Wellness interventions for anesthesiologists

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Purpose of review
The review examines the different preventive measures that have been found to be useful to abolish or decrease the negative effects of burnout and increase resilience in anesthesiologists.

Recent findings
Studies in anesthesiology cite autonomy, control of the work environment, professional relationships, leadership, and organizational justice as the most important factors in job satisfaction. Factors such as difficulty in balancing personal and professional life, poor attention to wellness, work alcoholism, and genetic factors increase an individual's susceptibility to burnout. Exposure to chronic or repeated stress instigates a spectrum of autonomic, endocrine, immunologic, and behavioral responses that activate the sympathetic-adrenal-medullary and hypothalamic-pituitary-adrenal axis. Investigating the difference in psychobiologic reactivity, as well as defining the psychological symptoms that are characteristic to individuals vulnerable to stress-induced illness, would enable scientists to better look into the modalities to eradicate the negative effects. Recent studies have shown that a combination of individual and structural changes in institutions can increase resilience in physicians.

Summary
Burnout is a pathological syndrome that is triggered by constant levels of high stress. A combination of individual efforts as well as structural interventions can help to increase wellbeing in physicians.

Keywords
allostatic load, burnout, resilience, wellbeing

INTRODUCTION

Work-related demands for anesthesiologists have been a subject of concern in the past few decades. An anesthesiologist's job demands knowledge, sustained vigilance, effective communication with operating room staff and surgeons, as well as rapid decision making in challenging emergency situations. Studies on the effects of sleep deprivation in anesthesiologists have shown that it significantly decreases vigor, causes a perceptible decline in motor task performance, and increases fatigue, tension, and total mood disturbances after a night call [1,2▪]. There is growing concern about the effects of physician wellbeing on performance, productivity, absenteeism, job turnover, early retirement, and reduced revenue; as well as its impact on patient's safety and the overall healthcare system.

The following consensual factors are cited as contributing to professional stress in anesthesiologists:

(1) Time constraints
(2) Work overload
(3) Production pressure
(4) Complexity of clinical tasks
(5) Huge clinical responsibilities
(6) Fear of harming the patient
(7) Workplace atmosphere
(8) Communication difficulties
(9) Lack of job control
(10) Mixing family life with professional duties
(11) Fatigue

Negative coping behaviors, like addiction, are points of concern for anesthesiologists as well as physicians in other specialties. Prevalence rates of alcohol abuse and dependence among physicians are about equal to those seen in the population as a whole, whereas prescription drug misuse and dependence rates are far higher Anesthesiologists experience

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KEY POINTS

- There is growing concern about the effects of physicians' wellbeing on performance, productivity, increased absenteeism, job turnover, early retirement, and reduced revenue; as well as its impact on patient's safety and the overall healthcare system.
- Exposure to stressors instigates a spectrum of autonomic, endocrine, immunologic, and behavioral responses. However, there seem to be characteristics that are perceived to render individuals more or less vulnerable in the face of similarly stressful events.
- Individual-focused interventions, when combined with structural or organizational changes, have shown to increase physician wellbeing.

substance-abuse disorders at a rate reported to be 2.7 times that of other physicians [3,4]. Opioids (fentanyl and sufentanil) and less common agents, such as propofol, ketamine, nitrous oxide, potent volatile anesthetics, are cited as the most frequently abused drugs among anesthesiologists. Alcoholism impacts anesthesiologists at rates similar to those in other professions. The proximity to highly addictive drugs, the ease of diversion, and the stressful environment are referenced as possible factors for the high incidence of drug and alcohol abuse among anesthesiologists [5,6].

Physicians' suicide rates have repeatedly been reported to be higher than those of the general population. Studies on physicians' suicide collectively show modestly (men) to highly (women) elevated suicide rate ratios [7]. Multiple attempts have been made to prevent the negative effects of burnout in anesthesiologists; nevertheless, chronic fatigue, burnout, and the high rate of suicide and addiction continue to be persistent issues in both anesthesiology residents and faculty.

THE CONCEPT OF BURNOUT

The National Institute of Occupational Safety and Health recognize challenge as an important component of healthy and productive work. Challenge often motivates individuals to learn new skills and builds self-confidence. Stress is experienced when 'the demands exceed the personal, social capabilities, and resources'. This strain can lead to poor health and even injury. Burnout, as was first described by Maslach in the 1970s, is a pathological syndrome with physical, mental, and emotional responses to constant levels of high stress [8]. Burnout has three distinct components (emotional exhaustion, depersonalization, and feeling of inefficacy), which cause conflict, poor performance, medical errors, job dissatisfaction, cynicism, absenteeism, cognitive dysfunction, alcohol/drug abuse, and suicide ideation. These symptoms subsequently cause high levels of depression, which could, in turn, threaten an individual's job, physical health, and social relationships [9,10].

