

The Impact of COVID-19 on the Status of the Anesthesiologists' Well-Being

Rebecca Aron, MD, MSE*, Joseph Pawlowski, MD, Mohanad Shukry, MD, Sasha Shillcutt, MD, MS

Department of Anesthesiology, University of Nebraska Medical Center, 984455 Nebraska Medical Center, Omaha, NE 68198, USA

Keywords

• Wellness • Well-being • Burnout • Resilience • Stress • Physician health

Key points

- The prevalence of professional burnout in anesthesiology is between 15% and 65% and has reached a critical number of at-risk physicians whose own well-being is critical during a global pandemic.
- Specific concerns regarding proper and sufficient personal protective equipment, fears of personal exposure and transmission to others, have had the greatest psychological impact on anesthesiologists during the COVID-19 pandemic.
- Addressing physician burnout during a pandemic includes individual, team, and institutional strategies.
- Developing well cultures can help reduce burnout. Preventative measures include assessing wellness, finding interventions to promote wellness, initiating interventions and reassessment. Some strategies to achieve a well culture are offering flexibility, increasing engagement, creating clear expectations, showing gratitude and creating a community at work.

INTRODUCTION

In the early months of 2020, no one in the specialty of anesthesiology and peri-operative medicine could have predicted how much our work life would change. When the COVID-19 pandemic reached its first peak, anesthesiologists were already facing significant challenges with regards to overall well-being and culture. Critical deficits in workforce numbers, fiscal challenges of

*Corresponding author. *E-mail address:* Rebecca.aron@unmc.edu

balancing clinical, educational, and research demands, transitions in hospital-based and private practice groups, coverage of subspecialty cases, out of operating room locations and greater demand in work hours all potentially could increase the incidence of professional burnout in our specialty. When the pandemic arrived, it would affect an anesthesiology workforce already under significant pressure.

The response to the pandemic by anesthesiologists has been nothing short of heroic. Departments scrambled to acquire personal protective equipment to assure a safer workplace and decrease the risk of infection with the severe acute respiratory distress syndrome coronavirus 2 (*SARS-CoV-2*) attributed to occupational-related exposure. Anesthesiology leaders coordinated and created triage algorithms for which patients could proceed with surgical procedures despite limited COVID-19 testing availability. Anesthesiologists developed protocols and pathways for triaging the workforce into areas such as the critical care wards and hospital intubation teams. Simulation sessions for donning and doffing were coordinated over weekends and held on postcall days. Clinical trials for the treatment and care of patients with COVID-19, as well as methods to decrease anesthesiologists' risk and improve safety were rapidly instituted. Webinars with our European and Chinese colleagues were coordinated to educate each other on how to care for the patients with COVID-19 in the perioperative period. Several anesthesiologists found themselves creating ways to decrease the potential spread of the SARS-CoV-2 through innovations such as transesophageal probe covers and infectious particle capture devices.

The response of our specialty to the pandemic was not the only stress added to the practicing anesthesiologists. At the same time, home lives were upended. Those with school-aged children were suddenly faced with children at home and a lack of childcare, as well as a sudden responsibility to supervise virtual learning platforms for their children. In-home support was decreased, as many traditional childcare methods (family members, nannies, and daycare) were not feasible due to mandated stay-at-home measures. Sick leave, COVID-19-related illness in anesthesiologists themselves, as well as the financial strain due to temporarily canceled elective cases also contributed to a sudden increase in psychological and emotional stressors.

In this article, we review the impact of the COVID-19 pandemic on anesthesiologists' well-being. We discuss the importance of recognizing threats to our well-being and resilience and the value of implementing strategies to promote wellness in our work lives. We discuss the critical need for well-being as a foundation of the culture of our work environments, and that well-being is best instituted from top-down leadership approaches and peer support.

DEFINITION OF BURNOUT

If you are a physician practicing in 2021, most likely you have heard the word burnout and used it in a variety of ways in conversations around work-life balance. It is important to establish the actual definition of burnout, and what it means in relation to the health care workforce. While usage of the term

burnout began in the 1960s to describe the psychological exhaustion amongst health care clinic staff, the way burnout is currently described in the institution of medicine was defined based on the research of Maslach and colleagues in the 1980s [1]. Maslach and colleagues classically described burnout based on the presence of three main symptoms in varying degrees [2–4].

1. *Depersonalization*: a distant or indifferent toward work as a coping mechanism to work overload; it can manifest as negative, callous, and cynical behaviors; or interacting with colleagues or patients in an impersonal manner.
2. *Reduced personal accomplishment*: a feeling of being unable to fully meet standards of care the individual has set for themselves, or a feeling of helplessness to meet the demands of an institution.
3. *Emotional exhaustion*: feeling like one cannot meet the demands of their patients, coworkers or loved ones, due to complete lack of energy to engage.

Burnout is a personal expression of these three attributes and is related to workplace stress in health care [2]. The majority of the literature on burnout, as well as metrics that analyze the prevalence of burnout amongst health care workers, typically measure some combination of these three attributes in varying degrees [3]. Burnout is now categorized as a “syndrome” that results from “chronic workplace stress that has not been successfully managed”, according to the World Health Organization’s International Disease Classification (ICD-11). Fig. 1 illustrates the pathway to burnout.

