

Optimizing Wellness in Academic Emergency Medicine

Kristen E. Nordenholz, MD, MSc¹, Al'ai Alvarez, MD^{2*}, Michelle D. Lall, MD, MHS³, Christine Stehman, MD⁴, Cindy C. Bitter, MD, MA, MPH⁵, Emily L. Hirsh, MD⁶, Rita Manfredi, MD⁷, Rosanna D. Sikora, MD⁸, Dave W. Lu, MD, MS, MBE⁹, Leon D. Sanchez, MD, MPH¹⁰, Matthew L. Wong, MD, MPH¹⁰, Steven Bird, MD¹¹, Andra L. Blomkalns, MD, MBA²

DOI: 10.18297/jwellness/vol2/iss2/8

Website: <https://jr.library.louisville.edu/jwellness/>

Affiliations: ¹University of Colorado School of Medicine, ²Stanford University School of Medicine, ³Emory University School of Medicine, ⁴University of Illinois, Department of Emergency Medicine, ⁵Saint Louis University, ⁶Prisma Health/University of South Carolina School of Medicine, Greenville, ⁷George Washington School of Medicine and Health Sciences, ⁸West Virginia University, School of Medicine, ⁹University of Washington - Seattle Campus, ¹⁰Beth Israel Deaconess Medical Center, Department of Emergency Medicine, ¹¹University of Massachusetts Medical School

Recommended Citation: Nordenholz, Kristen E.; Alvarez, Al'ai; Lall, Michelle D.; Stehman, Christine; Bitter, Cindy C.; Hirsh, Emily L.; Manfredi, Rita; Sikora, Rosanna D.; Lu, Dave W.; Sanchez, Leon D.; Wong, Matthew L.; Bird, Steven; Blomkalns, Andra L. (2020) "Optimizing Wellness in Academic Emergency Medicine," *Journal of Wellness*: Vol. 2 : Iss. 2, Article 8.

Received Date: Aug 09, 2020

Accepted Date: Oct 07, 2020

Publication Date: Oct 22, 2020



Abstract

Introduction: Academic Emergency Physicians (EPs) face additional unique challenges in optimizing wellness compared to community EPs.

Objective: Our objective was to explore specific individual and systems challenges that academic EPs encounter that affect their wellbeing and professional fulfillment in emergency medicine (EM).

Methods: An expert group of academic EPs convened in 2019 at the annual meeting of the Society of Academic Emergency Medicine to investigate the overall causes of burnout in healthcare providers, the effects of burnout on the healthcare system, specific causes of burnout in EM, and the distinct challenges facing academic emergency physicians.

Results: We outline specific causes of burnout in EM and the effects of burnout on the healthcare system. Scholarly productivity pressures, variable reimbursement gaps, time allotment, and work-life balance are challenges facing academic EPs.

Conclusion: Understanding the unique challenges of academic EPs in optimizing wellness is vital to inform future research and effective interventions.

INTRODUCTION

Challenges

Case 1

I breathe deeply, looking at my patient list on the electronic health record. It took 10 minutes and 37 mouse clicks just to order a simple life-saving medication. There are an uneaten energy bar and a cold cup of coffee sitting next to my computer. The admitting teams are both capped and tired, leading to several tense exchanges when admitting a patient. Overhearing the conversation, one patient's family member states, "I don't want my mother admitted to any doctor who does not want her."

Case 2

There is significant pressure to publish in academic EM in order to show the value of my work. My chair expects me to publish, submit grants, perform research, attend departmental conferences, present nationally, and teach medical students. How can I accomplish these tasks in addition to working my irregular, erratic shifts, which leave me exhausted?

BACKGROUND

Burnout Definition

Burnout has been well described by the World Health Organization (WHO) in the 11th Revision of the International Classification of Diseases (ICD-11) [1]. Burnout is a result of

chronic workplace stressors, rather than individual mental health factors [2]. While some consider depression and suicide as an occupational hazard in the medical profession [3], burnout differs from depression and other mood disorders, as mood disorders encompass a person's whole life. In contrast, burnout is specific to one's relation to his/her work environment. Although it is often treated as a dichotomous variable in research [4], burnout exists along a continuous spectrum. Several tools are available to assess physician burnout and wellbeing [5-14] and the resulting consequences in the affected systems.

The Problem of Burnout in Healthcare Providers

Healthcare providers, organizations, and patients desire safe, high-quality, and high-value care.

Unfortunately, the rising prevalence of burnout among healthcare providers, particularly physicians, especially emergency physicians (EPs), increasingly threatens this central goal. The prevalence of burnout in physicians is more than twice that observed in the general adult working population, despite physicians reporting less burnout as first-year medical students compared to their age-adjusted non-medical peers [15]. As the prevalence of burnout increases, so do the associated adverse effects in healthcare among physicians

*Correspondence To: Al'ai Alvarez
Email: aalvarez2@stanford.edu

Copyright: © 2020 The author(s). This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

and their patients. Burned-out physicians enjoy their jobs less [16] and likely intend to leave [17-19], and demonstrate both decreased productivity [20, 21] and a higher prevalence of substance abuse disorders [22, 23]. These physicians also practice less cost-effective medicine. That is, they order more laboratory and imaging tests, consultations, and spend increased time charting [24]. They also make more medical errors [25, 26], have worse patient outcomes, and poorer patient adherence to recommendations [27, 28] than their non-burned out peers. Fully understanding physician burnout involves understanding its definition, effects, and causes.

METHODS

Society for Academic Emergency Medicine (SAEM) Wellness Initiatives

In 2018, then president of SAEM, D. Mark Courtney MD, charged the newly formed national Wellness Committee to define the state of burnout in medicine, academic medicine, and specifically in academic EM. Andra Blomkalns, MD, the immediate past-president of SAEM, was assigned its first chair. Designated SAEM members known to be involved in wellness initiatives and burnout interventions, including those who had demonstrated scholarly activity, comprised the Wellness Committee.

SAEM also planned to host an additional initiative called the Wellness Consensus Conference in May of 2019 to explore the current climate and cultural and systemic issues challenging physician wellbeing in EM [29-31]. One of this conference's goals was to outlay a research agenda needed to understand this systemic problem. Consensus conference participants included EM leaders in wellness as determined by the conference co-chairs, Rosanna Sikora, MD, and Rita Manfredi, MD. This SAEM Consensus Conference demonstrated the greater need for cultural change in EM with specific recommendations to study which interventions at a broader systems' level are effective. Continuing professional assessment over the emergency provider's lifespan is crucial in guiding wellness and resilience interventions and assessing physician wellbeing with positive flourishing indices, rather than negative burnout scales [32-34].

SAEM has clearly committed to advancing the science and practice of wellness, improving professional fulfillment, and mitigating burnout of its members and in all of academic EM. The first step in doing this was to perform a wellness survey of SAEM EM providers, faculty, and trainees. SAEM modeled its survey after the well-known and previously validated Stanford Wellness Survey [35]. Moreover, SAEM modified the survey with permission to add focus on potential challenges unique to academic EM. Examples of additional questions pertinent to academia included, "[To what extent] am I able to balance my academic responsibilities and clinical responsibilities," "[To what extent] have I seriously considered pursuing a job outside the academic environment," and "[To what extent] Leadership values my academic work?"

The survey was administered by Roundtable Analytics (<https://roundtableanalytics.com>) and completed in late 2019. With 1046 responses (18% of the total possible respondents), it represents the most extensive wellness assessment in academic EM to date. This large amount of data is still being analyzed to provide answers for a myriad of questions and continues facilitating the creation of new interventions, new hypotheses, and ultimately progress in this area. This survey offers the groundwork for academic departments, and SAEM as a whole, to begin to address wellness in academic EM. Preliminary results shared at the SAEM Annual Meeting 2020 Plenary Session suggested that while burnout was prevalent amongst academic EM physicians, the gender and racial differences identified previously appear to not exist currently in the survey respondents [36]. The survey also identified several

challenges of wellness in the academic EM community.