THE PHYSIOLOGICAL STRESS RESPONSE

Exposure to acute psychological or physiological stress activates a spectrum of autonomical, endocrine, immunological, and behavioral responses. The hallmark of the responses is the activation of the sympathetic-adrenal-medullary (SAM) and hypothalamic-pituitary-adrenal (HPA) axis [11]. Both systems are innervated by the amygdala and the hippocampus and are partially modulated by prefrontal cortices (PFCs).

Adrenal steroids along with catecholamines promote the movement of the immune cells to tissues and modulate the expression of the cytokines. Chronic hyperactivity of these mediators can result in immunosuppression, whereas the absence of sufficient levels of glucocorticoids increases the risk of autoimmune and inflammatory disorders [12]. HPA and SAM show different levels of specificity in reaction to and recovery from different types of stressors, and appear to follow different patterns of habituation to stress. It is important to note that according to the theory of cognitive appraisal, stress is a dynamic state which depends on both the environment and the individual response. Thus, different strategies have to be dealt with at both organizational and individual level to erase or alleviate the effects of stressors [13–15].

Activation of the SAM axis occurs rapidly (in response to stress) to prepare the body to either take fight or flight responses, whereas HPA activation occurs more slowly.

Corticotropin-releasing hormone (CRH) is one of the most important mediators of the stress response as it coordinates the adaptive behavioral and physiological changes that occur during stress [16–18]. Excessive and sustained cortisol secretion can have serious adverse effects, including hypertension, osteoporosis, immunosuppression, insulin resistance, dyslipidemia, and ultimately, atherosclerosis and cardiovascular disease. The ability to restrain the initial CRH response to acute stress may be related to psychobiological resilience. Dehydroepiandrosterone (DHEA) is also secreted with cortisol in response to changing adrenocorticotrophic hormone levels. Negative associations between plasma DHEA levels and depressive symptoms suggest that DHEA promotes psychological resilience [19–22]. Multiple studies have been performed on

the effect of DHEA on resilience, but none that we are aware of are specific to physicians to date.

THE CONCEPTS OF ALLOSTASIS AND ALLOSTATIC LOAD

The optimal function of both HPA and SAM systems is in response to acute, short-term exposure to stressors, whereas chronic exposure to prolonged stress takes a significant toll on these systems. The term allostasis means, 'maintaining stability (or homeostasis) through change'. Allostatic load is when normal allostatic processes fail to shut off [23–27]. Chronic stress can dysregulate the HPA and SAM axis as well as the immune system. Over time, high allostatic load leads to a variety of adverse physical and mental health consequences (e.g., hypertension, cardiovascular disease, depression, anxiety, burnout, etc.) [28–32]. Initially, chronic stress launches a series of biological and psychological mediators (allostatic load), which contribute to physical, emotional, and behavioral disorders. It affects specific brain regions that are responsible for effective coping and adaptation, including the hippocampus and regions of the PFC. It subsequently further impairs the individual's ability to cope with the situation [33–35]. Research in the field of psychoneuroimmunology during the past 3 decades shows that stressful experiences alter the regulation of the immune system and inflammatory processes, and can potentially increase the risk of infection, depression, autoimmune, and coronary artery disease [36]. In summary, stressors elevate the risk of disease through two important key pathways: negative behavioral changes that occur as a coping mechanism to the stressors. Stress-induced responses; HPA and SAM systems [37,38]. Prolonged activation of these two systems can put one at increased risk for physical and psychiatric disorders.

INDIVIDUAL DIFFERENCES IN STRESS REACTIVITY

Although it is well known that stress plays a role in the cause and progression of a broad range of physical diseases, there seem to be characteristics that are perceived to render individuals more or less vulnerable in the face of the identical stressful events. Enormous individual differences based on personal, social, and biological characteristics, as well as the work environment, affect an individual's response to a stressful event [39–41]. Factors, such as perfectionism, poor attention to wellness, work alcoholism, difficulty in balancing personal and professional life, and genetic factors, increase an individual's susceptibility to burnout [42▪]. Delineating psychological characteristics that render individuals vulnerable to stress-induced illnesses, as well as investigating the difference in psychobiologic reactivity (the magnitude of cardiovascular and immune responses), allow scientists to determine this connection and look into the modalities in order to eradicate the negative effects. Although many research projects have been conducted to examine the effect of individual differences on stress reactivity in both physical and psychological disorders, nothing has been done in anesthesiologists or any other physicians. The need to better understand these interactions informs our future research projects.