A recent meta-analysis reviewed whether or not burnout falls on the spectrum of depression, and what, if any overlap between burnout and clinical depression exists. Bianchi and colleagues [5] published a meta-analysis on 92

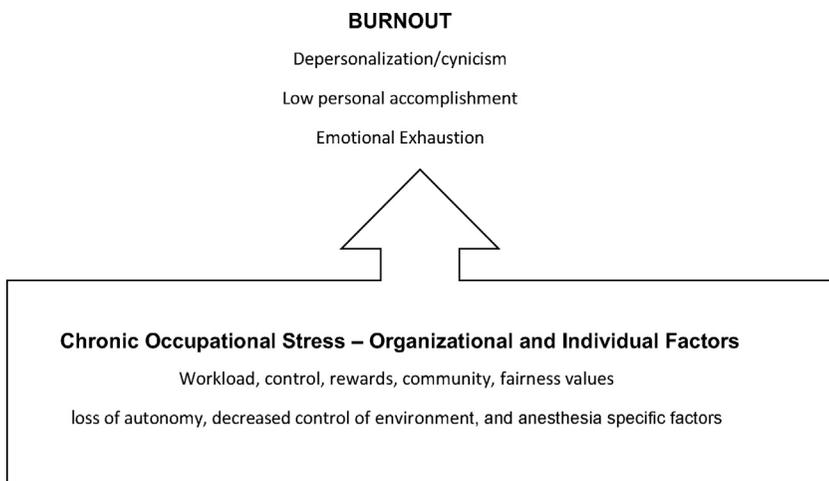


Fig. 1. Pathway to burnout: Burnout results from chronic occupational stress, which can be a result of both organizational and individual factors.

published articles on both burnout and depression and found that a clear distinction between the two has not been well described. While burnout results from chronic occupational stress, depression may not be at all related to one's occupation. In contrast, burnout may share similar symptoms with clinical depression at what is commonly termed "end-stage" burnout in some studies [5]. Because a lack of clear distinction between the two has not been well studied, it is possible that there may be an overlap of these two diagnoses in symptoms, yet one must be careful to recognize clear differences in etiology. Thus, respecting an individual's state of burnout as unique is important to note.

Gender differences in the expression of burnout have been described in the literature. Purvanova and Muros published the largest meta-analysis on 183 studies which described the prevalence and slight differences in how men and women display burnout [6]. Their findings suggest that women do not experience higher burnout than men, a commonly described misconception. They did find slight differences in how men and women display the triad of burnout. Women were more likely to display emotional exhaustion, whereas men in the studies were more likely to experience more depersonalization. Purvanova and Muros [6] suggested differences are important to note, as common misconceptions about gender and burnout influence decisions made at institutional levels and thus should be recognized.

PREVALENCE OF BURNOUT IN ANESTHESIOLOGY

The prevalence of burnout in the United States (US) physician workforce has been described in annual surveys by large health care companies such as Medscape, peer-reviewed research studies, and individual institutional metrics via physician engagement surveys. In 2012, Shanafelt and colleagues [7] published the largest national study of 7288 US physicians across all specialties using the Maslach Burnout Survey, considered the gold standard measuring tool of burnout, and compared with to the general US workforce population. They found that compared with a workforce of nonphysicians, physicians reported a higher rate of professional burnout (37.9% vs 27.8%) [7]. They also found that unlike other careers where having an advanced degree (masters, doctorate) was protective against burnout, in medicine the opposite is true. Those with MD/DO degree were more likely to report burnout when compared with the national workforce [7]. This study was important, as it was the first to demonstrate that compared with a highly educated nonphysician workforce, physicians working in high-stress and in particular, frontline environments (emergency medicine, internal medicine, neurology, surgery, and anesthesiology) were more likely to experience burnout than those working in less-acute care specialties (dermatology, occupational health, pathology, and pediatrics).

The prevalence of burnout in the specialty of anesthesiology has been reported between a range of 14% to 65% in peer-reviewed publications, depending on the study [8–12]. Whether the true prevalence is closer to 14% or 65%, the fact remains that it is of significance in our specialty and has reached a

critical mass of at-risk physicians whose own well-being is critical for an aging surgical population in the crux of a global pandemic [12].

In the largest published survey study to date in anesthesiology, the prevalence of burnout (syndrome) was reported as 13.8%; however, 59% of respondents had a high risk for developing burnout. It is important to note while the survey had high total numbers for responding (3,898), there was a low participation rate (13.6%) [12].

In the COVID-19 pandemic, there have been increased reports world-wide on mental health challenges of health care workers dealing with the pandemic, as well as calls by leaders to address the wide variety of mental health risk to health care workers: emotional exhaustion, stress, moral injury (the challenge of simultaneously knowing what care patients need but being unable to provide it due to constraints that are out of our control), post-traumatic stress disorder, mental fatigue, and an increase in the awareness of suicides amongst health care workers. Anesthesiologists, who may find themselves working alone for a 24- to 48-h shift (without connecting to their friends, family, and colleagues for several days) are certainly not safe from the increase in work stress COVID-19 has brought. Whether working in the COVID-19 critical care wards, caring for emergent cases of unknown COVID-19 status, or working in the operating rooms in a strapped workforce, anesthesiologists, without doubt, are at risk of burnout.

CONTRIBUTORS OF BURNOUT IN ANESTHESIOLOGY

Contributors of burnout are multifactorial and can generally be linked to both organizational and individual factors. In contrast to the relative shortage of significant individual factors, many organizational risk factors have been identified. These factors fall into six domains: workload, control, reward, community, fairness, and values [13]. Individual factors that contribute to physician burnout include loss of autonomy, decreased control over practice environment, workload, and inefficient use of time. Other risks include specialty choice, practice setting, lack of work-life balance, medical errors, risk of malpractice suits, and physicians' methods to deal with patient death and illness [14].

Anesthesiologists are affected by the same factors as other physicians. Working in a stressful medical discipline, anesthesiologists may frequently face unexpected and often emergent clinical scenarios such as managing unanticipated difficult airways, cardiac arrest, and other life-threatening emergencies. Afonso and colleagues found a perceived lack of support at work (odds ratio [OR]: 6.7) had the strongest association with burnout syndrome. Additionally, working greater than or equal to 40 hours per week (OR: 2.2), perceived lack of support at home (OR: 2.1), perceived staffing shortages (OR: 2.1), identifying as under-represented on the basis of lesbian, gay, bisexual, transgender/transsexual, queer/questioning intersex and asexual status (OR: 2.2), not having a confidant at work (1.6), and age less than 50 (OR: 1.5) were also independently associated with a high risk of burnout [12].

