ANESTHESIOLOGY

The Gathering Storm: The 2023 Rovenstine Lecture*

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ABSTRACT

Anesthesiologists are currently in demand and highly compensated. What appears to be a great success from our perspective is considered problematic from every other healthcare perspective. Consequently, there are powerful healthcare forces seeking to improve anesthesia access and reduce service cost. They will try to impose solutions that may radically change operative anesthesia. The Rovenstine lecture, delivered on World Anesthesia Day 2023, identified substantial challenges our specialty faces and discusses solutions that might be forced on us. It also presented opportunities in perioperative care.

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I'm fascinated by arcs of history. By that I mean the process by which organizations spring into existence, persist for some time, and then flame out. The middle plateau period typically lasts decades for companies and social organizations, centuries for countries, and extends to millennia for some religions. A common feature of historical arcs is that when the end comes, it comes quickly—and that members of the organization rarely recognize the threat, much less take effective action until it is too late. Instead, they are crushed under the weight of history.

Anesthesia's Historical Arc

The founding of anesthesia is generally traced to Ether Day (now World Anesthesia Day), October 16, 1846, about 175 yr ago. Anesthesia was an immediate success. The first anesthetic was given on the Continent later that year, and within a few years, anesthesia spread around the globe. The idea of surgery without anesthesia soon became inconceivable.

Anesthesia as a specialty also developed well, especially after we split off from surgery. The specialty of anesthesia is now widely recognized as an essential part of the healthcare enterprise. Furthermore, anesthesiologists are individually respected for their skills, and during emergencies, physicians from all specialties breathe a sigh of relief when an anesthesiologist shows up—because we actually know what we're doing. We have never been so well positioned within the healthcare constellation. Anesthesiologists are in great demand, and we've never been better compensated.

At times like these, it is worth remembering the words of Nobelist Herbert Stein who, during the 1986 economic bubble, said "If something can't go on forever, then it won't." The trouble is that for the same reasons we see ourselves in clover—that is, in great demand and highly compensated—nearly every other healthcare group sees us as a problem because of inadequate availability and excessive cost.

Being unpopular wouldn't matter if we were the biggest kid on the block, but it is just the opposite. The forces arrayed around us are each bigger than we are and combined are way more powerful. Relevant forces include politicians, payors, hospitals, and various groups that would like to independently provide anesthesia-like services. These entities will solve the anesthesia availability/cost problem. They will solve the problem with or without our collaboration. They will solve it with or without our acquiescence, but they will solve it, and soon—think years, not decades. No one knows how the anesthesia availability/cost problem will be solved, but it will not involve throwing more money at anesthesia.

Three Branches of Anesthesia

Before considering threats to anesthesia, we should recognize important differences across the three major branches of anesthesia: pain medicine, critical care, and conventional anesthesia. The future seems bright for both pain medicine and critical care physicians. The number of patients needing each kind of management is growing and will likely increase for decades to come. I'm thus not worried about the future for specialists in either field.

I am, however, worried from the perspective of the American Society of Anesthesiologists (ASA) because neither field is "owned" by anesthesiology. Other specialties contribute experts to each, including physical medicine, neurology, pulmonology, and surgery. Obviously, physicians from other specialties have little allegiance to anesthesia. Furthermore, many anesthesia-trained pain and critical care specialists do not see anesthesia as their home because both fields have their own societies which are as important as ours, meetings as big as ours, and journals as good as ours.

Both pain medicine and critical care seem likely to increasingly drift away from anesthesia, even though many

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practitioners are anesthesiologists. At some point, pain medicine and critical care may effectively separate from anesthesia, leaving operating room anesthesia as the remaining anesthesia field. For example, I can easily imagine a future in which pain medicine becomes a recognized residency with its own board certification. Were that to happen, the field's allegiance to anesthesia would be trivial.