STRATEGIES TO PROMOTE WELLNESS AND DECREASE VULNERABILITY TO BURNOUT

Studies in anesthesiology cite autonomy, control of the work environment, professional relationships, leadership, and organizational justice as the most important factors in job satisfaction. Different institutions have proposed various techniques and measures to increase job satisfaction, physician wellbeing, and system outcomes. Both individual-focused and structural or organizational interventions have shown to decrease vulnerability to burnout in physicians. A combination of both strategies probably has an enhanced effect on reducing physician burnout.

ORGANIZATIONAL EFFORTS

Recent studies show a national burnout rate of 46% among physicians in practice, including private practice, academic medical centers, and the Department of Veteran's Affairs [43]. With almost half of United States doctors showing signs of burnout and numerous adverse outcomes for physicians linked to burnout, it is an important issue for practices to address. Reducing burnout can have a positive impact on clinical practices, including higher retention rates, improved devotion to patients, better morale in the office, and improved recruitment. The four major factors that are known to contribute to burn out are lack of control over work conditions, time pressure, chaotic workplace, and lack of alignment value between providers and leaders [44]. A recent article from Mayo Clinic suggests several strategies to promote physician wellbeing at the organization level [45▪▪].

(1) The initial step is to increase awareness by starting a candid dialogue with the administrators and the chief executive officer (CEO) about the importance of physician wellness, its impact on the individual, patient's care, and the overall healthcare system. Physician wellbeing has been

shown to be crucial to the health and viability of the organization; and therefore, physician wellbeing should be systematically measured through Linzer's assessment of various criteria (such as satisfaction, burnout, engagement, professional fatigue, emotional health/stress, and quality of life) at regular intervals [46,47]. Linzer's assessment describes seven steps to prevent burnout establishing wellness as a quality indicator for the workplace, start a wellness committee and/or choose a wellness champion, distribute an annual wellness survey, regular meeting with leaders to discuss data and interventions to promote wellness, implement selected interventions, repeat and reevaluate in 1 year, and seek answers and continue improvements.

(2) Acknowledgement of the critical role of the leadership behavior of the immediate supervisor (section chief/department chair) on the wellbeing of the department physicians. The 2013 Study [48] showed that a one-point increase in the leadership score was associated with a 3.3% decrease in burnout ($P<0.001$) and a 9.0% increase in physician's satisfaction ($P<0.001$). This program suggests the active participation of organization's CEO. Individuals must regularly assess the performance of the leader and the organization needs to have the courage to change leadership when necessary.

(3) Development and the implementation of focused interventions by identifying and addressing specific factors causing dissatisfaction and creating a collaborative action plan to improve physician burnout and satisfaction [49].

(4) Cultivating peer support and a safe environment that help physicians to navigate challenges, such as workplace conflicts, malpractice suits, and medical errors [50].

(5) Looking into rewards and incentives that could facilitate work–life balance (flexibility) or protected time for a meaningful activity for professional fulfillment (research, community outreach, and mentorship), instead of simple financial rewards [51,52]. One of the great examples is the 'Time bank' initiative by Stanford University Department of Emergency Medicine. This initiative provides faculty with meals, housecleaning, babysitting, elder care, movie tickets, grant writing help, handyman services, dry cleaning pickup, and speech training, Web support and more—as part of a program aimed at addressing complex challenges facing physicians [53].

(6) Having an open dialogue designed to assess values through candid feedback and to affirm the partnership between physicians and the institution [54].

(7) Promoting flexibility and allowing physicians to tailor their work hours to meet both personal-professional balance [55].

(8) Sincere efforts to address issues leading to burnout, coupled with resources that help to promote self-care and resilience [56].

(9) Developing evidence-based strategies and scientific efforts to conduct intervention studies, randomized trials, and establishing new metrics and national benchmarks.

INTERVENTIONS AT AN INDIVIDUAL LEVEL

Apart from organizational efforts, individuals can use active coping mechanisms and modalities that could potentially increase resilience and reduce vulnerability to burnout. Resilience is the ability of an individual to retain some sense of control over the environment, maintain equilibrium, adjust to adversity, and continue to move on in a positive manner [57]. There is increasing evidence that similar stressors in different individuals can result in diverse outcomes. In early studies, resilience was viewed as an inherited characteristic [58]. However, later on, when research moved beyond adverse conditions (such as early life socioeconomic disadvantages, violence, chronic illness, and catastrophic life events), it was discovered that resilience is an interaction of both protective and risk factors over time, involving individual and family history, as well as larger sociocultural support [59]. Resilience is an active process and is strongly associated with factors, such as self-reflection, competence, confidence, optimism, and social support [60–62]. There is no one unique intervention to increase resilience that can fit all. Studies have shown that learning stress management techniques and positive adaptive coping mechanisms improves vulnerability to burnout and increases resilience [63,64]. Modalities that concentrate on effective communication and interpersonal skills were used to increase social support, enhance the individual's capacity to cope, and avoid maladaptive behaviors. Jackson suggests that concentrating on factors, such as self-care, healthy nutrition, daily meditation, assertiveness, support seeking, situation mastery, avoiding chaos, flexibility, time management, and sense of humor could increase wellbeing. Another popular approach is developing mindfulness, which refers to a meditation practice that cultivates present moment awareness. One of the most researched stress management programs is mindfulness-based stress reduction (MBSR). MBSR teaches mindfulness, which is the ability to attend to thoughts and