Using a self-reporting questionnaire in Belgian physician anesthesiologists, Nyssen and colleagues studied the levels, causes, and moderating factors associated with stress and burnout. They found the level of stress in anesthesiologists was similar to the global working population, but they had higher emotional exhaustion levels (particularly in anesthesiologists younger than 30 year old). When queried on stress sources, respondents cited a lack of control over of the following: (1) time management (long hours, planning nonclinical tasks such as lectures, research), (2) work planning (difficulty in getting days off in advance, frequent schedule changes during a given work day), and (3) risks [15]. High workload, such as working more than 70 hours a week, and a high number of call obligations (weekends, nights, and holiday shifts), has a clear correlation with burnout due to low work–life integration [16].

Burnout is also well recognized in academic anesthesiologists, including ones in leadership positions. In 2011, De Oliveira and colleagues surveyed anesthesiology department chairs and anesthesia residency program directors. In two different studies with high response rates, the authors found that more than 50% of departments chair demonstrated high or moderately high levels of burnout. Independent factors for high burnout were low job satisfaction levels and lack of spousal support [17]. Of program directors, half of the respondents had either an increased risk of burnout or were at risk of burnout. They identified regulatory compliance and lack of spousal support as significant predictors of burnout [18]. Academic faculty have the additional challenge of navigating items (clinical care, education, research, administrative and compliance responsibilities) that compete for their time. The degree of satisfaction faculty derive from each different task varies. Individuals may not have the opportunity to focus on areas they deemed most personally meaningful; this quandary can lead to career discordance and burnout [19]. Finally, younger age, female gender, being married, having children, low family support system, and alcohol consumption each are positively correlated with burnout in anesthesiology [20]. Table 1 summarizes institutional versus individual factors that can lead to burnout [21].

IMPACT OF PHYSICIAN BURNOUT ON INSTITUTIONS

The effect of physician burnout on institutions has both significant patient care and financial implications. Fig. 2 summarizes effects burnout can have on

Table 1

Common institutional and individual factors that lead to burnout

Institutional	Individual
Insufficient reward	Low job satisfaction
Conflict in values	Lack of spousal support
Lack of control	Younger age
Absence of fairness	Female gender
Lack of community	Parental status
High workload	Decreased family support system

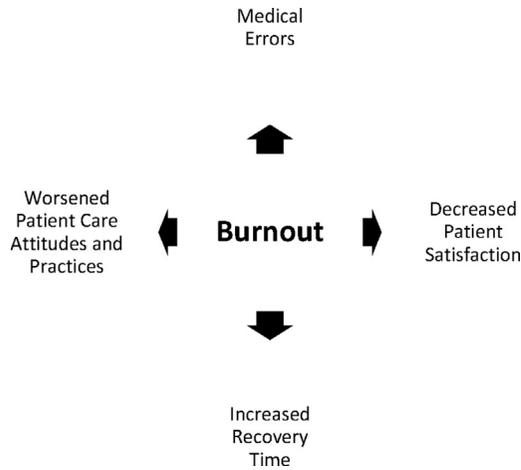


Fig. 2. The effects of physician burnout on patient care.

patient care. Burnout can lead to worse patient care attitudes and practices, increased patient recovery time, decreased patient satisfaction, and increased medical errors.

Patient effects

Shanafelt and colleagues surveyed trainees in a university-based internal medicine training program about patient care practices and burnout. Suboptimal patient care practices reported by trainees included inadequately discussing treatment options with patients or failing to answer patient's questions, forgoing diagnostic tests in order to discharge patient early, and paying less attention to the social or personal impact of an illness on a patient. Residents with burnout were more than twice as likely to report suboptimal patient care practices and attitudes as those without burnout (53% vs 21%, $P .004$) [22].

Negative effects of physician burnout are not just self-perceived. Physician burnout may have measurable negative effects on patient care. Haslbelsen and Rathert surveyed 178 matched pairs of physicians and patients who were hospitalized within the prior year. After controlling for other factors, they found the depersonalized dimension of physician burnout was associated with longer patient reported recovery time and decreased patient satisfaction [23]. In a prospective study in an academic emergency department, emergency physicians were surveyed by a psychiatrist using the Maslach Burnout Inventory [24]. Target waiting times were assessed by a triage nurse depending on disease severity. The study found that burnout of emergency physicians was independently associated with increased waiting times.

Medical errors

Medical errors seriously contribute to patient morbidity and mortality and several studies have reported an association with between physician burnout

and a higher rate of medical errors. As more people may die annually from medical errors in hospitals than from motor vehicle accidents or breast cancer, studies that have linked a higher rate of medical of medical errors with greater physician burnout demonstrate its clinical impact to patients [25].

In a survey of 7905 surgeons, 8.9% of participants reported concerns that they had made a major medical error in the last 3 months. While unable to determine cause and effect, surgeons scoring higher in burnout and depression were more likely to report a self-perceived recent major medical error [26]. *Another longitudinal cohort study of internal medicine residents at Mayo Clinic* over 5 years found an association of perceived medical errors with higher levels of burnout [27]. Of the 356 study participants, 139 of had at least one error over that study period and had higher levels of burnout with increased depersonalization and emotional exhaustion. Additionally, higher levels of burnout in all domains were associated with increased odds of reporting an error in the subsequent 3 months. In another study, 6695 US physicians were surveyed for the presence of burnout. The study found burnout was associated with self-reported medical errors independent of age, sex, workload, and specialty [28].

While studies have linked physician burnout with medical errors, cause, and effect is not clear. Physician burnout may increase the risk of patient errors, patient errors may lead to burnout. It is also possible that those with burnout may be more self-critical and more likely to report medical errors. Regardless, these studies show that burnout is harmful to both patients and those who treat them.