One of the objectives for the SAEM Wellness Committee was to assess the current literature on wellness in academia, wellness in EM, and create a whitepaper outlining the best possible available assessment of the academic EM environment. Volunteers of the overall committee formed the white paper subcommittee and are the authors of this manuscript. We independently searched the medical literature and publicly available websites using personally available methods and means with terms and combinations of words of "wellness," "medicine," "burnout," "resiliency," "faculty," "residents," "academic medicine," "emergency medicine," "medical training," "academia/academic/academic environment," "burnout and performance," "burnout and health," "burnout and system," "workplace violence," and "wellness strategies." Efforts included monthly conference calls and shared online documents to create this document over 18 months iteratively.

DISCUSSION

Physician Burnout Effects on the Healthcare System

Physician burnout has wide-reaching effects throughout healthcare, including patient care, provider health, and the medical profession's sustainability. For example, the perceived burdens of poor teamwork, excess volume, and low patient safety correlate with objective measures of being understaffed and worse patient outcomes (e.g., poor medication compliance, increased readmissions, and longer lengths of stay) [37]. Physicians with poor personal health habits are less likely than healthy physicians to recommend evidence-based screening and prevention to their patients [22, 38]. These issues, in turn, ripple downstream, creating further negative effects.

The Financial Cost of Burnout

Physician burnout is costly. Burned-out physicians attempt to ameliorate burnout by leaving healthcare [39-41], reducing their work hours, or change work environments [42]. The cost of replacing a physician due to burnout varies (\$50,000 to \$500,000), and a conservative estimate to replace an EM physician is \$160,000 [43]. Stanford's research revealed that physicians quitting due to burnout led to an institutional two-year recruitment cost of \$15.5-\$55.6 million [44]. Other study estimated that burnout-associated physician turnover and reduced productivity cost approximately \$4.6 billion annually [41].

Decreased Physician Performance

Burnout affects multiple aspects of physician work performance. A recent meta-analysis of 47 studies including 42,473 physicians demonstrated that physician burnout was associated with an increased risk of patient safety incidents (OR 1.96), reduced quality of care (OR 2.31), and reduced patient satisfaction (OR 2.28) [45]. Many studies demonstrate a direct relationship between physician burnout and self-identified or perceived medical errors [16, 25, 46-50]. Unfortunately, since an individual's risk of burnout increases as burnout increases among his/her peers, these errors spread [51]. Prior studies examining the aggregate level of burnout among healthcare teams found a correlation between team burnout and patients' mortality rates cared for by those teams [52]. Patients cared for by physicians experiencing depersonalization have a higher risk of a prolonged recovery [53]. Patients who feel their physicians are not compassionate have higher PTSD rates after critical illness [54]. Finally, burnout is associated with increased risk of malpractice claims, likely due to low patient satisfaction and suboptimal doctor-patient communication [55-57]. Physicians who experience burnout are more likely to be named in a malpractice suit, and likewise, physicians can develop burnout due to litigation [44, 58-61].

Burnout Effects on Physicians' Health: PTSD, Depression, Substance Use and Suicide

Burnout harms a physician's physical health by increasing an individual's risk for cardiovascular disease, obesity, sleep disturbances, hypercholesterolemia, and type 2 diabetes [62-65]. These may all be related to the increased insomnia, sleep fragmentation, and non-restorative sleep found in people with burnout [62, 66]. Physicians who suffer from burnout experience an increased risk of occupational injuries, including needle sticks, bodily fluid exposures, fatigue, and impaired sleep leading to motor vehicle collisions [67, 68].

Burnout also affects a physician's mental health. Burnout is a risk factor for post-traumatic stress disorder (PTSD) [69], something that affects between 12-20% of EM physicians [70-73], with 12% of US EM residents meeting the criteria for PTSD and 30% experiencing less severe symptoms. PTSD is associated with weight gain, sleep disturbance, decreased quality of life, and more missed days of work [74]. Physicians of all levels are apprehensive about seeking mental health care, fearing that doing so will impair their advancement chances. There is a stigma for mental health in healthcare, and the needed self-disclosure required for getting help can affect medical licensure in certain states [75, 76].

Burnout and depression, although distinct entities, correlate closely and have similar effects on physicians' mental health [77]. Like depression, burnout increases the risk of substance abuse and death by suicide [78]. Approximately 13% of male physicians and 21% of female physicians screen positive for alcohol use disorder [23]. Physician burnout is associated with a nearly 200% greater chance of suicidal ideation [79], a relationship that appears independent of depression. Physician burnout may also cause suicidal ideation; suicidal ideation decreases when burnout decreases [80]. Compared to the general population, the odds ratio for suicide is 1.41 for male physicians and 2.27 for female physicians [81]. Approximately 400 physicians die by suicide annually [82], and physicians are more likely to self-medicate with drugs of abuse and less likely to take prescribed antidepressants [83]. Physicians who die by suicide are younger than the general population, more likely to be single, have poor social support, and use overdose medications as a lethal means [83].

Medical Profession Sustainability

Burnout, leading to physicians' loss from medicine because of job dissatisfaction, mental and physical health issues, and suicide, threatens the medical profession's sustainability. Physician turnover from any cause exacerbates staff shortages that further negatively affect the existing workplace environment, leading to worsening burnout in those remaining. Besides, burnout's effect on academic physicians negatively impacts future physicians' education and training and the generation of new knowledge and scholarship.

Burnout in Emergency Medicine (EM) Physicians

Emergency physicians (EPs) report some of the highest burnout levels (48-70%) compared to other specialties. Like other "frontline" physicians (e.g., family medicine, general internal medicine, and neurology) with similarly high burnout levels, EPs' professional challenges result from many systemic factors [84-87]. These include widespread changes in healthcare regulations and policies, disparate employment and compensation models, the inefficiency of electronic health records (EHRs), and increasing administrative task burden [88]. EM is unique because EPs respond to unpredictable work demands in a high-stakes environment with ever-changing support teams and work schedules, frequent workflow interruptions, and continuous exposure to trauma and human suffering. These workplace factors contribute to an overall sense of lack of control and compromised decision-making autonomy [58, 89]. A national survey of 1,522

EM residents in 2017 showed a burnout prevalence of 76%, suggesting that these issues begin in residency training [90]. In EM, two particular potential causes of burnout deserve additional mention.

Clinical Work Environment

Burnout and the EM clinical work environment are deeply intertwined, each worsening the other. Many challenging aspects of the clinical work environment drive the development of burnout. EPs experience the stress of constant interruptions and stimuli, often while involved in high-stakes clinical scenarios. Researchers following on-duty EPs found that, in 180 minutes, EPs were interrupted 31 times while performing a mean of 68 discrete tasks [91]. EPs also have to work at the rhythm and tempo of the Emergency Department (ED), something beyond individual control. These interruptions and loss of cognitive autonomy erode mental faculties, compounding the effects of stress and are associated with decreased job satisfaction [92, 93].

Burnout is likely not only related to the stressful stimuli in the ED but also shiftwork-specific conditions. Working in the ED is difficult for the body, though the burden is not entirely understood [94, 95]. Rotating shift work is pathological and a recognized disease by the American Academy of Sleep Medicine [96, 97]. Shift work is associated with multiple chronic medical comorbidities and is potentially carcinogenic [98, 99]. The American College of Emergency Physicians has guidelines about scheduling and ways to mitigate shift work burden, although the available evidence quality is low. Thus, more research is needed [100]. In turn, those with burnout have a worse sleep than their non-burned out peers [66], possibly worsening burnout.

Workplace Violence

Burnout is also affected by the fact that the ED is both one of the most violent places in the hospital and one of the most likely areas where a healthcare provider would be verbally or physically injured while at work [101, 102]. In a recent poll of over 35,000 EPs nationwide, nearly half of respondents had been physically assaulted [101]. Verbal abuse is even more common: In the same survey, 96% of all female and 80% of all male EPs reported they had received inappropriate comments or unwanted advances. Verbal threats and physical assault are also common in EM residents [103]. The effects of violent interactions can be devastating for individuals, causing burnout, depression, and PTSD [104].