Most anesthesiologists work in operating rooms or provide non–operating room anesthesia, both of which I'll refer to as operating room anesthesia. The health of anesthesia as a specialty and of the ASA thus depends critically on the future of perioperative anesthesiologists. Let's then consider the forces that individually or collectively could represent a threat to operating room anesthesia.

Nurse Anesthetists

Let me start with certified registered nurse anesthetists, who constitute an obvious threat. The basic problem is that the ASA and its lobbyist tell anyone who will listen that medically directed nurse anesthetists are perfectly safe and that nurse anesthetists working under other arrangements are unconscionably dangerous—a perspective that few outside anesthesia finds plausible. The nurses, for their part, send lobbyists to tell anyone who will listen that medically directed and nondirected nurse anesthetists are comparably safe, an assertion that is not supported by a shred of evidence.

Let me be clear about my perspective. I'm sure that advanced training positions us to best decide who should have anesthesia and when, to devise wise anesthesia plans, and to intervene effectively during emergencies. I am convinced that years of extra training makes us outstanding clinicians who provide superior care and generate better outcomes. Unfortunately, the groups that will dictate anesthesia's future don't care what I think. They don't care what you think either. Decisions about the future of anesthesia will be evidence-based.

Evidence Supporting Medical Direction of Nurse Anesthetists

That raises the obvious question: what evidence is there to support medical direction of nurse anesthetists? There are a limited number of observational analyses, all of which are hopelessly confounded and most of which are highly biased. But it turns out that this doesn't matter because entities that will decide the future of our specialty don't consider these sorts of observational analyses to be actionable evidence. They want trial data, and that's a problem because there isn't any.

Lack of trial data seems unfortunate. After all, we believe medical direction improves care, so a well powered trial should show outcome benefits. Furthermore, a robust trial showing that medical direction of nurse anesthetists saves a meaningful number of lives would largely end the debate because health policy folks do care about lives saved. That's their job. So why don't we have the requisite trial? Is it because our leadership and trialists like me have been asleep at the switch? Hardly. The problem, as is so often the case with trials, is sample size.

Sample size for dichotomous outcomes is estimated from baseline risk and treatment effect. For the sake of argument, I will use an incidence of 5 per 100,000 cases when nurse anesthetists are medically directed[1] (surely an overestimate[2]) *versus* 10 per 100,000 cases when they are not. Based on these assumptions, a trial of preventable intraoperative mortality would require 1.5 million patients. Obviously, such a trial is impractical, meaning that there will never be convincing trial evidence that medical direction of nurse anesthetists saves lives. Mind you, that doesn't mean it's untrue, but there are many things that are true but can't be proven, and this appears to be among them. Consistent with this theory, a retrospective analysis suggests that lower medical direction ratios (corresponding to more anesthesiologist involvement per case) slightly improves a composite of morbidity and mortality.[3]

Selecting a more common but less serious outcome will reduce sample size. For example, many fewer patients would be required if the primary outcome were patient preference, nausea and vomiting, or hospital readmission, but those outcomes are also less important and unlikely to substantively influence health policy—important as they might be to individual patients. Furthermore, a focus on mortality ignores special situations such as pediatrics, organ transplantation, cardiac surgery, and patients at high baseline risk—all of whom presumably benefit from physician anesthesiologist care.

Number Needed to Treat and Potential Lives Saved

Using the same estimates as above, the number needed to treat is at least 20,000. For reference, policies, procedures, and treatments are usually implemented when the number needed to treat is less than 200. Even if my estimate were 100-fold high—and I assure you it isn't—the number needed to treat will not be low enough to influence health policy.

Another perspective is to consider the number of deaths that might result without medical direction. Using our same estimates, we get perhaps 1,600 additional deaths each year in the United States.† Each of those lives is valuable; each is someone's child, and most are someone's parent. Every one of them is meaningful and irreplaceable. We owe it to our patients, medical colleagues, and society at large to prevent as many of these deaths as possible. However, epidemiologists and health policy officials don't consider individual

†This estimate is based on the assumption that about half of all anesthetics involve nurse anesthetists and that mortality is doubled when nurse anesthetists are not medically directed.

lives. They instead look at populations and estimate how many lives might be saved by various policy changes. They also compare lives lost in given situations with other causes of death that might be ameliorated by healthcare investment, their goal being to identify large populations likely to benefit from interventions.