Financial implications

Financial implications of physician burnout are also relevant. Hamidi and colleagues [29] surveyed 472 physicians at a single institution on wellness with validated measures to assess self-reported burnout. Using longitudinal data, they assessed the association of self-reported burnout with intent to leave and actual turnover. After adjusting for surgical specialty, work hours, sleep-related impairments, anxiety and depression, physicians who experienced burnout had higher odds (OR: 2.68) of leaving their institution within 2 years compared with those who did not experience burnout. Of those who had symptoms of burnout, 2 years later 21% left compared with only 10% without burnout symptoms. Using the calculated expense of physician recruitment and startup cost, they estimated the minimum 2-year economic loss to physicians attributable to burnout ranged between 15 and 55 million dollars. Surgical specialty, hours worked, sleep-related impairments and anxiety were not significantly associated with physician turnover.

Shanafelt surveyed physicians at the Mayo Clinic and looked at administrative records and found that burnout was strongly associated with future reductions in full-time equivalents (FTEs) [30]. While these studies demonstrate burnout can lead to physicians reducing their FTE or leaving the workforce altogether, besides recruiting and training replacements, the reduction in FTE can have deleterious effects including increasing the workload of other physicians furthering a cycle of burnout.

IMPACT OF BURNOUT ON INDIVIDUALS

On an individual level, physician burnout has been demonstrated to have significant adverse consequences. A prospective longitudinal cohort study of 340 internal medicine residents at an institution for more than 5 years found associations between the depersonalization domain of burnout and increased odds of reported motor vehicle accidents [27]. This was after adjusting for factors such as fatigue and depression. Physician burnout is also associated with alcohol and substance abuse. Oreskovich and colleagues surveyed more than 25,000 surgeons to determine the prevalence of alcohol abuse and dependence among practicing surgeons and found more than 15% met criteria for alcohol abuse or dependence. Furthermore, surgeons who were burned out were more likely to have alcohol abuse or dependence (OR: 1.25, P .01) [31].

Physician burnout also adversely impacts mental health. In a survey of burnout, quality of life, and depression and work-home conflicts, Dyrbye found both physicians and their concurrently employed partners who had recent work-home conflicts had a higher likelihood of burnout [32]. Physicians with work-home conflict also had a lower quality of life, were more likely to screen positive for depression, and had increased prevalence of poor relationships (contemplating divorce or separation, dissatisfaction with partner) [30]. Even more concerning is that a Dutch study of medical residents found a higher incidence of suicidal ideation in medical residents with burnout compared with those without burnout (20.5 vs 7.5%, P <.001) [33]. The impact of burnout is far reaching, ranging from anxiety, depression, interpersonal relationship strife, to potential suicide.

CONSEQUENCES OF COVID-19 ON BURNOUT IN ANESTHESIOLOGY

Anesthesiologists have played an integral role in health care during the COVID-19 pandemic, largely because of their unique skillset such as airway and ventilator management, and expertise in critical care and resuscitation. At the same time, this elevated role has brought unexpected challenges to the specialty which may increase the risk of burnout.

Increased exposure to COVID-19 and possible shortage of PPE posed significant stress to anesthesiologists. Physicians were not only at increased risks of COVID-19 themselves but also risked potentially exposing family members and loved ones to SARS-CoV-2, causing significant anxiety. Some anesthesiologists avoided contact with their family to prevent the potential spread of infection. Some providers stayed in their garage, some stayed in a hotel, or even sent their children away to grandparents. In one dual physician family, anesthesia and critical care, concern over who would take care of their children should they contract COVID-19 on the front lines led them to send their children to live with family in Singapore. They did not see their children for 109 days [34]. With many schools closed and required quarantines after exposures, reliable childcare was also a significant source of anxiety for many anesthesiologists who cannot easily miss work. This burden did not fall equally on

men and women. Prepandemic women already did almost twice as much child-care compared with men. The COVID-19 pandemic added an additional work to an already disparate baseline. A study coauthored by McKinsey and Lean-In.org, the 2020 Women in Workplace study, revealed that 40% of mothers added three or more additional hours of caregiving a day to their schedule, compared with 27% of fathers [35].

The highly contagious nature of COVID-19, the initial knowledge gap about mechanisms (and prevention) of spread, and limited testing also had a significant psychological effect on anesthesiologists [36]. While other specialties were able to continue their work remotely through telehealth, most anesthesiologists, due to the hands-on nature of the practice, did not have this option. The negative psychological impact is supported by multiple studies. A cross sectional survey-based study collected mental health data from anesthesia and ICU physicians working in Cairo university hospitals in March and April 2020. The survey revealed 65% with a high level of psychological stress among anesthesia and intensive care physicians treating suspected or confirmed patients with COVID-19 [37]. This study confirmed the most important concerns among providers were fears of contracting the disease, transmitting the disease to others, and insufficient availability of PPE. A survey of frontline health care workers in China engaged in direct diagnosis, treatment, and care of patients with COVID-19 demonstrated significantly higher risks of symptoms of depression (OR: 1.5, P .01), insomnia (OR: 2.97, P <.001), distress (OR: 1.6, P <.001), and anxiety (OR 1.6, P <0.1) [38]. Another survey of medical staff reported more than one third-of medical staff reported insomnia symptoms during the COVID-19 outbreak [39].

A study from The University of Pennsylvania's Anesthesia Department found nearly half of those surveyed believed they were likely to contract COVID-19 at work. Interestingly, the culture of anxiety they observed in their colleagues related to the pandemic further increased individual anxiety. They concluded that anxiety directly influenced emotional exhaustion and therefore would contribute to burnout [39].

Academic faculty have also been significantly impacted during COVID-19. A survey performed by Fidelity and the Chronicle of Higher Education revealed that indicators of burnout have risen dramatically in higher education. A pool of US faculty members found that almost 70% felt stressed in 2020 and more than double the number in 2019 (32%). More than two-thirds of those surveyed felt a deterioration of work-life balance, especially female faculty during the pandemic [40].