Academic Emergency Medicine Physicians

Burnout may affect the community and academic EPs differently. By definition, academic EPs have additional non-clinical expectations and responsibilities related to training future generations of physicians. While some community EPs may have administrative roles, they primarily only provide clinical care, usually in the primary and secondary medical center EDs. Academic EPs tend to deliver patient care in tertiary or quaternary medical centers, often to more complex patients than those seen at community sites.

Because of these additional duties, academic EPs face unique significant challenges to their wellness, particularly their professional fulfillment. Stanford WellMD [105] divides the professional fulfillment model into three domains: the culture of wellness, the efficiency of practice, and personal resilience (see Figure 1). It is important to note that the culture of wellness and the efficiency of practice are both attributed to systems factors (red) affecting individual physician burnout; blue represents personal resilience. Depending on circumstances, the arrows outside the pie chart symbolize no one-size-fits-all solution to achieving professional fulfillment, thus optimizing physician wellness.



Figure 1: The Stanford WellMD Professional Fulfillment Model [105]

Academic EPs must both provide patient care and meet additional demands (e.g., educating and mentoring medical students and resident physicians, the requirement of highly favorable evaluations from trainees, generating peer-reviewed publications, competing for research support, serving on local and national committees, and developing an academic portfolio for successful promotion). Non-academic counterparts do not need these academic demands.

Academic EPs work on the specialty's cutting edge with focused time spent in their favored subspecialties. However, based on departmental needs, this focused time may be limited. The risk of burnout increases when academic faculty report spending less than 20% of their time (or approximately one day/week) on the activity that is most meaningful to them—patient care, education, research, or administration [106].

Within academics, those academic EPs with primarily clinical roles are more likely than their non-primarily clinical faculty peers to report difficulty balancing competing clinical work demands with institutional scholarly expectations for academic advancement [107].

Academic Pressures

Academic EPs experience significant pressure to perform research, apply for grants, teach and mentor learners and junior faculty, perform other administrative duties, and serve on local and national committees. These tasks rarely come with financially-supported administrative time to offset the clinical workload demands. Physicians who enjoy teaching or performing research often find that work in their area of interest can increase their sense of meaning and purpose in their careers while bringing a sense of wellbeing to their work [32, 106]. However, this increased workload can be stressful and may conflict with one's sense of wellbeing. Academic physicians who spend the majority of their time in clinical care find that they have less time to develop their academic careers and tend to demonstrate greater dissatisfaction with academic medicine [107-109]. Additionally, academic physicians who work in institutions with higher expectations and incentives for research and teaching may perceive clinical care as lower in value, which may disincentivize providing excellent clinical care [110]. Because of the pressure to provide outstanding clinical care while teaching and performing research (traditionally called the "triple threat"), fewer trainees in any specialty are choosing a career in academic medicine [111-113].

Reimbursement gap

Academic EPs and community EPs often have different reimbursement structures. An academic EP's salary/income is generally more consistent and less dependent on productivity but usually lower overall [114]. That said, academic EPs tend to enjoy better benefits and job security [115]. It is difficult to determine how much an academic EP should be paid for activities, such as didactics, bedside teaching, research, and administrative tasks. These activities do not translate into an RVU easily. Some academic medical centers have added academic or education RVUs to account for productivity in academic activities such as publications, teaching, administrative service, and research [116-118].

Time Challenges and Work-life Balance/Integration

EPs experience significant circadian rhythm and scheduling challenges due to emergency work's 24/7 nature, and academic EPs also face multiple unique challenges. Academic EPs perform work-related tasks and attend meetings during their nonclinical time, often during "typical" business hours (0700-1800), whereas clinical shifts occur throughout the day and night. During shifts, the academic EP's devote their attention entirely to patient care and the bedside education of learners, leaving academic activities to occur and, often outside of, the clinical workday. Additionally, these academic activities rarely directly precede or follow the EP's shift, making for an extra-long workday and disrupting sleep recovery, family time, exercise, and other self-care activities. Thus, work-life balance may feel even more challenging to achieve as work demands more compromises in "life" time than the other way around. [119]

It is widely accepted among academic EPs that for every hour of financially-supported administrative time provided to the academic EP, they will spend at least two hours in nonclinical work. Many nonclinical tasks do not offer any financially supported time to accomplish them, leaving academic physicians with uncredited work time. Increasing numbers of work hours seem to increase the risk of work-home conflict [120]. That said, autonomy over schedule and total work hours may improve career satisfaction [83].

All of these issues that academic EPs face hints at possible solutions to burnout in academic EM. Whether the activities that increase meaning to each individual are clinical or focused on education, research, or administration, the professional development, advancement, and fulfillment of academic physicians are instrumental for institutions to recruit and retain faculty to maintain the academic medical mission.

Individual Solutions Are Not the Answer

Burnout was long thought to be a problem of susceptible individuals [121, 122] and wellness initiatives traditionally focused on individuals, such as yoga, meditation, and mindfulness. While the Stanford WellMD has found that physicians with the highest self-compassion have the lowest burnout, and physicians with the highest burnout have the lowest self-compassion [35], and self-care practices benefit individuals, none of these meaningfully address the challenges of the system, including the efficiency of practice. Focusing on individual solutions to burnout can lead physicians to experience a sense of betrayal since systemic environmental factors are not addressed, and seek solutions that are individually beneficial but detrimental to the healthcare organizations and society. These individual solutions include reducing professional work effort, retiring early, leaving a traditional clinical model for a concierge model, etc. [123].

Fortunately, it is now recognized that physician burnout is less of an individual problem. Instead, it is highly dependent upon system factors that involve hospitals, institutions, and the healthcare system [124-127]. To quote Shanafelt, et al.:

"The fact that almost 1 in 2 US physicians have symptoms of burnout implies that the origins of this problem are rooted in the environment and care delivery system rather than in the personal characteristics of a few susceptible individuals." [84] The state of physician burnout in EM has reached a critical point, requiring novel and innovative large scale solutions. It is time for healthcare organizations and academic medical centers to take action.

Taking Action: Creating a Wellness Culture A Consensus Study from NAM

In 2017, the National Academy of Medicine (NAM) took a critical step toward creating a culture of wellness. Members of the Academy collaborated to develop a comprehensive conceptual model of factors affecting clinician wellbeing and resilience, identifying external (systemic) factors as influencing clinician wellness much more than internal (individual) factors. NAM outlined six broad wellness goals for the future: (1) create positive work environments, (2) create positive learning environments, (3) reduce administrative burden, (4) enable technology solutions, (5) provide support to clinicians and learners, and (6) invest in research [3]. A solution to physician burnout involves moving from minimizing burnout to creating a culture of physician and employee wellbeing and clinical practice sustainability. This requires active participation from health system leaders and decision-makers. Research demonstrates that leaders play a significant role in individual physicians' wellness [128, 129, 145]. Well-trained academic leaders must consider physician wellbeing as vital to their institutions and departments and equivalent to financial and operational objectives. Once physician wellbeing is established as an essential priority for the organization, leader performance must be tied to metrics similar to operational and financial objectives. Specifically, leaders must be objectively assessed based on their performance in addressing physician wellbeing goals: studying and aligning institutional values and culture, promoting flexibility and work-life integration, providing resources to promote and practice self-care, setting up appropriate rewards and incentives, and studying opportunities for improvement [123, 145].

Well-being Evolution of Organizational Change in Academia

Improving physician wellbeing requires a deliberate approach at the organizational level. When organizations make changes to enhance physician wellbeing, they follow a predictable pathway from novice to expert. These pathways are often established by leaders in the chief executive team, who may not be working clinically. Correspondingly, these changes' impact goes from minor to transformative as the organization becomes more experienced.

- Most organizations are at the novice stage, with only some awareness that physician burnout is a problem. Most of the initiatives at this stage are targeted toward the individual.
- Once organizations move toward a slightly better understanding of burnout and engagement drivers, they move into the beginner stage. These organizations create peer-support programs, survey their physicians, and consider physician wellbeing when making operational decisions.
- It is not until organizations reach the competent stage that there is a real understanding of the business case for physician wellbeing. Competent organizations redesign practice based on drivers of physician burnout and engagement while regularly measuring physician burnout and monitoring trends.