Epidemiologists might, for example, compare our 1,600 putative annual lives lost from lack of medical direction of nurse anesthetists to the opioid epidemic with also kills that many people—*every week*. Similarly, they might compare our potential 1,600 annual lives lost to COVID-19, which still kills that many people *every month*. And finally, they might compare our deaths to losses from heart failure or cancer, each of which kills tens of thousands of people per week. None of these comparisons strongly supports requirements for medical direction of nurse anesthetists.

Groups that Can Help

There are four groups that can solve our nurse anesthetist problem: payors, hospitals, politicians, and patients. In fact, each alone can fully solve the problem. I'll start with payors and focus on Medicare because it is the largest and because other payors usually follow its lead. Medicare could solve our problem by only funding nurse anesthetists when they are medically directed.

Like every government agency, Medicare has a limited budget and must perform its mandated work within that budget. Medicare decisions are guided by smart epidemiologists, and the agency tries hard to optimize overall public health by directing funding to areas where it will prove most helpful. The Centers for Medicare and Medicaid Services is also evidence-driven and rarely choses expensive options without supporting evidence. (Medicare epidemiologists can do arithmetic as well as I can, so none of the estimates presented above are news to Medicare or other large payors.) That is especially the case given that the number of anesthesia deaths potentially prevented by medical direction of nurse anesthetists is small, whereas conditions such as cardiovascular disease and cancer still have stunning high mortality. Potential incremental benefit is therefore considerably higher in other areas. Put bluntly, Medicare has better places to allocate healthcare dollars and thus isn't likely to require medical direction of nurse anesthetists.

What about hospitals? Hospitals can certainly solve our problem. After all, any hospital can, with no one's permission, simply require that nurse anesthetists be medically directed—and many do. But increasingly, many do not. The problem is that without compelling evidence of benefit, hospitals have little incentive to support the extra cost of anesthesiologists. Most hospitals operate with tight margins, and a disconcerting fraction have gone under in recent years. Eighty percent of hospitals already subsidize anesthesia groups in the United States and are obviously unhappy with this situation. Hospitals will not support a more expensive care option unless there is compelling evidence that the investment meaningfully improves outcomes or is otherwise required. Such evidence does not currently exist and seems unlikely to be forthcoming. In the meantime, even if hospitals had extra money, taking a position that complicates scheduling and increases anesthesia cost isn't likely to be their priority.

How about politicians? After all, politicians with a signature could simply prohibit unsupervised nurse anesthetist care. *Mischief managed*. The question is whether they are likely to. Politicians broadly respond to their constituents. Let me then ask, how many politicians have lines of constituents trying to get in to promote medical direction of nurse anesthetists? Precious few. And now let me ask how many politicians have constituents who are frustrated by access to healthcare and white-hot angry about the cost of care? Pretty much every one of them. The incentives for politicians are thus clear and do not include defending a policy that reduces healthcare access while simultaneously increasing costs. Predictably, one state after another is thus loosening rules requiring medical direction of nurse anesthetists. It is simply a matter of time until most allow nurses to operate without anesthesiologist oversight. Don't expect politicians to bail us out.

Might patients help us? Patients care intensely about their health. Just look at the tens of billions of dollars spent on vitamins and nutritional supplements, most of which are no more effective than tap water and some of which are flat-out toxic. Patients certainly care about who does their surgery. No patient casually selects a surgeon, and we know that patients also care who provides their anesthesia. We know they care, because daily, across the country, thousands of patients arrive for surgery, discover that an anesthesiologist will not be involved in their care and furiously stalk out demanding that surgery be rescheduled when a physician anesthesiologist care for them. Not! There are two reasons. The first is that nurse anesthetists have been successful with their disinformation and title misappropriation campaigns. The other reason is that from an epidemiologic perspective, patients are right to be more concerned about other aspects of their care because anesthesia is not on the top 25 list of the things most likely thing to kill them. Consequently, we should not look to patients to solve the anesthesiologist–nurse anesthetist controversy.