Financial impact

During the first wave of COVID-19, the majority of elective surgical procedures were canceled to prepare for potential inpatient surges in patients with COVID-19. While less time may have been spent in the operating room, anesthesiologists were often redeployed to various locations such as critical care units and faced unpredictable and irregular hours.

Decreased elective case volumes lowered the planned workload for many anesthesia practices and had significant financial consequences. For private practice groups where compensation is directly linked for payment of anesthesia, furloughs or reductions in staffing led to a decrease in compensation. In practices where some employees were furloughed, determining who, and what type of provider (C.R.N.A., anesthesiologist) presented a challenge for anesthesia leadership [41]. Anesthesiologists who work in the ambulatory setting or pain clinic saw significant drops in patient demand. The Coronavirus Aid, Relief and Economic Security Act has tempered some of the effects by providing some financial support to small businesses. However, with no clear-cut end in sight, financial uncertainty continues to be a major concern for many.

IDENTIFYING BURNOUT IN ANESTHESIOLOGY DEPARTMENTS

Identifying and measuring physician burnout presents a variety of challenges. Individuals may lack insight into their own degree of burnout, hence numerous tools are available to assist in objectively capturing burnout data [42]. Additionally, varying ways to define and detect burnout can change the way physician burnout is identified. Choosing the appropriate survey tool and then interpreting the results in a useful way can be intimidating. Basing interventions on data that is insufficiently valid or incorrectly interpreted can undermine positive improvements. Survey tools differ on the burden they pose to respondents, the burden posed to organizations, the degree to which the data is actionable, the sensitivity to affect change, the psychometric support, and applicability [43]. Here, we will briefly review some common survey instruments. The Maslach Burnout Inventory – Human Services Survey (MBI-HSS) is a commonly used measure of physician burnout [2]. It uses the three subscales to identify emotional exhaustion, depersonalization, and reduced personal accomplishment. In each domain, respondents self-report the frequency with which they experience feelings addressed in each question, with a total of 22 items surveyed. As the most widely used assessment tool, the MBI-HSS is well-validated. There is robust data showing that survey scores correlate to outcomes of interest, particularly in the emotional exhaustion and depersonalization domains [12,44]. There is a fee associated with using it, and analysis entails some complexity. Contrast this with a single-item burnout measure such as the Physician Worklife Survey (mini-Z) (PWLS) [45]. In this free-to-use survey, respondents are asked about self-defined burnout and prompted to use a five-choice scale to rate. The simple nature of the question (“Overall, based on your definition of burnout, how would you rate your level of burnout?”) allows for low respondent burden. Single-item, self-defined surveys have been validated as correlating with the MBI emotional exhaustion subscale, but the PWLS missed half of high-burnout clinicians when compared with MBI in another study [42,46].

Other available survey tools include the Copenhagen Burnout Inventory and the Oldenburg Burnout Inventory [47,48]. Both are similar to the MBI in that they assess various domains of burnout with a series of items, therefore

requiring some complexity in analysis. In addition to these surveys that focus on burnout, several survey instruments exist that assess general well-being but are beyond the scope of this review. Table 2 outlines the aforementioned burnout survey tools.

AM I BURNED OUT OR JUST STRESSED?

Burnout can result from prolonged stress, but there are key differences between the two. Stress typically displays itself in physicians by being hyperactive, hyper-engaged, and working nonstop, with little time to stop and focus on interpersonal connections. On the continuum of stress is burnout; burnout can occur after ineffective coping mechanisms to deal with stress. It is important to recognize differences between stress and burnout both in ourselves and our work colleagues. While a stressed-out physician may be hyper-engaged, a burned-out physician is quite the opposite: they are disengaged, have lost hope in systems, and may appear to be or suddenly act withdrawn. While a stressed-out individual displays more anxiety behaviors, a burned-out individual may be highly inefficient in work areas, where they once thrived, due to loss of hope, significant apathy for any change or relief, or due to fears of contracting COVID-19.

While excessive stress is associated with burnout, effective coping mechanisms to deal with stress can prevent burnout. Burnout specifically relates to the triad of symptoms described previously including emotional exhaustion, depersonalization and low personal accomplishment as described before [49]. Table 3 contrasts differences between stress and burnout.

PREVENTION OF BURNOUT AND EMOTIONAL EXHAUSTION FROM COVID-19

Addressing physician burnout during a pandemic presents unique challenges. Evidence regarding interventions specifically tailored to COVID-19-related burnout is sparse, but burnout prevention remains the mainstay. Preventing physician burnout relies on strategies at individual, team, and institutional levels [50].

Table 2

Summary of two common burnout survey tools

Tool	Description
Maslach Burnout Inventory – Human Services Survey (MBI-HSS)	<ul style="list-style-type: none"> • Three subdomains to identify emotional exhaustion, depersonalization and reduced personal accomplishment • Most widely used assessment tool • Well validated
Physician Worklife Survey (PWLS, mini-Z)	<ul style="list-style-type: none"> • Free to use • Ask about self-defined burnout with five choice scale to rate • Validated to correlate with MBI emotional exhaustion subscale, may miss up to 50%

Table 3

Differences in individual expression between stress and burnout

Stress	Burnout
Over engagement	Disengagement
Over reactive	Blunted
Urgency and hyperactivity	Helplessness and hopelessness
Loss of energy	Loss of motivation
Physical damage	Emotional damage
Anxiety disorders	Detachment and depression

Individual

Self-care, in particular, is a critical aspect of the health care system's response to the COVID-19 pandemic. Health care providers have a duty to care for themselves as much as for their patients. Prevention strategies include those that are resilience focused and those that are aimed at limiting negative drivers. Stress management training, exercise programs, mindfulness, and other self-care methods are approaches that have evidence showing positive effects [51].

