Three Wise Men (×2) and the ASA-Physical Status Classification System

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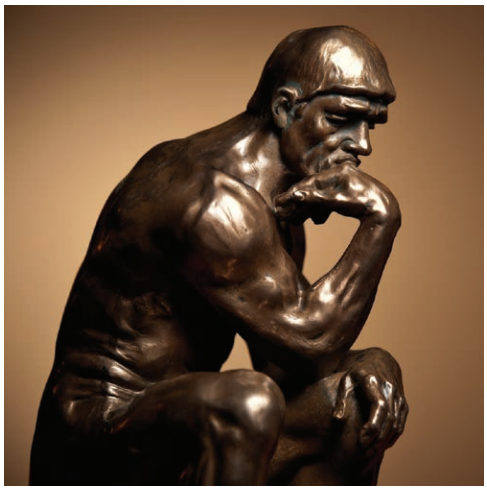
THE American Society of Anesthesiologists (ASA)-Physical Status score is ubiquitous in the literature and the practice of perioperative medicine. It is likely the most commonly applied classification system in medicine and is used worldwide. The ASA-Physical Status is subjective, and anesthesiologists frequently disagree on appropriate assignments such that studies have demonstrated low-to-moderate interrater reliability.[1,2] It is not surprising that nonanesthesia-trained personnel struggle to use it, and the accuracy is often less than 50%.[2,3] The study by Hurwitz *et al.* in this month's issue of Anesthesiology is the first to look at whether the new conditions attached to the classification can improve correct assignments of ASA-Physical Status by nonanesthesia and anesthesia providers.[3] All groups improved when provided examples. Interestingly, anesthesiologists improved the least when using the ASA-Physical Status examples. Why would the people who are most familiar with the classification score lower than nonanesthesia nurses? Are they ignorant of the grading system? Do they interpret the case histories differently? Do they refuse to match patients to a nonevidence-based list, or do they rely on complex decision-making based on intuition and experience honed over years?



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The strongest criticisms of the ASA-Physical Status are its simplicity, subjectivity, and nonspecificity. However, these can be viewed as its strengths. To determine the ASA-Physical Status there is no need for diagnostic tests, and until the most recent revision to index specific diseases. It is simple to remember and intuitive enough to allow an individual to quickly determine a score, and these relatively simple classifications have been shown to predict patient outcomes.[1] When assigning an ASA-Physical Status, providers weigh multiple, often conflicting, criteria implicitly and make decisions based on tacit knowledge and intuition. Tacit knowledge is defined as skills and experiences that people have in their minds but is difficult to articulate because it is typically not codified. The transfer of tacit knowledge, in contrast to explicit knowledge, requires shared understanding and training. Examples of activities using tacit knowledge are driving a car, speaking a language, and practicing medicine. Tacit knowledge has been described as how we know, not what we know. Acquiring tacit knowledge requires experience.

Case 10 in the Hurwitz *et al.* study exemplifies how differing opinions may lead to divergent classifications. This hypothetical patient is an 81-yr-old without a defined exercise capacity; "She says she has no medical problems, but she has not seen a doctor in 20 yr."[3] Per the new guidelines, she is an ASA-Physical Status I because she has no comorbidities, and age does not count. However, age is associated with perioperative adverse events and is a strong predictor of poorer health status. This patient has not seen a physician in 20 yr. We don't know what we don't know. It is not surprising that an experienced clinician may upgrade this patient, especially compared to a 30-yr-old marathoner who regularly visits her gynecologist.

One of the weaknesses of the Hurwitz *et al.* study is how the correct ASA-Physical Status score was determined for their presented cases. The study notes, "The correct ASA-Physical Status for each hypothetical case was previously determined by consensus among the investigators using objective interpretation of the definitions of ASA-Physical Status Classification System and the ASA-approved examples."[3] It is unclear how consensus was reached. A definitive standard for the ASA-Physical Status has not been

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identified, and many of their cases had comorbidities not included in the new classifications.

In the modern practice of anesthesiology, the intended use of the ASA-Physical Status is controversial. Originally, it was created to define the health status of a preoperative patient. Regardless of the original intent, it is now used to predict perioperative risk, especially by hospitals, law firms, accrediting boards, and other healthcare groups. It is not surprising that the ASA-Physical Status predicts risk if we accept that sick patients are more likely to have complications or die compared to robust ones. Studies show that the ASA-Physical Status is associated with mortality, complications, costs, unexpected admissions after ambulatory surgery, and admission to intensive care units postoperatively and correlates with the Charlson comorbidity index, the Revised Cardiac Risk Index, and hospital length of stay.[1] Hurwitz *et al*. suggest that perhaps individual institutions or specialty groups, such as pediatric anesthesiologists, create their own relevant examples. Because the ASA-Physical Status classifications are used far beyond the evaluation of an individual or a single practice (*e.g.*, as a component of risk calculators), varying definitions would confound these tools.[4]

Decades before the concept and actualization of risk prediction utilizing big data and sophisticated statistics, three anesthesiologists derived a simple categorization of preoperative patient status. Drs. Saklad, Rovensteine, and Taylor originally included examples of conditions for each ASA-Physical Status class.[5] However, when the ASA adopted this system in 1962 after modification by Dripps, they decided to not use examples. But the ASA has now changed direction and is providing a few definers. As with the original developers of the ASA-Physical Status, it appears that the latest rendition was created by a triad from the ASA Committee on Economics (Schaumburg, Illinois) and the Section on Professional Practice without using an evidence-based approach and little transparency of how or why the changes were made.[6] Why specific conditions were chosen as examples is not readily apparent, and much of what is there perpetuates vagueness (*e.g.*, social alcohol drinker, moderate reduction in ejection fraction, poorly controlled diabetes or hypertension) and seems arbitrary.

Although Hurwitz *et al*. suggest that the inclusion of ASA-approved ASA-Physical Status examples enhances classifications, additional studies are needed to demonstrate whether this new system is as good a predictor of patient outcomes as the prior one by comparing construct and predictive validity. We need to prove it is as good or better than heuristics.

We should be most concerned about the construct and predictive validity of the ASA-Physical Status. Construct validity is "the degree to which a test measures what it claims, or purports, to be measuring." Construct validity refers to whether the ASA-Physical Status scale is indeed a measure of preoperative physical status or the patient's condition. Predictive validity, on the other hand, compares the measure in question with an outcome assessed at a later time. Predictive validity describes whether the ASA-Physical Status scale predicts patient outcomes. The benefit in assessing a patient's health status preoperatively (beyond gathering statistical data) is to determine if his or her current pathophysiology increases risks of adverse events to allow informed decisions and design of perioperative care.

Considering multiple criteria and applying structure to complex situations explicitly leads to more informed decisions. The intent of the ASA in providing examples within the ASA-Physical Status classification may have been to enhance clarity. Unfortunately, without validation, there may be unintended consequences of attempts to improve a system that has worked for decades. The most recent changes in the ASA-Physical Status classification system do not supplant the need for good medical judgment in both determining the ASA-Physical Status and its ability to predict patient outcomes. Without further studies, we can only hope that the value of the ASA-Physical Status continues.

Competing Interests

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