Let me then summarize the nurse anesthetist situation. For statistical reasons, there will never be a robust trial showing that medical direction of nurse anesthetists saves a meaningful number of lives—despite compelling reasons to believe it does. Nurse anesthetists are attractive to payors, hospitals, and politicians because they appear to cost less than we do.‡[4] In the absence of compelling trial data—which are not forthcoming—none of the relevant powerful players has much incentive to pay a substantial premium for anesthesiologists. To be blunt, our problem with nurse

‡It is questionable whether nurse anesthetists actually cost less because anesthesiologists generally work longer hours.

anesthetists is serious and won't go away anytime soon. Along those lines, the general problem of physician substitution is hardly unique to anesthesia. Emergency medicine physicians, for example, are increasingly being replaced by physician assistants and nurse practitioners.

Surgical Volume

Let me now address two other challenges we face. Like our problem with nurse anesthetists, all are linked by the supply–demand ratio. That ratio may seem somewhat esoteric, but the reason we are currently in demand and well paid is that the supply–demand ratio is slightly less than 1. If that were to shift to even slightly more than 1, it would force the highly nonlinear supply–demand economic equation in reverse, and compensation would plummet. Factors that influence the need for anesthesia are thus of considerable interest to the specialty. Surgical volume is the most important driver of need for anesthesia services, so I will start with that.

Surgical volume is currently high, largely because members of the baby boom demographic bubble are in those late years of their lives during which many require surgery. The need will continue for at least a decade and is compounded by the fact that many anesthesiologists (and nurse anesthetists) are themselves baby boomers who are currently retiring at higher than replacement rates. But when the baby boom bubble ends, surgical volume may decrease precipitously.

Another factor influencing surgical volume is the long-term trend away from large open procedures to small minimally invasive procedures and even to procedures that no longer require anesthesia. The poster child for this secular trend is coronary bypass grafting, which has largely been replaced by transluminal procedures. Even heart valves are increasingly being replaced transluminally. Also consider appendicitis; long considered an absolute indication for surgery, it is increasingly being successfully treated with antibiotics alone.[5]

A final and subtle consideration is that surgery is (finally) becoming evidence based. The first randomized trial of surgery *versus* alternative management is within easy memory, and there have been dozens since. Many surgical trials demonstrated little or no benefit, including some for the country's most common operations.[6,7] So far, these results have had disappointingly little effect on practice because many surgeons assert "my patients are different" and continue operating, but payors will soon catch on and stop covering low-value surgical care; when reimbursement stops, so will most such surgery.

Anesthetic Drugs

The next threat I'd like to address is anesthetic drugs. The reason anesthesia exists as a specialty is that the initial anesthetic drugs—and drug delivery systems—were so dangerous that it took years of training to get even a healthy patient through a minor operation, but each generation of anesthetic drugs has become safer, as have anesthesia machines. We also now have sophisticated monitors that further reduce risk. The consequence is that anesthesia is much safer now than previously. Since my residency, for example, anesthetic mortality has decreased by a remarkable factor of ten. Let's now take drug development to an extreme: suppose there were an anesthetic so safe and easy to use that most anyone could use it, including registered nurses.

We already almost have that drug; it's ketamine. Ketamine is generally safe, and for the most part, dosing is noncritical. Even with anesthetic doses of ketamine, most patients breath spontaneously and maintain near-normal hemodynamics. Granted, ketamine isn't going to replace us because of its psychomimetic properties, but remimazolam (an ultra-short benzodiazepine) might. The drug is already widely used in Asia and was recently approved by the U.S. Food and Drug Administration (FDA). It is perfectly plausible that some endoscopies and small operations in healthy patients that currently come to us will in the future be conducted with remimazolam "deep sedation."[8] Anything that reduces the need for anesthesiologists unfavorably increases the supply–demand ratio.