Team

Health care teams are smaller groups of providers (eg, those who share shift assignments or a departmental division) that afford an opportunity to intervene on burnout in a way that is nimbler than at an institutional level, and more community-focused than the individual level. Team interventions dedicated to preventing burnout include those intended to facilitate appropriate work distribution and those that engender peer support. During the COVID-19 pandemic, successful teams have freed clinicians from other tasks in order to focus on the disproportionate effect of clinical work. Work hours can be restricted, acknowledging the challenging balance between staffing a busy unit and allowing adequate time off for team members. The "battle buddy" concept is a peer support system modeled by the United States Army and effectively adapted to health care use by a number of medical centers [52]. The initiative invites staff members to identify a "battle buddy" and periodically check in with that person regarding well-being or specific concerns.

Institutional

Leaders at an organizational level recognize that individual resilience strategies alone will not prevent burnout. Shanafelt, and colleagues, insightfully categorized the institutional approaches to wellness as responses specifically tailored to health care workers' needs: the needs to be heard, protected, prepared, supported, and cared for [53]. Importantly, providing channels for workforce feedback, such as listening groups, town halls, suggestion boxes, and availability of hospital leaders in work areas ensures that health care workers remain part of the decision-making process. Insofar as much of the stress and additional burnout related to COVID-19 centers around personal risk of exposure, institutional strategies should appropriately focus on measures such as providing adequate PPE, rapid access to occupational health, and information and

resources directed at protecting employees' family members. Health care team members who are at increased risk are especially sensitive to practical accommodations that minimize their infectious exposure. Finally, supporting health care providers from an institutional level may include fostering a team-oriented environment that recognizes the challenges and novelty of the pandemic. Rapid team training in developing diagnostics, treatments, and directions is essential. In addition, institutions should attempt to provide timely evidence-based updates on the rapidly expanding knowledgebase and effects on clinical practices.

STRATEGIES TO RECOVER FROM BURNOUT

Because burnout is caused by situational (primary) and personal factors, strategies needed to recover from burnout are multidimensional. Those strategies have to occur at both the organizational and personal levels and involve a combination of educational, practice changes, and skill-building constructs.

Effective organization-directed interventions involve changes in the scheduling process to allow reductions in the workload intensity, as well as increase participation in decision-making. Other effective strategies involve changes to the policies and practices to improve teamwork and work evaluation. In this way, physicians may feel a reduction in job demand and enhancement regarding their job control. Furthermore, organizational-directed interventions focus on measuring well-being periodically, creating an organizational framework (eg, professional fulfillment model), and developing infrastructure (reactive interventions for struggling physicians and proactive interventions) can help prevent burnout [54]. Physician-directed interventions typically involve courses on mindfulness or cognitive behavioral techniques that help enhance job competence and improve communication skills and coping strategies.

In a meta-analysis of controlled interventions to reduce burnout in physicians, Panagioti and colleagues [55] found that organization-directed interventions (rescheduling shifts, reducing workload, multidisciplinary meetings to enhance teamwork and leadership) were associated with higher treatment effects compared with physician-directed interventions. Regarding the career stage, interventions on more experienced physicians showed greater effectiveness than interventions targeting less experienced physicians.

Physician-directed interventions focus on prioritizing self-care (healthy sleep habits, nutrition, exercise, mindfulness, or cognitive behavioral techniques to enhance coping), shifting perspective (delegation, focusing on the role, and what one can control, better communication skills), reducing exposure to job stressors (resetting expectations of others for example), and seeking out connections (mentoring and seeking mentorship, professional and personal network) [56]. Table 4 lists the described institutional and individual strategies to prevent burnout.

DEVELOPING WELL CULTURES

The commitment to support a well culture, which can mitigate burnout, distress, and depression, needs to be embraced by leadership. There is a

Table 4

Institutional versus individual strategies to prevent burnout

Institutional strategies	Individual strategies
Allow reductions in workload intensity	Do meaningful work for you
Increase participation in decision-making	Prioritize self-care (sleep hygiene, exercise)
Incorporate multidisciplinary meetings to enhance teamwork and leadership	Reduce exposure to job stressors
Measure well-being	Seek out connections (mentor, mentorship, professional and personal networking)
Develop infrastructure and interventions for struggling physicians	Shifting perspective (delegation, focus on controlling what you can)
Teach mindfulness, cognitive behavioral techniques to help coping and improve communication	Incorporate mindfulness, cognitive behavioral techniques to improve coping and improve communication

professional and business case for a well culture. Reducing burnout can positively impact any department or practice, including higher retention, improved recruitment, elevated morale, enhanced patient care, decreased medical errors, and, consequently, malpractice claims. In well-conducted surveys from anesthesiology residents and first-year graduates, Sun and colleagues [57] found that perceived institutional support, work–life balance, strength of social support, workload, and student debt impact physician anesthesiologists' well-being.

The American Medical Association recommends following these seven steps when developing a well culture: (1) establish wellness as a quality indicator, (2) start a wellness committee and choose a wellness champion, (3) distribute an annual wellness survey, (4) meet regularly with leaders and staff to discuss data and interventions to promote wellness, (5) initiate selected interventions, (6) repeat the survey within the year to re-evaluate wellness, and (7) seek answers within the data, refine interventions and continue to make improvements. Some other tested strategies to achieve a well culture include offering flexibility in scheduling, emphasizing or acknowledging lifestyle priority, encouraging faculty to take on small projects that interest them to increase engagement and sense of ownership, creating clear expectations, and showing gratitude. Creating a community at work is another successful strategy to combat burnout [58]. This systematic support can be directed following a negative and stressful clinical outcome (death in the operating room, for example) or during stressful and challenging times (pandemic).

