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(Accepted for publication April 26, 2012.)

Author-created Surrogate Time Intervals Misrepresents Actual Times

To the Editor:

We are constantly amazed when the performance of anesthesiologists practicing in the anesthesia care team model (including both private practice and academic settings) is judged by administrators, operating room (OR) managers, and surgeons on "first-case starts." Unfortunately, too many of these nonanesthesiologists use magical thinking and demand that all the ORs start at the same time and without delay. The reality is that in an anesthesia care team model, the anesthesiologist cannot be at two places at once. Therefore, it should be obvious that when starting more than one room first thing in the morning, surgeons and OR teams may have to wait for the anesthesiologist to become available to attend to each patient.

With this understanding of reality, we read Epstein and Dexter's recent publication with great interest.[1] But unfortunately, instead of looking at the first-case starts, the authors chose to also look at other portions of anesthesia care as well. We were dismayed over this methodology because the authors utilized retrospective data that lacked a critical data element necessary to accurately determine anesthesiologist presence. Because their retrospective data from the single center studied did not include the actual time and duration of demanding portions of anesthesia care, the authors had to develop surrogate time interval definitions that would capture the critical portions of anesthesia team care. This deserves emphasis. The authors do not know from the electronic health record data when the actual demanding portions of anesthesia occurred, the duration of those occurrences, and the role the attending anesthesiologist played in managing those events. These surrogate definitions are found in table 2 of their publication.

To illustrate how broad these surrogate time intervals are and how they include not only the critical portion but also many noncritical portions, one only has to look at the first definition: induction of general anesthesia. The authors chose to define this time period as when the patient enters the OR to intubation (or the equivalent) + 3 min. Therefore, they include within their definition of the induction the following events: transportation into the OR, movement of the patient from the stretcher to the bed, placement of the IV (if not done in holding), placement of standard monitors, and waiting for the surgeon to arrive. This overly broad definition creates artificial "conflicts," where none in fact occur. For example, if the anesthesiologist is present in OR A for extubation, and the nonphysician anesthesia provider brings the patient into OR B, then, by the authors' definition of induction, the anesthesiologist is not available for a critical portion and there is a "lapse" identified by the simulation.

One could apply this definition of induction to the surgeon. If the critical portion of the anesthetic begins when the patient arrives in the OR and includes the preoperative briefing (authors' definition), then similarly, a critical portion of surgery should include the time from the patient's arrival into the OR to the briefing. If a surgeon is not present during this period for probably justifiable reasons (*e.g.*, rounding on inpatients, meeting with the family of previous patient, and so on), the surgeon would be found in "lapse" of care by the authors and would contribute to avoidable inefficiencies.

This one example illustrates how using retrospective data and surrogate time intervals will result in exaggeration of so-called lapses. Similar problems exist for all the other definitions in their table 2.

Furthermore, electronic health records do not document the timing, duration, and content of every communication between anesthesiologist and nonphysician anesthesia provider (anesthesiology assistant, nurse anesthetist, or anesthe-

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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(Accepted for publication May 3, 2012.)

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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.[1] 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