An additional consideration is that delivery of anesthetic drugs will increasingly be assisted by computers that do far more than simply target plasma concentrations. Computers of the (not very distant) future will simultaneously evaluate every routine measurement, along with many new ones that we haven't even heard about yet. They will know every patient's history and of course all drugs and fluids that have been given.

In nearly every tested circumstance, including many medical situations, artificial intelligence has bested humans, despite current systems being relatively primitive.[9,10] It is just a matter of time before artificial intelligence will make better decisions than we do. For the most part, artificial intelligence will help us provide better care, but it will also guide nonanesthesiologists—some of whom might try to replace us.

Lessons from Coal Miners

Presumably, few of you were hoping to hear a polemic about the troubles we're facing. Honest introspection is often disconcerting and always hard work. Sometimes it is distressing—as this discussion has been. So, let's not do that anymore. Instead, let's look at coal miners.

Coal miners, you ask, how could they be relevant to a professional group like us? After all, most coal miners barely finished high school, and we're highly trained physicians. What can we possibly have in common? Bear with me, though, while we consider their historical arc. There are more parallels than you might expect and possibly something to learn.

The United Mine Workers of America was founded in 1890, just 15 yr before the ASA. The union was an immediate success. It grew rapidly, and within some years, most coal mining jobs in the States were unionized. The union's goal was to augment and sustain coal miner wages. In this respect, it was highly successful. Coal miners were, and still are, paid disproportionately well considering the modest education and skill required for the work.

The union thus ably handled internal considerations—that is, everything related to extracting coal from the ground—but they didn't do so well with external forces; in their case, the global movement from dirty extractive energy to clean renewable power. The union was perfectly aware of the danger posed by wind and solar power and fought hard, although ineffectually, to stop the initial installations. That proved a disastrous mistake. What they should have done instead was to unionize the initial installations—which they could have because at the time the union was big enough to practically shut down the country. They then could have rapidly retrained coal miners as wind and solar technicians. Had the union taken that approach, they would now represent workers in the rapidly growing wind and solar industries. But they did the opposite, and the results were catastrophic.

Membership in the United Mine Workers Union peaked at 886,000, about 15 times larger than the ASA. Today, it is about 35,000, little more than half the size of the ASA. Between 2010 and 2020, half of the coal mines in the United States closed; many more have since shuttered. Think about it: 883,000 to 35,000 members—a 25-fold reduction. These weren't people who just decided to seek another line of work. Those 850,000 miners lost good jobs because their professional association resisted the future rather than understanding and embracing it. *Game over.* Any analogy with our situation is purely coincidental . . .

Implications for Our Specialty

In Hemmingway's 1926 novel *The Sun Also Rises*, a character is asked how he went bankrupt and famously answers, "Two ways: gradually, and then suddenly." The line resonates because "gradually, and then suddenly" applies to so much of life. Success rarely comes overnight; instead, it is nearly always preceded by decades of sustained effort. Failure similarly rarely comes like a lightning bolt from the sky; more often it results from years of cutting corners and not doing things quite *comme il faut*.

"Gradually, and then suddenly" doesn't just apply to individuals. It also applies to organizations. Near the beginning, I explained that people within an organization rarely recognize existential threats and that when the end comes, it comes quickly. That is the organizational version of "gradually, and then suddenly." The challenge for any organization is thus to recognize when business as usual morphs into the "gradually" that precedes "suddenly." It isn't easy, but we're expert diagnosticians and should notice when the canary in our coal mine is getting sick. We, of all people, shouldn't have to wait for the poor birdie to be stone-cold dead on the bottom of its cage before noticing that we have a problem.