- Organizations at the proficient stage align their key operational objectives with physician wellbeing. These organizations understand that physician wellbeing is an integral part of a successful enterprise. They create funded programs for wellness interventions, train physician leaders in participatory management and stakeholder inclusion, measure systems-level interventions for efficacy, and consider physician wellbeing in all operational decisions.
- Finally, at the expert stage, physician wellbeing takes a central role in the organization. These organizations appoint a Chief Wellness Officer on the chief executive team and establish endowed wellness programs that ultimately assist other organizations. This strategic investment to promote physician wellbeing further creates a total organizational culture of wellness.

Proven Wellness Strategies

Physician wellbeing initiatives must also include a focus on individual providers [130]. Mindfulness training and cognitive-behavioral interventions have increased resilience in most published trials, with more extended programs being more effective [131]. However, strategies aimed to improve personal resilience must be structured to be integrated into the work schedule. Asking or mandating physicians to sacrifice personal time to address work stressors is counterproductive. For example, yoga sessions offered during conference time plus nutrition and exercise challenges resulted in reduced depression on the Maslach burnout inventory, lower stress and anxiety, and lower blood pressure among residents and fellows [132]. Furthermore, nurses' mental health screening and referral to occupational health were cost-effective in a Dutch study [133]. However, few programs within EM have shown significant and sustained improvement in burnout [134].

Innovative Wellness Initiatives at the Organizational Level

The Institute for Healthcare Improvement (IHI) developed four steps to promote joy at work with greater emphasis on addressing physician wellbeing for individuals and its impact on improved "wellness" within the organization [135]. To achieve forward momentum and sustainability in the organization, it is vital to have a constant wellness champion focused on promoting joy in work [136]. To this end, the University of Michigan Cardiac Intensive Care Unit created a space for discussions to appraise critical issues that promote and prevent joy at work. Nursing staff, cardiology fellows, and "scribes" were asked to identify top priorities and allowed an open forum to discuss issues identified and propose solutions. At the University of Virginia School of Nursing, off-duty employees wanted to be unencumbered by the expectation of responding to work emails. In a pilot intervention, emails were no longer sent to nurses during their time off. After the change was implemented in a follow-up survey, 80% of respondents reported improvement in respect for their personal time [135].

EM may need to access organizational strategies that have been successful in non-medical institutions and translate those approaches into a medical model. Alcoa (Aluminum Corporation of America), the world's 6th largest producer of aluminum and one of the safest organizations in the world, believes that any organization has the potential for greatness if every person can say "yes" to three questions without reservation (and asks these of its employees daily): (**Table 1, see next page**).

Table 1: "Three Questions Each Day" Alcoa Corporation daily questions modified for academic medicine to assess an individual's sense of meaning

Are you treated with dignity and respect every day by everyone you encounter without regard to age or gender or race or ethnicity or your level of education or your professional degrees or how much you get paid or your title?
Are you given the things you need - education, training, encouragement, tools - so you can contribute to this organization that gives meaning to your life?
Are you recognized for what you do? Does someone whose judgment you care about make it clear to you all the time that you're essential here?

Rarely in EM are physicians asked such questions. It seems reasonable to hypothesize that translation of practices similar to Alcoa's may affect individual wellness due to system innovations [137]. Approaches to physician wellbeing and solutions to burnout are described, yet few solutions have been elucidated within EM and even fewer for academic EM. Some academic EM departments have worked toward instituting strategies to mitigate and reduce burnout using specific programs (Table 2, see next page).

Future Desired State

Healthcare, at its core, relies on physicians and other human factors. While technology and artificial intelligence claim a portion of the medical landscape, ultimately, people provide care. Academic physicians also innovate, discover, and teach to advance medical cures and promote health. The data are precise: a well healthcare workforce leads to improved patient outcomes. As outstanding patient outcomes are ultimately our healthcare system's goal, organizations (including medical schools, hospitals, hospital systems, CMS, and third-party payers) should create and drive programs to enhance physicians and other healthcare workers' wellness. Despite clear and convincing data of physician wellness's financial benefits, the implementation of programs that promote physician wellness is critical. While societal return on investment in physician wellness is genuine, there are also real collective barriers to improving clinician wellness. For example, focus groups conducted by the NAM [3] found that physicians are considered by many to be a privileged group, needing no assistance to maintain and promote their wellbeing. Similarly, many healthcare consumers viewed physicians' interactions as strictly transactional and immediate, with little consideration of a future state.

The transformation of hospitals and healthcare systems to address clinician burnout needs to be driven by local leadership commitment. However, input and involvement from physicians, who will co-design solutions and facilitate the implementation of organizational decisions, is also required. Such a collaborative approach with real and meaningful clinician participation would lead to innovative approaches encompassing the entire organization [138]. Physicians should provide primary insights and expertise on their experiences in identifying, evaluating, implementing, and continually improving innovations that promote wellbeing and healthy work culture at all levels.

Physicians' participation in developing and implementing solutions for addressing burnout can also be part of the solution. This provides a means for engaging physicians, giving them opportunities to work with other physicians outside of their typical work, to learn from others, and to allow greater self-control over their work environment [139]. Physicians' participation in the transformational process can provide the means for mutual support amongst the clinician workforce, allowing them to support each other and bring up ideas on how to manage the change better.

As a leader within academic medicine, SAEM, in conjunction with its partner SAEM Foundation (a fundraising and grant funding organization), is committing resources for research and pilot grants to identify novel approaches to promote wellbeing. As burnout and wellbeing are complex, multidimensional constructs, effective interventions will require transformational ideas and funding to discover those ideas and implement novel methods. Enhancing wellness at a local level requires effective leadership. As the academic home for EM, SAEM works with academic chairs and leaders to provide professional development and improve competencies in evaluating and promoting wellness.

CONCLUSION

It is our hope that SAEM and other EM organizations promote a much-needed culture change where departments and institutions take responsibility to find solutions favoring the health and wellbeing of our trainees and academic colleagues. We must prioritize physician wellbeing just as much as the financial wellbeing of our emergency departments. It is no longer acceptable to simply recognize that EPs are more prone to depression or suicide or concede that academia's stresses drive physicians out of discovery, science, and education. Instead, we must shift our understanding to embrace a change where physician wellbeing in organizations and departments is considered seriously and incorporated as a measure of success.

Table 2: Examples of institutions with Wellness innovations

Institution	Emory University	Mayo Clinic	The Ohio State University	Stanford University	NY Presbyterian - Weill Cornell Medical Center [123],[140],[141]
Innovation	<ul style="list-style-type: none"> Resident and faculty wellness retreats Departmental wellness committee and Director of Well-being, Equity, Diversity and Inclusion Departmental wellness ambassadors within the SOM 	<ul style="list-style-type: none"> Physician wellbeing is an institutional performance metric Cultivate community through physician engagement groups (COMPASS) Provide validated self-calibration tool with links to promote self-care 	<ul style="list-style-type: none"> Home away from Home (childcare) Incentives for participation in self-care (accrue points to earn gift cards to local restaurants) 	<ul style="list-style-type: none"> WellMD Center WISE credits-connects research and innovations to strengthen all elements of the campus "ecosystem" Case Review Committee. Focusing on systems issues rather than naming/blaming/shaming in peer review 	<ul style="list-style-type: none"> Physician wellness satisfaction committee 30-minute scheduled breaks for physicians during shifts Wellness and recharge events for faculty with residents
Mentorship	<ul style="list-style-type: none"> Faculty and resident advocate program 	<ul style="list-style-type: none"> Monitoring of the physician leadership score with tailored coaching to those in need Incorporate discussions of career fit into annual reviews 		<ul style="list-style-type: none"> Faculty mentorship program; Physician Coaching program 	
Curriculum	<ul style="list-style-type: none"> Longitudinal resident wellness curriculum[142] 		<ul style="list-style-type: none"> Resident teaching rounds by Stress, Trauma and Resilience Staff [3, 143] 	<ul style="list-style-type: none"> Asynchronous Wellness Credit provides individualized wellness opportunities to residents; Reflection Rounds highlight the importance of storytelling and narrative medicine 	<ul style="list-style-type: none"> Restore and relax sessions
Peer Support				<ul style="list-style-type: none"> Peer Resource Network (PRN) [105] Faculty Staff Help Center[144] provides free, confidential counseling, as well as other resources 	<ul style="list-style-type: none"> Faculty peer support program