SUMMARY

The COVID-19 pandemic has stressed an already challenged workforce in anesthesiology and has increased the risk for burnout even further. This article summarized the prevalence and risk factors, as well as strategies to identify and prevent burnout. Prevention is critical as burnout has significant implications on both institutions and the individual, and therefore routine assessment and measurement of burnout amongst team members by leadership is critical to

intervene. Prevention and treatment strategies include those focused on the individual, team, and institutional level. Feelings of support both in mentorship at work and at home are critical factors in an anesthesiologist's well-being. Ongoing commitment to support a well culture at the highest level of institutions should be embraced [12]. This culture creation should have frequent feedback and updates without fear of retaliation for feedback. Supportive leadership, control of work schedules, and promotion of both one's professional and personal life are key factors to mitigate burnout in anesthesiology [12,53,59].

FUNDING SOURCE

This study received funding from the Department of Anesthesiology, University of Nebraska Medical Center.

Disclosure

Dr. S.Shillcutt is the owner of Brave Enough LLC. The other authors have nothing to disclose.

Reference

- [1] Rotenstein LS, Torre M, Ramos MA, et al. Prevalence of burnout among physicians: a systematic review. *JAMA* 2018;320(11):1131–50.
- [2] Maslach C, Jackson SE, Leiter MP, et al. Maslach burnout inventory manual. 4th edition. Menlo Park, CA: Mind Garden Inc; 2016. Available at: <https://www.mindgarden.com/117-maslach-burnout-inventory-mbi>. Accessed March 19, 2021.
- [3] West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. *J Intern Med* 2018;283(6):516–29.
- [4] Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol* 2001;52:397–422.
- [5] Bianchi R, Schonfeld IS, Laurent E. Burnout-depression overlap: a review. *Clin Psychol Rev* 2015;36:28–41.
- [6] Purvanova RK, Muros JP. Gender differences in burnout: a meta-analysis. *J Vocat Behav* 2010;77(2):168–85.
- [7] Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med* 2012;172(18):1377–85.
- [8] Hyman SA, Shotwell MS, Michaels DR, et al. A survey evaluating burnout, health status, depression, reported alcohol and substance use, and social support of anesthesiologists. *Anesth Analg* 2017;125(6):2009–18.
- [9] Mion G, Journois D, Libert N. Burnout in American anesthetists, comparison with a French cohort. *Anesth Analg* 2018;126(6):2149.
- [10] Shah A, Wyatt M, Gourneau B, et al. Emotional exhaustion among anesthesia providers at a tertiary care center assessed using the MBI burnout survey. *Psychol Health Med* 2019;24(5):620–4.
- [11] Sanfilippo F, Noto A, Palumbo GJ, et al. Burnout in cardiac anesthesiologists: results from a national survey in Italy. *J Cardiothorac Vasc Anesth* 2018;32(6):2459–66.
- [12] Afonso AM, Cadwell JB, Staffa SJ, et al. Burnout rate and risk factors among Anesthesiologists in the United States. *Anesthesiology* 2021;134(5):683–96.
- [13] Maslach C, Leiter MP. Early predictors of job burnout and engagement. *J App Psychol* 2008;93(3):498–512.
- [14] Shanafelt T, Sloan J, Habermann T. The well-being of physicians. *Am J Med* 2003;114(6):513–7.

- [15] Nyssen AS, Hansez I, Baele P, et al. Occupational stress and burnout in anaesthesia. *Br J Anaesth* 2003;90(3):333–7.
- [16] Yrondi A, Fournier C, Fourcade O, et al. Burnout compared between anaesthesiology and psychiatry residents in France: an observational study. *Eur J Anaesthesiol* 2017;34(7):480–2.
- [17] De Oliveira GS Jr, Ahmad SS, Stock MC, et al. High incidence of burnout in academic chairpersons of anesthesiology: should we be taking better care of our leaders? *Anesthesiology* 2011;114(1):181–93.
- [18] De Oliveira GS Jr, Almeida MD, Ahmad SS, et al. Anesthesiology residency program director burnout. *J Clin Anesth* 2011;23(3):176–82.
- [19] Shanafelt TD, West CP, Sloan JA, et al. Career fit and burnout among academic faculty. *Arch Intern Med* 2009;169(10):990–5.
- [20] Sanfilippos F, Noto A, Foresta G, et al. Incidence and factors associated with burnout in anesthesiology: a systematic review. *Biomed Res Int* 2017;(4):1–10.
- [21] Maslach C, Leiter MP. *The truth about burnout: how organizations cause personal stress and what to do about it*. San Francisco, CA: Jossey-Bass; 1997.
- [22] Shanafelt TD, Bradley KA, Wipf JE, et al. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med* 2002;136(5):358–67.
- [23] Halbesleben JR, Rathert C. Linking physician burnout and patient outcomes: exploring the dyadic relationship between physicians and patients. *Health Care Manage Rev* 2008;33(1):29–39.
- [24] de Stefano C, Philippon A, Krastinova E, et al. Effect of emergency physician burnout on patient waiting times. *Intern Emerg Med* 2017; <https://doi.org/10.1007/s11739-017-1706-9>.
- [25] Institute of Medicine (US). Committee on Quality of Health Care in America. *To err is human: building a safer health system*. Washington (DC): National Academies Press (US); 2000.
- [26] Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. *Ann Surg* 2010;251(6):995–1000.
- [27] West CP, Tan AD, Shanafelt TD. Association of resident fatigue and distress with occupational blood and body fluid exposures and motor vehicle incidents. *Mayo Clin Proc* 2012;87(12):1138–44.
- [28] Tawfik DS, Profit J, Morgenthaler TI, et al. Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. *Mayo Clin Proc* 2018;93(11):1571–80.
- [29] Hamidi MS, Bohman B, Sandborg C, et al. Estimating institutional physician turnover attributable to self-reported burnout and associated financial burden: a case study. *BMC Health Serv Res* 2018;18(1):851.
- [30] Shanafelt TD, Mungo M, Schmitgen J, et al. Longitudinal study evaluating the association between physician burnout and changes in professional work effort. *Mayo Clin Proc* 2016;91(4):422–31.
- [31] Oreskovich MR, Kaups KL, Balch CM, et al. Prevalence of alcohol use disorders among American surgeons. *Arch Surg* 2012;147(2):168–74.
- [32] Dyrbye LN, Sotile W, Boone S, et al. A survey of U.S. physicians and their partners regarding the impact of work-home conflict. *J Gen Intern Med* 2014;29(1):155–61.
- [33] van der Heijden F, Dillingh G, Bakker A, et al. Suicidal thoughts among medical residents with burnout. *Arch Suicide Res* 2008;12(4):344–6.
- [34] Jenkins G. We didn't see our kids for 109 days. *New York Times*; 2020. Available at: <https://www.nytimes.com/2020/08/14/parenting/singapore-children-coronavirus.html>. Accessed March 22, 2021.
- [35] McKinsey & Company. *Women in the workplace*. LeanIn.Org. 2020. Available at: https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2020.pdf. Accessed May 18, 2021.

