularly support keeping the practice of anesthesia aligned with the highest standard of patient safety, hence the necessity that the anesthesiologist “personally participates in the most demanding procedures in the anesthesia plan, including induction and emergence” and is “available for immediate diagnosis and treatment of emergencies.”\*

Anesthesiologists provide proven value to the quality and safety of perioperative care.<sup>2</sup> Active leadership by anesthesiologists ensures that we are present for critical portions of each case, to both avoid complications and to provide rescue from adverse events when they might occur.

“Medical direction” and “medical supervision” are terms defined in Medicare regulation.\* The authors seem to erroneously interchange the terms “supervision” and “medical direction.” Although on the surface they may seem the same, there are significant differences, both clinically and by federal regulation. The interchangeable use of these terms has the potential to create confusion. Some individuals and groups have already come to the erroneous conclusion that the study demonstrates that anesthesiologists are not fulfilling their medical direction responsibilities.† This conclusion is not supported by the current study.

It should be pointed out that this study employed a mathematical model to evaluate what would happen without staggered starts; however, it did not collect data on what really occurred. Every day in this country, anesthesiologists prioritize which cases to start first, when they may safely leave, and what aspects of care require their presence. Although in some systems staggered starts may not be structurally embedded in the formal operating room “schedule,” they are a reality in practice as anesthesiologists focus on patient safety.

\* CMS Manual System, Pub 100-04 Medicare Claims Processing Transmittal 1324. Available at: <https://www.cms.gov/transmittals/downloads/R1324CP.PDF>. Accessed April 20, 2012.

† Malina DP: AANA President. Nurse Anesthesia. Available at: <http://www.nurse-anesthesia.org/content.php/388-Journal-Anesthesiology-C>. Accessed April 20, 2012.

ASA supports the highest standard in quality of care and patient safety. One model to achieve this standard is an anesthesia care team comprised of members who work together for a common goal, having diverse roles that synergize to provide exceptional patient-centered medical care. We hope the issues brought forth in the article by Epstein and Dexter will engender vigorous discussion, and that our letter will help highlight limitations in the study methodology and make more transparent some of the opaque aspects of the regulatory environment intrinsic to the authors’ investigation.

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1. Epstein RH, Dexter F: Influence of supervision ratios by anesthesiologists on first-case starts and critical portions of anesthetics. *ANESTHESIOLOGY* 2012; 116:683-91
2. Silber JH, Kennedy SK, Even-Shoshan O, Chen W, Koziol LF, Showan AM, Longnecker DE: Anesthesiologist direction and patient outcomes. *ANESTHESIOLOGY* 2000; 93:152-63

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## In Reply:

We appreciate the interest in our work from the officers and committee chairs of the American Society of Anesthesiologists. To lessen the possibility that we have misrepresented or misinterpreted the comments of these authors, in our reply, we quote from their respective letters and identify the specific authors. We provide explanations as to why we think the results and conclusions of our original article are reliable and valid.

1. Cohen *et al.* write, “Every day in this country, anesthesiologists prioritize which cases to start first, when they may safely leave, and what aspects of care require their presence. Although in some systems staggered starts may not be structurally embedded in the formal operating room ‘schedule,’ they are a reality in practice as anesthesiologists focus on patient safety.”

Our research was motivated by the previous report from Paoletti and Marty of France, who performed a simulation study to calculate the percentage of days in which there would be waiting for an anesthesiologist in at least one operating room (OR).<sup>1</sup> Their results were published in the *British Journal of Anaesthesia* in 2007. Cohen *et al.* state that the percentage should be high; Paoletti and Marty’s simulation study found it was high,<sup>1</sup> and so did our data analysis.<sup>2</sup> Thus, the scientifically useful results of our research were principally the time of the day when the percentage risk of waiting was the largest (our second hypothesis) and the parameters most highly affecting those percentage waits.<sup>2</sup>

2. Cohen *et al.* comment that “this study was published . . . based on a methodologically-suspect mathematical model.”