REFERENCES

- World Health Organization. Mental Health [Internet]. [cited 2020 May 15, 2020]. Available from: https://www.who.int/mental_health/evidence/burn-out/en/
- Poorman E. Depression and suicide: occupational hazards of practicing medicine. *J Patient Saf Risk Manag.* 2019;24(5):181–3.
- National Academies of Sciences. Engineering, Medicine. Taking action against clinician burnout: a systems approach to professional wellbeing. Washington (DC): National Academies Press; 2019.
- Dyrbye LN, West CP, Shanafelt TD. Defining burnout as a dichotomous variable. *J Gen Intern Med.* 2009 Mar;24(3):440.
- Lall MD, Gaeta TJ, Chung AS, Dehon E, Malcolm W, Ross A, et al. Assessment of Physician Well-being, Part One: Burnout and Other Negative States. *West J Emerg Med.* 2019 Mar;20(2):278–90.
- Lall MD, Gaeta TJ, Chung AS, Chinai SA, Garg M, Husain A, et al. Assessment of Physician Well-being, Part Two: beyond Burnout. *West J Emerg Med.* 2019 Mar;20(2):291–304.
- Maslach C, Jackson SE, Leiter MP, Schaufeli WB, Schwab RL. *Maslach burnout inventory: Consulting psychologists press* Palo Alto, CA; 1986.
- Kristensen TS, Hannerz H, Høgh A, Borg V. The Copenhagen Psychosocial Questionnaire—a tool for the assessment and improvement of the psychosocial work environment. *Scand J Work Environ Health.* 2005 Dec;31(6):438–49.
- Fiorilli C, De Stasio S, Di Chicchio C, Chan SM. Emotion socialization practices in Italian and Hong Kong-Chinese mothers. *Springerplus.* 2015 Dec;4(1):758.
- Sestili C, Scalingi S, Cianfanelli S, Mannocci A, Del Cimmuto A, De Sio S, et al. Reliability and Use of Copenhagen Burnout Inventory in Italian Sample of University Professors. *Int J Environ Res Public Health.* 2018 Aug;15(8):E1708.
- Linzer M, Poplau S, Prasad K, Khullar D, Brown R, Varkey A, et al.; Healthy Work Place Investigators. Characteristics of Health Care Organizations Associated With Clinician Trust: Results From the Healthy Work Place Study. *JAMA Netw Open.* 2019 Jun;2(6):e196201.
- Linzer M, Poplau S, Grossman E, Varkey A, Yale S, Williams E, et al. A Cluster Randomized Trial of Interventions to Improve Work Conditions and Clinician Burnout in Primary Care: Results from the Healthy Work Place (HWP) Study. *J Gen Intern Med.* 2015 Aug;30(8):1105–11.
- Linzer M, Poplau S, Brown R, Grossman E, Varkey A, Yale S, et al. Do Work Condition Interventions Affect Quality and Errors in Primary Care? Results from the Healthy Work Place Study. *J Gen Intern Med.* 2017 Jan;32(1):56–61.
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav.* 1983 Dec;24(4):385–96.
- Brazeau CM, Shanafelt T, Durning SJ, Massie FS, Eacker A, Moutier C, et al. Distress among matriculating medical students relative to the general population. *Acad Med.* 2014 Nov;89(11):1520–5.
- Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med.* 2002 Mar;136(5):358–67.
- Estryn-Behar M, Doppia MA, Guetarni K, Fry C, Machel G, Pelloux P, et al. Emergency physicians accumulate more stress factors than other physicians—results from the French SESMAT study. *Emerg Med J.* 2011 May;28(5):397–410.
- Stehman CR, Testo Z, Gershaw RS, Kellogg AR. Erratum: This Article Corrects: “Burnout, Drop Out, Suicide: Physician Loss in Emergency Medicine, Part 1”. *West J Emerg Med.* 2019 Aug;20(5):840–1.
- Stehman CR, Testo Z, Gershaw RS, Kellogg AR. Burnout, Drop Out, Suicide: Physician Loss in Emergency Medicine, Part I. *West J Emerg Med.* 2019 May;20(3):485–94.
- Kuhn G, Goldberg R, Compton S. Tolerance for uncertainty, burnout, and satisfaction with the career of emergency medicine. *Ann Emerg Med.* 2009 Jul;54(1):106–113.e6.
- Dewa CS, Loong D, Bonato S, Thanh NX, Jacobs P. How does burnout affect physician productivity? A systematic literature review. *BMC Health Serv Res.* 2014 Jul;14(1):325.
- Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *Lancet.* 2009 Nov;374(9702):1714–21.
- Oreskovich MR, Shanafelt T, Dyrbye LN, Tan L, Sotile W, Satele D, et al. The prevalence of substance use disorders in American physicians. *Am J Addict.* 2015 Jan;24(1):30–8.
- Kushnir T, Greenberg D, Madjar N, Hadari I, Yermiahua Y, Bachner YG. Is burnout associated with referral rates among primary care physicians in community clinics? *Fam Pract.* 2014 Feb;31(1):44–50.
- Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, et al. Burnout and medical errors among American surgeons. *Ann Surg.* 2010 Jun;251(6):995–1000.
- Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB. Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. *PLoS One.* 2016 Jul;11(7):e0159015.
- Nelson KM, Helfrich C, Sun H, Hebert PL, Liu CF, Dolan E, et al. Implementation of the patient-centered medical home in the Veterans Health Administration: associations with patient satisfaction, quality of care, staff burnout, and hospital and emergency department use. *JAMA Intern Med.* 2014 Aug;174(8):1350–8.
- Shanafelt T, Goh J, Sinsky C. The Business Case for Investing in Physician Well-being. *JAMA Intern Med.* 2017 Dec;177(12):1826–32.
- Talbot SG, Dean W. Physicians aren't 'burning out.' They're suffering from moral injury. *Stat.* 2018. Available from <https://www.statnews.com/2018/07/26/physicians-not-burning-out-they-are-suffering-moral-injury/>
- Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral Injury: An Integrative Review. *J Trauma Stress.* 2019 Jun;32(3):350–62.
- Noseworthy JH, Madara J, Cosgrove D, Edgeworth M, Ellison E, Krevans S, et al. Physician burnout is a public health crisis: a message to our fellow health care CEOs. *Health Affairs Blog;* 2017.
- Lieff SJ. Perspective: The missing link in academic career planning and development: pursuit of meaningful and aligned work. *Acad Med.* 2009 Oct;84(10):1383–8.
- Sikora RD, Manfredi RA, Chung A, Kaplan JA, Tyo CJ, Akhtar S; Wellness Consensus Conference Significant Subcommittee Contributors. Wellness for the Future: Cultural and Systems-based Challenges and Solutions. *Acad Emerg Med.* 2020 Apr;27(4):317–32.
- Dyrbye LN, Meyers D, Ripp J, Dalal N, Bird SB, Sen S. A pragmatic approach for organizations to measure health care professional wellbeing. *NAM Perspectives;* 2018.
- Trockel MH, Murphy ML, Bohman B. 2016 Physician Wellness Survey Full Report [Available from: <https://wellmd.stanford.edu/content/dam/sm/wellmd/documents/2017-WellMD-Domain-Definitions-FINAL.pdf>