Organizations face repeated challenges to their existence and must therefore repeatedly make important decisions correctly. Their historical plateau lasts exactly as long as they make the right decisions. Just a single major wrong decision can end an otherwise successful organization, and the cause is often a failure to recognize external threats or to respond to them effectively. For example, an organization might thrive for 118 yr and then end precipitously after failing to deal with a single existential challenge. The question, of course, is whether the ASA might be in the "gradually" phase that precedes "suddenly."

I've presented various threats that might reduce the need for physician anesthesiologists. They won't all materialize, but at least one surely will—and just one might suffice to seriously disrupt our current practice model if we are not prepared. Consider a hypothetical but perfectly plausible future in which the United States finds itself with 10% more anesthesiologists than the country needs. Anesthesiologists will compete for available jobs, reversing the supply–demand equation and causing compensation to plummet.

But what if there were a safety net for our specialty? That is, something else for operating room anesthesiologists to do. Something that would be considered valuable by patients and other medical specialists and that someone might pay for.

A Safety Net—and a Fourth Branch of Anesthesia

We have an opportunity to establish a safety net for our specialty, but let me first discuss perioperative mortality, with its relevance soon becoming apparent. Safety is our primary mission, so it is reasonable to ask what kills surgical patients. It is not the intraoperative period. That problem was solved two decades ago; intraoperative mortality is now so low that it is hard to quantify.

When grandma comes for major surgery and arrives stable in the postanesthesia care unit, most everyone assumes that she has survived the most dangerous part of her perioperative experience. That assumption is absolutely untrue. Grandma's chances of dying in the subsequent 30 days is 140 times higher than it was during surgery.[11] To put this another way, the 30 days after surgery is the world's third-leading cause of death.[12] A third of these deaths occur during the initial hospitalization; that is, under our care in our highest-level healthcare facilities. Two factors contribute.

One reason postoperative mortality remains high is that patient monitoring on hospital wards has hardly changed in a half-century. When the system was designed, all surgery was done in-hospital, and patients were admitted days before surgery and remained hospitalized for weeks

thereafter. People older than 60 yr of age rarely had surgery, and operations were generally not especially large or complex. Furthermore, patients with substantial baseline risks were rarely offered surgery. Consequently, a half-century ago, the average acuity on hospital wards hardly exceeded that at a church picnic.

How things have changed. Anyone halfway stable is sent home on the day of surgery. Half our patients are older than 60 yr old, and we do major operations on most anyone, no matter their comorbidities. Consequently, many patients who now populate surgical wards would have been admitted to an intensive care unit (ICU) in previous decades. We nonetheless leave them on surgical wards and monitor vital signs at 4- to 6-h intervals—about the way we did a half-century ago. Vital sign monitoring interval is not academic: there is compelling evidence that critical events are preceded by hours of deterioration[13] and that intermittent monitoring delays detection of deterioration.[14–16]

There are now FDA-cleared untethered continuous ward monitoring devices. The advantage of continuous vital sign monitoring is that clinicians always know the vital signs. The disadvantage is that these monitors generate continuous streams of artifact-laden data. Nurses aren't trained to deal with such data; furthermore, a given nurse might care for 10 patients—and they already have full-time jobs. It would be unfair to simply feed continuous vital sign data to nurses and expect them to interpret the signals.

So, are there clinicians who are expert in interpreting continuous physiologic signals? That is, clinicians who are skilled at recognizing subtle patterns that allow them to intervene *before* patients get into trouble? That's us! Evaluating real-time physiologic data is our core expertise.

A second factor contributing to postoperative mortality is inadequate medical management. All postoperative patients get surgical management, usually briefly and early in the morning before surgeons disappear into operating rooms. Many also get pain management from an anesthesiologist, but neither addresses the serious underlying medical conditions that so many postoperative inpatients suffer. Yet it is often underlying conditions, especially cardiovascular conditions—aggravated by the stress of surgery—that kill patients.[17] Intense medical management would likely stabilize patients, allowing them to better tolerate the consequences of surgery including systemic inflammation. It would also quickly identify patients who are deteriorating—and thus allow intervention before critical events.[18] Finally, intense postoperative medical management would improve patient condition at discharge, possibly preventing some readmissions and home deaths.