emotions as they arise and to be fully conscious of the present moment experience. MBSR is typically run as an 8-week course instructing the practice of meditation, body scan (a type of guided awareness), and hatha yoga. One of the strengths of MBSR, in contrast to most stress-reduction programs, is that it offers participants different mindfulness practices to choose from. Research indicates that participants often find one of the three practices more beneficial or preferred for personal reasons, which improve compliance [65–68]. Other common interventions include small group discussions [69–72], relaxation training [73], art, music [74], and other multicomponent interventions [75–78]. Diverse stress management techniques include cognitive–behavioral training [79–82]. One of such interventions was the program that our team started at the Department of Anesthesia at Yale University. The purpose of that intervention was to evaluate the effects of an evidenced-based, workplace program (Coping with Work and Family Stress) in anesthesiology residents [83–85]. The intervention consisted of 16 1.5 h weekly sessions. The program was based on Pearlin and Schooler's hierarchy of coping mechanisms, which consists of four components [86]. The first is aimed at eliminating or modifying sources of stress, which included training on the identification of stressful situations and the use of effective problem-solving, communication skills, and strategies to increase residents' social networks. The second component involved instruction in approaches to modify cognitive and appraisal processes. The third emphasized stress management techniques (e.g., deep breathing, muscle relaxation, healthy eating, and exercise) and minimizing the use of avoidance coping (e.g., reducing problem avoidance or use of alcohol to reduce tension, and teaching refusal skills). The final component integrated the course material with the creation of participants' own personal stress management plans. Residents were randomly assigned to three different groups to compare the effects: wellness intervention, no-treatment control with release time, and no-treatment control with routine duties. Coping, stressors, social support, psychological symptoms, and alcohol and tobacco use were measured before and after the intervention. Our study showed that residents in the wellness program reported significantly fewer stressors in their role as a parent, were able to increase social support at work, developed greater problem-solving coping skills, showed less anxiety, and used less avoidance coping (e.g., alcohol consumption) as compared with one or both of the control groups. The intervention discontinued after the study, due to the lack of funding and compact residency training curriculum.

Another example is the University of Saskatchewan novel, comprehensive and formalized program, called The Anesthesiology Residency Wellness Program (ARWP). The intervention comprised of four components: modular curriculum, peer support curriculum, self-directed learning activities, and department wellness program [87]. The curriculum modules comprised of eight modules: physician wellness, physician resilience, professionalism, occupational wellness, emotional wellness, financial wellness and career management, social wellness/team building, and situational awareness and mindfulness. The Peer Support Curriculum includes the Resident Wellness Committee, Mentorship, evening program and discussion about transitions. The fourth component includes Grand Rounds and lectures on wellness and professionalism, opportunities for social engagement, and collaboration with other healthcare professionals. The ARWP curriculum seminars run a 2-year cycle, with two of eight modules offered per term (i.e., four sessions per academic year). In circumstances when the compact residency training prevent the full four sessions per year, the department combines two modules and present relevant topics at Grand Rounds or in visiting guest lecturer series.

CONCLUSION

Anesthesiologists deal with urgent and emergent situations that can persistently generate stress and threaten physician wellbeing. Identifying stressors, as well as factors that cause differences in individual stress reactivity, can help with creating appropriate interventions to address the negative impacts. The role of these interventions is to present a variety of different tools and coping skills that allow the individual to choose the appropriate modality that works best for them.

Strategies that promote physician wellbeing at the organizational level include increasing awareness; effective leadership; identifying specific factors causing dissatisfaction; creating a collaborative action plan; cultivating peer support; designing incentives that could facilitate work-life balance; creating a safe environment for an open dialogue and honest feedback; promoting flexibility and encouraging intervention studies. In addition, physicians can utilize different modalities, such as promoting self-care and healthy lifestyles, increasing energy, self-compassion, empathy, and pursuit of excellence (but not perfection) at an individual level to increase resilience and wellbeing.

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Conflicts of interest

There are no conflicts of interest.

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- ■ of special interest
- ■■ of outstanding interest

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