36. A. B, editor. Wellness in Academic Emergency Medicine: Initial Exploration of 2019 Survey of the SAEM Physician Membership. SAEM Virtual Conference; 2020 cited 2020 May 17; Internet.
37. Sturm H, Rieger MA, Martus P, Ueding E, Wagner A, Holderried M, et al.; WorkSafeMed Consortium. Do perceived working conditions and patient safety culture correlate with objective workload and patient outcomes: A cross-sectional explorative study from a German university hospital. *PLoS One*. 2019 Jan;14(1):e0209487.
38. Cornuz J, Ghali WA, Di Carlantonio D, Pecoud A, Paccaud F. Physicians' attitudes towards prevention: importance of intervention-specific barriers and physicians' health habits. *Fam Pract*. 2000 Dec;17(6):535–40.
39. Dyrbye LN, Awad KM, Fiscus LC, Sinsky CA, Shanafelt TD. Estimating the Attributable Cost of Physician Burnout in the United States. *Ann Intern Med*. 2019 Oct;171(8):600–1.
40. Girard DE, Nardone DA, Hickam DH, Goldfarb T. Estimating the Attributable Cost of Physician Burnout in the United States. *Ann Intern Med*. 2019 Oct;171(8):600.
41. Han S, Shanafelt TD, Sinsky CA, Awad KM, Dyrbye LN, Fiscus LC, et al. Estimating the Attributable Cost of Physician Burnout in the United States. *Ann Intern Med*. 2019 Jun;170(11):784–90.
42. Kane L. Medscape National Physician Burnout, Depression and Suicide Report 2019 [Available from: <https://www.medscape.com/slideshow/2019-lifestyle-burnout-depression-6011056>]
43. Shah S. The Real Cost of Emergency Department Physician Turnover 2016 [Available from: <https://www.studergroup.com/resources/articles-and-industry-updates/insights/january-2016/the-real-cost-of-emergency-department-physician-tu>]
44. Hamidi MS, Bohman B, Sandborg C, Smith-Coggins R, de Vries P, Albert MS, et al. Estimating institutional physician turnover attributable to self-reported burnout and associated financial burden: a case study. *BMC Health Serv Res*. 2018 Nov;18(1):851.
45. Panagioti M, Geraghty K, Johnson J, Zhou A, Panagopoulou E, Chew-Graham C, et al. Association Between Physician Burnout and Patient Safety, Professionalism, and Patient Satisfaction: A Systematic Review and Meta-analysis. *JAMA Intern Med*. 2018 Oct;178(10):1317–31.
46. Shanafelt TD, West C, Zhao X, Novotny P, Kolars J, Habermann T, et al. Relationship between increased personal well-being and enhanced empathy among internal medicine residents. *J Gen Intern Med*. 2005 Jul;20(7):559–64.
47. Lu DW, Dresden S, McCloskey C, Branzetti J, Gisondi MA. Impact of Burnout on Self-Reported Patient Care Among Emergency Physicians. *West J Emerg Med*. 2015 Dec;16(7):996–1001.
48. Tawfik DS, Profit J, Morgenthaler TI, Satele DV, Sinsky CA, Dyrbye LN, et al. Physician Burnout, Well-being, and Work Unit Safety Grades in Relationship to Reported Medical Errors. *Mayo Clin Proc*. 2018 Nov;93(11):1571–80.
49. West CP, Huschka MM, Novotny PJ, Sloan JA, Kolars JC, Habermann TM, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. *JAMA*. 2006 Sep;296(9):1071–8.
50. West CP, Tan AD, Habermann TM, Sloan JA, Shanafelt TD. Association of resident fatigue and distress with perceived medical errors. *JAMA*. 2009 Sep;302(12):1294–300.
51. Bakker AB, Le Blanc PM, Schaufeli WB. Burnout contagion among intensive care nurses. *J Adv Nurs*. 2005 Aug;51(3):276–87.
52. Welp A, Meier LL, Manser T. Emotional exhaustion and workload predict clinician-rated and objective patient safety. *Front Psychol*. 2015 Jan;5:1573.
53. Halbesleben JR, Rathert C. Linking physician burnout and patient outcomes: exploring the dyadic relationship between physicians and patients. *Health Care Manage Rev*. 2008 Jan-Mar;33(1):29–39.
54. Moss J, Roberts MB, Shea L, Jones CW, Kilgannon H, Edmondson DE, et al. Healthcare provider compassion is associated with lower PTSD symptoms among patients with life-threatening medical emergencies: a prospective cohort study. *Intensive Care Med*. 2019 Jun;45(6):815–22.
55. Ratanawongsa N, Roter, D., Beach, MC, et al. [Internet] 2008 [cited 2020 May 17];23(10):1581. Available from: <https://doi.org/10.1007/s11606-008-0702-1>... Physician Burnout and Patient-Physician Communication During Primary Care Encounters. *J Gen Intern Med*. 2008;23(10):1581.
56. Williams ES, Lawrence ER, Sydow Campbell K, Spiehler S. The effect of emotional exhaustion and depersonalization on physician-patient communication: A theoretical model, implications, and directions for future research. In: Savage TG, Fottler DM, editors. *Biennial Review of Health Care Management: Meso Perspective*. Bingley, UK: Emerald Group Publishing Limited; 2009. pp. 3–20.
57. Passalacqua SA, Segrin C. The effect of resident physician stress, burnout, and empathy on patient-centered communication during the long-call shift. *Health Commun*. 2012;27(5):449–56.
58. Oskrochi Y, Maruthappu M, Henriksson M, Davies AH, Shalhoub J. Beyond the body: A systematic review of the nonphysical effects of a surgical career. *Surgery*. 2016 Feb;159(2):650–64.
59. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. *J Intern Med*. 2018 Jun;283(6):516–29.
60. Crane M. Why burned-out doctors get sued more often. *Med Econ*. 1998;75(10):210-2, 5-8.
61. McAbee JH, Ragel BT, McCartney S, Jones GM, Michael LM 2nd, DeCuypere M, et al. Factors associated with career satisfaction and burnout among US neurosurgeons: results of a nationwide survey. *J Neurosurg*. 2015 Jul;123(1):161–73.
62. Salvagioni DA, Melanda FN, Mesas AE, González AD, Gabani FL, Andrade SM. Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PLoS One*. 2017 Oct;12(10):e0185781.
63. Fransson EI, Nordin M, Magnusson Hanson LL, Westlund H. Job strain and atrial fibrillation - Results from the Swedish Longitudinal Occupational Survey of Health and meta-analysis of three studies. *Eur J Prev Cardiol*. 2018 Jul;25(11):1142–9.
64. Toker S, Melamed S, Berliner S, Zeltser D, Shapira I. Burnout and risk of coronary heart disease: a prospective study of 8838 employees. *Psychosom Med*. 2012 Oct;74(8):840–7.
65. Toppinen-Tanner S, Ahola K, Koskinen A, Väänänen A. Burnout predicts hospitalization for mental and cardiovascular disorders: 10-year prospective results from industrial sector. *Stress Health*. 2009;25(4):287–96.
66. Metlaine A SF, Gomez-Merino D, Boucher T, Elbaz M, Delafosse JV, et al. Sleep and biological parameters in professional burnout: A psychophysiological characterization. *PLoS ONE* 2018;13(1).2018:e0190607
67. Katsavouni F, Bebetos E, Malliou P, Beneka A. The relationship between burnout, PTSD symptoms and injuries in firefighters. *Occup Med (Lond)*. 2016 Jan;66(1):32–7.
68. 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 Dec;87(12):1138–44.
69. Shoji K, Lesnierowska M, Smoktunowicz E, Bock J, Luszczyńska A, Benight CC, et al. What Comes First, Job Burnout or Secondary Traumatic Stress? Findings from Two Longitudinal Studies from the U.S. and Poland. *PLoS One.* 2015 Aug;10(8):e0136730.
 70. DeLucia JA, Bitter C, Fitzgerald J, Greenberg M, Dalwari P, Buchanan P. Prevalence of Post-Traumatic Stress Disorder in Emergency Physicians in the United States. *West J Emerg Med.* 2019 Aug;20(5):740–6.
 71. Roden-Foreman JW, Bennett MM, Rainey EE, Garrett JS, Powers MB, Warren AM. Secondary traumatic stress in emergency medicine clinicians. *Cogn Behav Ther.* 2017 Nov;46(6):522–32.
 72. Luftman K, Aydelotte J, Rix K, Ali S, Houck K, Coopwood TB, et al. PTSD in those who care for the injured. *Injury.* 2017 Feb;48(2):293–6.
 73. Mills LD, Mills TJ. Symptoms of post-traumatic stress disorder among emergency medicine residents. *J Emerg Med.* 2005 Jan;28(1):1–4.
 74. Wild J, Smith KV, Thompson E, Béar F, Lommen MJ, Ehlers A. A prospective study of pre-trauma risk factors for post-traumatic stress disorder and depression. *Psychol Med.* 2016 Sep;46(12):2571–82.
 75. Dyrbye LN, West CP, Sinsky CA, Goeders LE, Satele DV, Shanafelt TD. Medical licensure questions and physician reluctance to seek care for mental health conditions. *Mayo Clin Proc.* 2017 Oct;92(10):1486–93.
 76. Swapnil S, Mehta BA, Matthew L, Edwards, MD Suffering in Silence: Mental Health Stigma and Physicians' Licensing Fears. *Am J Psychiatry.* Epub 2018 Nov 1.
 77. Templeton KB, Sukhera J, et al. [Internet] 2019 [cited 2020 May 18]; Available from: <https://nam.edu/gender-based-differences-in-burnout-issues-faced-by-women-physicians/> Gender-Based Differences in Burnout: Issues Faced by Women Physicians 2019 [Available from: <https://nam.edu/gender-based-differences-in-burnout-issues-faced-by-women-physicians/>]
 78. Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry.* 2016 Jun;15(2):103–11.
 79. Shanafelt T. Burnout in anesthesiology: a call to action. *Anesthesiology.* 2011 Jan;114(1):1–2.
 80. Dyrbye LN, Thomas MR, Massie FS, Power DV, Eacker A, Harper W, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med.* 2008 Sep;149(5):334–41.
 81. Schernhammer ES, Colditz GA. Suicide rates among physicians: a quantitative and gender assessment (meta-analysis). *Am J Psychiatry.* 2004 Dec;161(12):2295–302.
 82. Kishore S, Dandurand DE, Mathew A, Rothenberger D. 2016. Breaking the Culture of Silence on Physician Suicide. *NAM Perspectives.* Discussion Paper, National Academy of Medicine, Washington, DC. <https://doi.org/10.31478/201606a>.
 83. Eckleberry-Hunt J, Lick D. Physician Depression and Suicide: A Shared Responsibility. *Teach Learn Med.* 2015;27(3):341–5.
 84. Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med.* 2012 Oct;172(18):1377–85.
 85. Shanafelt TD, West CP, Sinsky C, Trockel M, Tutty M, Satele DV, et al. Changes in Burnout and Satisfaction With Work-Life Integration in Physicians and the General US Working Population Between 2011 and 2017. *Mayo Clin Proc.* 2019 Sep;94(9):1681–94.
 86. Shanafelt TD, Sinsky C, Dyrbye LN, Trockel M, West CP. Burnout Among Physicians Compared With Individuals With a Professional or Doctoral Degree in a Field Outside of Medicine. *Mayo Clin Proc.* 2019 Mar;94(3):549–51.
 87. Balch CM, Shanafelt T. Combating stress and burnout in surgical practice: a review. *Adv Surg.* 2010;44(1):29–47.
 88. Shanafelt TD, Schein E, Minor LB, Trockel M, Schein P, Kirch D. Healing the Professional Culture of Medicine. *Mayo Clin Proc.* 2019 Aug;94(8):1556–66.
 89. Linzer M, Manwell LB, Williams ES, Bobula JA, Brown RL, Varkey AB, et al. Working conditions in primary care: physician reactions and care quality. *Ann Intern Med.* 2009;151(1):28–36, W6–9. <https://doi.org/10.7326/0003-4819-151-1-200907070-00006>.
 90. Lin M, Battaglioli N, Melamed M, Mott SE, Chung AS, Robinson DW. High Prevalence of Burnout Among US Emergency Medicine Residents: Results From the 2017 National Emergency Medicine Wellness Survey. *Ann Emerg Med.* 2019 Nov;74(5):682–90.
 91. Chisholm CD, Collison EK, Nelson DR, Cordell WH. Emergency department workplace interruptions are emergency physicians “interrupt-driven” and “multitasking”? *Acad Emerg Med.* 2000 Nov;7(11):1239–43.
 92. Collins SM, Karasek RA, Costas K. Job strain and autonomic indices of cardiovascular disease risk. *Am J Ind Med.* 2005 Sep;48(3):182–93.
 93. MacDonald LA, Karasek RA, Punnett L, Scharf T. Covariation between workplace physical and psychosocial stressors: evidence and implications for occupational health research and prevention. *Ergonomics.* 2001 Jun;44(7):696–718.
 94. Peters GA, Wong ML, Joseph JW, Sanchez LD. Pulse Rate Variability in Emergency Physicians During Shifts: Pilot Cross-Sectional Study. *JMIR Mhealth Uhealth.* 2019 Oct;7(10):e13909.
 95. Peters GA, Wong ML, Sanchez LD. Pedometer-measured physical activity among emergency physicians during shifts. *Am J Emerg Med.* 2020 Jan;38(1):118–21.
 96. Auger RR, Burgess HJ, Emens JS, Deriy LV, Thomas SM, Sharkey KM. Clinical Practice Guideline for the Treatment of Intrinsic Circadian Rhythm Sleep-Wake Disorders: Advanced Sleep-Wake Phase Disorder (ASWPD), Delayed Sleep-Wake Phase Disorder (DSWPD), Non-24-Hour Sleep-Wake Rhythm Disorder (N24SWD), and Irregular Sleep-Wake Rhythm Disorder (ISWRD). An Update for 2015: An American Academy of Sleep Medicine Clinical Practice Guideline. *J Clin Sleep Med.* 2015 Oct;11(10):1199–236.
 97. Sack RL, Auckley D, Auger RR, Carskadon MA, Wright KP Jr, Vitiello MV, et al.; American Academy of Sleep Medicine. Circadian rhythm sleep disorders: part I, basic principles, shift work and jet lag disorders. An American Academy of Sleep Medicine review. *Sleep.* 2007 Nov;30(11):1460–83.
 98. Vetter C, Devore EE, Wegrzyn LR, Massa J, Speizer FE, Kawachi I, et al. Association Between Rotating Night Shift Work and Risk of Coronary Heart Disease Among Women. *JAMA.* 2016 Apr;315(16):1726–34.
 99. Ashooh MP, Barnette K, Moran TP, O'Shea J, Lall MD. Advanced Practice Provider Burnout in a Large Urban Medical Center. *Adv Emerg Nurs J.* 2019 Jul/Sep;41(3):234–43.
 100. Physicians ACoE. American College of Emergency Physicians. Emergency Physician Shift Work 2017 [Available from: <https://www.acep.org/patient-care/policy-statements/emergency-physician-shift-work/#sm.00001fag7md9wf4x1199q1z4gowni>]
 101. Physicians ACoE. Emergency Department Violence Poll Research Results 2018 [Available from: <https://www.emergencyphysicians.org/globalassets/files/>]