We understand both surgical and medical issues and are therefore perfectly positioned to provide intense postoperative management of surgical patients. We have the skills to interpret and intervene on continuous physiologic signals, presumably assisted by artificial intelligence, which we should develop; and we have the background and ability to provide sophisticated medical management. Combined, the two approaches will markedly improve postoperative care, and allow us to move beyond "failure to rescue," a concept that now dates back three decades,[19] to *preventing* critical events.[20] Here, we're not talking about 1,600 lives, but tens of thousands saved annually just in the United States. That is an opportunity to make a huge contribution to patient safety.

Continuous ward monitoring and ICU-style hands-on management of postoperative patients by anesthesiologists is our safety net. Not only will it assure the future of our specialty when the number of operating room anesthesiologists outstrips need, it will also save lives—lots of them.

What I'm describing is not just a safety net for our specialty, it is a *fourth branch of anesthesia* to complement pain medicine, critical care, and operating room anesthesia. Let me stress, though, that we have a brief window of opportunity to claim intensive postoperative care as our fourth branch of anesthesia. Other specialties are already moving into the (now largely empty) field. Hospitalists unsurprisingly would like to incorporate postoperative care, and there are already fellowships in postoperative care—in internal medicine departments! If we are to make intensive postoperative care a fourth branch of anesthesia, we must act immediately, and our actions should include serious resident training, allocating anesthesiologists to ward care, research to define how our efforts improve care, and eventually board certification to ring-fence the field.

The alternative is to define anesthesia responsibility as largely ending when patients leave the recovery room—which is exactly the same as defining anesthesia as being *irrelevant to the major perioperative problem*, that is postoperative mortality. It is also analogous to electively locking ourselves in an operating room cage, destined to forever fight nurse anesthetists—a battle we're not winning.

To its credit, the ASA has addressed the issue through the Perioperative Surgical Home program and subsequent summits, collaborations, and publications on the topic. Our society created a Center for Perioperative Medicine and instituted a perioperative medicine educational track at the Annual Meeting. The American Board of Anesthesiology has also augmented training requirements in this arena, but we need to do more. Much more.

I recognize the financial challenges. Postoperative care doesn't pay the way operating room anesthesia does. There is also a shortage of operating room anesthesiologists, so no one wants to divert them to alternative activities, but it is just a matter of time until the supply–demand ratio for operating room anesthesiologists reverses—possibly sooner than you think.

Postoperative care is currently a wide-open opportunity and a way to avoid commoditization of anesthesia,[21] just as wind and solar power initially was for coal miners. But it won't stay open. We have a brief window of opportunity to claim postoperative management, and it would be prudent

for us to take it, because the opportunity may no longer exist if we wait until demand for operating room anesthesia decreases. More importantly, solving postoperative mortality is an opportunity for our generations to cement a legacy comparable to the glorious legacy of previous generations that solved intraoperative mortality.[22]

Conclusions

Presumably, no one started this article hoping for a depressing tirade about the serious risks we face, and the need for radical change to secure our future. It would have been easy to paint an optimistic picture of how anesthesia is at the top of its game and project a rosy future. But fairy tales are a poor basis for policy. If we're to have any hope of guiding our future—rather than having it inflicted on us—we need a clear understanding of the threats we face and realistic assessments of what we can do about them. Only then will be able to make requisite changes that might keep anesthesia at the top of its historical arc. One thing we can and should do is to establish intense postoperative management as a fourth branch of anesthesia. A radical change, yes, but necessary if anesthesia is to remain strong, and we need it now because the window of opportunity is brief. *Carpe diem*. Seize the day. Today.

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The author declares no competing interests.

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