- [36] Sasangohar F, Jones SL, Masud FN, et al. Provider burnout and fatigue during the COVID-19 pandemic: lessons learned from a high-volume intensive care unit. *Anesth Analg* 2020;131(1):106–11.
- [37] Ali H, Ismail AA, Abdalwahab A. Mental stress in anesthesia and intensive care physicians during COVID-19 outbreak. *Anesth Pain Med* 2020;10(5):e106623.
- [38] Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3(3):e203976.
- [39] Zhang C, Yang L, Liu S, et al. Survey of insomnia and related social psychological factors among medical staff involved in the 2019 novel coronavirus disease outbreak. *Front Psychiatry* 2020;11:306.
- [40] Fidelity Investments. On the verge of burnout: Covid-19's impact on faculty well-being and career plans. *The Chronicle of Higher Education*; 2020. Available at: https://connect.chronicle.com/rs/931-EKA-218/images/Covid%26FacultyCareerPaths_Fidelity_Research-Brief_v3%20%281%29.pdf. Accessed May 18, 2021.
- [41] Miller TR, Radcliff TA. Economic shocks from the novel COVID-19 pandemic for anesthesiologists and their practices. *Anesth Analg* 2020;131(1):112–6.
- [42] Knox M, Willard-Grace R, Huang B, et al. Maslach burnout inventory and a self-defined, single-item burnout measure produce different clinician and staff burnout estimates. *J Gen Intern Med* 2018;33(8):1344–51.
- [43] Dyrbye LN, Meyers D, Ripp J, et al. A pragmatic approach for organizations to measure health care professional well-being. *NAM Perspectives*. Available at: <https://nam.edu/a-pragmatic-approach-for-organizations-to-measure-health-care-professional-well-being/>. Accessed March 22, 2021.
- [44] Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry* 2016;15:103–11.
- [45] Linzer M, Poplauer S, Babbott S, et al. Worklife and wellness in academic general internal medicine: results from a national survey. *J Gen Intern Med* 2016;31(9):1004–10.
- [46] Rohland BM, Kruse GR, Rohrer JE. Validation of a single-item measure of burnout against the Maslach Burnout Inventory among physicians. *Stress and Health* 2004;20(2):75–9.
- [47] Kristensen TS, Borritz M, Villadsen E, et al. The Copenhagen Burnout Inventory: a new tool for the assessment of burnout. *Work Stress* 2005;19(3):192–207.
- [48] Demerouti E, Bakker AB. The Oldenburg Burnout Inventory: a good alternative to measure burnout and engagement. *Handbook of Stress and Burnout in Healthcare*; 2008. Available at: https://www.researchgate.net/publication/46704152_The_Oldenburg_Burnout_Inventory_A_good_alternative_to_measure_burnout_and_engagement. Accessed March 22, 2021.
- [49] Rama-Maceiras P, Jokinen J, Kranke P. Stress and burnout in anesthesia: a real world problem? *Curr Opin Anaesthesiol* 2015;28(2):151–8.
- [50] Bradley M, Chahar P. Burnout of healthcare providers during COVID-19. *Cleve Clin J Med* 2020; <https://doi.org/10.3949/ccjm.87a.ccc051>.
- [51] Ruotsalainen JH, Verbeek JH, Marine A, et al. Preventing occupational stress in healthcare workers. *Cochrane Database Syst Rev* 2015;4:CD002892.
- [52] Albott CS, Wozniak JR, McGlinch BP, et al. Battle buddies: rapid deployment of a psychological resilience intervention for health care workers during the COVID-19 pandemic. *Anesth Analg* 2020;131(1):43–54.
- [53] Shanafelt T, Ripp J, Trockel M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. *JAMA* 2020;323(21):2133–4.
- [54] Marchalik D. What healthcare can teach other industries about preventing burnout. *Harvard Business Review*; 2020. Available at: <https://hbr.org/2020/10/what-health-care-can-teach-other-industries-about-preventing-burnout>. Accessed March 22, 2021.

-
- [55] Panagioti M, Panagopoulou E, Bower P, et al. Controlled interventions to reduce burnout in physicians: a systematic review and meta-analysis. *JAMA Intern Med* 2017;177(2): 195–205.
 - [56] Valcour M. Managing yourself beating burnout. *Harvard Business Review*; 2016. Available at: <https://hbr.org/2016/11/beating-burnout>. Accessed March 22, 2021.
 - [57] Sun H, Warner DO, Macario A, et al. Repeated cross-sectional surveys of burnout, distress, and depression among anesthesiology residents and first-year graduates. *Anesthesiology* 2019;131:668–77.
 - [58] Shapiro J, Galowitz P. Peer support for clinicians: a programmatic approach. *Acad Med* 2016;91(9):1200–4.
 - [59] Hyman SA. Burnout: the “other” pandemic. *Anesthesiology* 2021;134(5):673–5.