- pdfs/2018acep-emergency-department-violence-pollresults-2.pdf
102. Phillips JP. Workplace Violence against Health Care Workers in the United States. *N Engl J Med*. 2016 Aug;375(7):e14.
 103. Schnapp BH, Slovis BH, Shah AD, Fant AL, Gisondi MA, Shah KH, et al. Workplace Violence and Harassment Against Emergency Medicine Residents. *West J Emerg Med*. 2016 Sep;17(5):567–73.
 104. Zafar W, Khan UR, Siddiqui SA, Jamali S, Razzak JA. Workplace Violence and Self-reported Psychological Health: Coping with Post-traumatic Stress, Mental Distress, and Burnout among Physicians Working in the Emergency Departments Compared to Other Specialties in Pakistan. *J Emerg Med*. 2016 Jan;50(1):167–77.e1.
 105. Stanford Well MD. [Available from: <https://wellmd.stanford.edu/get-help/prn-support.html>]
 106. Shanafelt TD, West CP, Sloan JA, Novotny PJ, Poland GA, Menaker R, et al. Career fit and burnout among academic faculty. *Arch Intern Med*. 2009 May;169(10):990–5.
 107. Girod SC, Fassiotto M, Menorca R, Etzkowitz H, Wren SM. Reasons for faculty departures from an academic medical center: a survey and comparison across faculty lines. *BMC Med Educ*. 2017 Jan;17(1):8.
 108. Buckley LM, Sanders K, Shih M, Hampton CL. Attitudes of clinical faculty about career progress, career success and recognition, and commitment to academic medicine. Results of a survey. *Arch Intern Med*. 2000 Sep;160(17):2625–9.
 109. Straus SE, Straus C, Tzanetos K; International Campaign to Revitalize Academic Medicine. Career choice in academic medicine: systematic review. *J Gen Intern Med*. 2006 Dec;21(12):1222–9.
 110. Christmas C, Durso SC, Kravet SJ, Wright SM. Advantages and challenges of working as a clinician in an academic department of medicine: academic clinicians' perspectives. *J Grad Med Educ*. 2010 Sep;2(3):478–84.
 111. Hebert RS, Elasy TA, Canter JA. The Oslerian triple-threat: an endangered species? A survey of department of medicine chairs. *Am J Med*. 2000 Sep;109(4):346–9.
 112. Horn L, Koehler E, Gilbert J, Johnson DH. Factors associated with the career choices of hematology and medical oncology fellows trained at academic institutions in the United States. *J Clin Oncol*. 2011 Oct;29(29):3932–8.
 113. Goudreau BJ, Hassinger TE, Hedrick TL, Slingluff CL Jr, Schroen AT, Dengel LT. Academic or community practice? What is driving decision-making and career choices. *Surgery*. 2018 Sep;164(3):571–6.
 114. Medical Group Management Association. mgma-data-finds-non-academic-hospital-system-physicians-earn-as-much-as-123000-more-than-their-academic-counterparts. *Ciston Newswire*. 2017.
 115. Kellermann AL. Are You Considering an Academic Career?: Emergency Medicine Residentt Association; 2020 [Available from: <https://www.emra.org/residents-fellows/career-planning/practice-types/are-you-considering-an-academic-career/>]
 116. Mezrich R, Nagy PG. The academic RVU: a system for measuring academic productivity. *J Am Coll Radiol*. 2007 Jul;4(7):471–8.
 117. Ma OJ, Hedges JR, Newgard CD. The Academic RVU: Ten Years Developing a Metric for and Financially Incenting Academic Productivity at Oregon Health & Science University. *Acad Med*. 2017 Aug;92(8):1138–44.
 118. Luong P, Bojansky AM, Kalra A. Academic Physician Compensation in the United States: should providers' work at academic medical Centres be judged by just one metric, the relative value unit (RVU)? *Eur Heart J*. 2018 Oct;39(40):3633–4.
 119. Rosen B, Rosen P, Schofer J, Asher S, Wald D, Cheaito MA, et al. Is Emergency Medicine the Right Choice for Me? *J Emerg Med*. 2019 Mar;56(3):e35–8.
 120. Dyrbye LN, West CP, Satele D, Sloan JA, Shanafelt TD. Work/Home conflict and burnout among academic internal medicine physicians. *Arch Intern Med*. 2011 Jul;171(13):1207–9.
 121. Scheurer D, McKean S, Miller J, Wetterneck T. U.S. physician satisfaction: a systematic review. *J Hosp Med*. 2009 Nov;4(9):560–8.
 122. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. *J Appl Psychol*. 2001 Jun;86(3):499–512.
 123. Shanafelt TD, Noseworthy JH. Executive Leadership and Physician Well-being: Nine Organizational Strategies to Promote Engagement and Reduce Burnout. *Mayo Clin Proc*. 2017 Jan;92(1):129–46.
 124. Shanafelt TD, Hasan O, Dyrbye LN, Sinsky C, Satele D, Sloan J, et al. Changes in Burnout and Satisfaction With Work-Life Balance in Physicians and the General US Working Population Between 2011 and 2014. *Mayo Clin Proc*. 2015 Dec;90(12):1600–13.
 125. Shanafelt TD, Sloan JA, Habermann TM. The well-being of physicians. *Am J Med*. 2003 Apr;114(6):513–9.
 126. Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Ann Fam Med*. 2014 Nov-Dec;12(6):573–6.
 127. Spinelli WM. The phantom limb of the triple aim. *Mayo Clin Proc*. 2013 Dec;88(12):1356–7.
 128. Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Manage Rev*. 2007 Jul-Sep;32(3):203–12.
 129. Shanafelt TD, Gorringer G, Menaker R, Storz KA, Reeves D, Buskirk SJ, et al. Impact of organizational leadership on physician burnout and satisfaction. *Mayo Clin Proc*. 2015 Apr;90(4):432–40.
 130. Panagioti M, Geraghty K, Johnson J. How to prevent burnout in cardiologists? A review of the current evidence, gaps, and future directions. *Trends Cardiovasc Med*. 2018 Jan;28(1):1–7.
 131. Cleary M, Kornhaber R, Thapa DK, West S, Visentin D. The effectiveness of interventions to improve resilience among health professionals: A systematic review. *Nurse Educ Today*. 2018 Dec;71:247–63.
 132. Babbar S, Renner K, Williams K. Addressing obstetrics and gynecology trainee burnout using a yoga-based wellness initiative during dedicated education time. *Obstet Gynecol*. 2019 May;133(5):994–1001.
 133. Noben C, Smit F, Nieuwenhuijsen K, Ketelaar S, Gärtner F, Boon B, et al. Comparative cost-effectiveness of two interventions to promote work functioning by targeting mental health complaints among nurses: pragmatic cluster randomised trial. *Int J Nurs Stud*. 2014 Oct;51(10):1321–31.
 134. Stehman CR, Clark RL, Purpura A, Kellogg AR. Wellness: combating burnout and its consequences in Emergency Medicine. *West J Emerg Med*. 2020 Apr;21(3):555–65.
 135. Perlo J, Balik B, Swenson S, Kabcenell A, Landsman J, Feeley D. Institute for Healthcare Improvement: Framework for improving joy in work. 2017.
 136. Fitzpatrick B, Bloore K, Blake N. Joy in Work and Reducing Nurse Burnout: From Triple Aim to Quadruple Aim. *AACN Adv Crit Care*. 2019;30(2):185–8.
 137. O'Neill P. Views on Effective Leadership 2013 [Available from: <https://globaleduc.wordpress.com/2013/09/16/paul-o-neil-former-secretary-of-the-us-treasure-and->

- ceo-of-alcoa-gives-his-views-on-effective-leadership/
138. Wolstenholme D, Grindell C, Dearden A. A co-design approach to service improvement resulted in teams exhibiting characteristics that support innovation. *Design Health (Abingdon)*. 2017;1(1):42–58.
 139. Spector PE. Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Hum Relat*. 1986;39(11):1005–16.
 140. Willis L, Mital R, Steel P, Sharma R. Discussion: physician-led wellness plan beating burnout. *Physician Leadersh J*. 2017;4(5):38–43.
 141. Drummond D. Stop Physician Burnout: What to Do When Working Harder Isn't Working. 57 *Development of physician leadership*. 2014:70.
 142. Zdradzinski MJ, O'Shea J, Moran TP, Caro D, Gomes PG, Huskey R, et al. A Comprehensive Residency Wellness Curriculum. *Journal of Wellness*. 2020;2(1):1–6.
 143. Cappelucci K, Zindel M, Knight HC, Busis N, Alexander C. Clinician Well-Being at Ohio State University: A Case Study. *NAM Perspectives*; 2019.
 144. Cardinal At Work [Available from: <https://cardinalatwork.stanford.edu/faculty-staff-help-center/services>
 145. Shanafelt TD, Makowski MS, Wang H, Bohman B, Leonard M, Harrington RA, et al. Association of Burnout, Professional Fulfillment, and Self-care Practices of Physician Leaders With Their Independently Rated Leadership Effectiveness. *JAMA Netw Open*. 2020 Jun;3(6):e207961.