Treating Clinician Burnout With Mindfulness Training

**Introduction**
Medical tools and treatments often distract us from attending to the essential instrument of medicine: the clinician’s own mind. Very little in medical education prepares us for the challenges of practice in the 21st century, so it is no surprise that radical changes in medicine should result in stress and burnout. Burnout among medical providers is widespread, and threatens practitioners and patients alike. Burnout can be prevented, treated, and even reversed with mindfulness training. Through mindfulness practice, clinicians may become happier and perform better.

**Critical Appraisal of the Literature**
A PubMed search using the search term *mindfulness* yielded 2315 titles. The search was narrowed to studies on focused magnetic resonance imaging (fMRI), cognitive testing studies, descriptive studies, and clinical trials. There are no landmark-type articles; instead, there has been a steady accumulation of significant and interlocking data in different fields that show meaningful effects on burnout with mindfulness training.

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**OBJECTIVES**
Upon completion of this article, you should be able to:
1. Define burnout and its relationship to stress and depression.
2. Describe the pathological changes in the associated brain function in burnout.
3. Describe the concept of mindfulness and activities that can be mindful.
4. Describe mindfulness training as prevention and treatment for burnout.
5. Self-assess and self-treat for stress and burnout with mindfulness practice.
mindfulness training.

The studies that were most like bench research were the fMRI studies, which correlated burnout and wellness with activation of the different parts of the brain that play a role in cognition. Each study had a relatively small number of subjects (often fewer than 20 patients), but virtually all studies showed differences between the burned-out brain and the mindful brain.

Studies of cognitive testing in clinical and nonclinical environments had larger patient groups, usually in the 40 to 100 range. They were statistically robust and showed the changes in cognition and function that might be predicted by fMRI results. This is the largest subset of data. No single article was dominant, but the mass and consistency of the data showing negative effects of burnout and the positive effects of mindfulness was compelling.

Descriptive studies and surveys in the clinical environment were the second largest subset of data. The data were consistent, but the more abstract the measure, the harder it is to measure the effect. Reaction time, recall, and working memory are concrete and easier to measure than clinical empathy or clinical results. Nonetheless, the studies and surveys consistently demonstrated negative effects with burnout and positive effects with mindfulness.

In real-world settings, such as in hospitals and emergency departments (EDs), limitations relate to the difficulty in finding objective end-points to compare. Many of these studies relied on self-reported error rates and questionnaires from surveyed physicians. Notable exceptions include work by Fahrenkopf et al. Further studies should focus more on objective clinical data as metrics for burnout and wellness. With regard to the effects of mindfulness, the literature is more robust. There is a rapidly growing body of experimental data where subjects are assigned to treatment arms, or serve as their own controls in before-and-after studies.

Wellness and Burnout: A Historical Perspective

The giants of medicine attended little to clinician wellness. The famous injunction, “Physician, heal thyself,” was not even addressed to physicians. It is a biblical proverb, with the moral that people should address their own flaws instead of the flaws of others. (Luke 4:23) The works of Hippocrates and Galen contain directives for excellence, but no instructions on how to achieve it. American Medicine continued the trend. In the works of Flexner, Osler, and Halsted, there is virtually no mention of clinician wellness. William Halsted, who founded many residency programs, exemplified superhuman work hours as the expectation for doctors, especially in training. (His own endurance was fueled, at least in part, by cocaine, which was legal at that time.2-4) Long work hours were so entrenched that Martin H. Fischer, an influential doctor of his day, could say without irony, “A doctor must work 18 hours a day and 7 days a week. If you cannot console yourself to this, get out of the profession.”5

Interest in clinician wellness began in the mid-20th century, though the focus was mostly on medical disease.6 Important findings included a higher rate of cardiovascular disease among physicians.7 By the 1960s, psychiatrists began studying psychiatric illness, drug addiction, and suicide in physicians. In this heyday of Freudian fashion, depressed physicians were often labeled as “neurotic,” and there was little concern for external factors such as work stress.8-11

The understanding of workplace stress was revolutionized in the 1970s with the concept of burnout, as developed by Herbert Freudenberger, Christina Maslach, and others studying disillusionment among social workers and healthcare providers.12-15 After 3 millennia of recorded medical history, the stressors of practice finally began to be studied systematically.

Burnout: The Scope of the Problem

Burnout among clinicians is widespread. A 2015 Mayo Clinic study showed that 50% of United States physicians surveyed reported burnout.16 Long work hours were once considered the primary cause of burnout; however, despite the work-hour reforms of the 1990s, burnout has increased. Since then, health insurance companies and other payers have adopted increasingly coercive financial leverage to contain costs and direct care. Because autonomy and control are critically important to maintaining morale among high-skill, high-stakes professionals, the creeping marginalization of doctors from healthcare design might be expected to increase burnout.17
Defining Burnout
Burnout is an exhaustion of personal resources that does not get better with rest. Burned-out workers lose the capacity to energetically engage and contribute to their work, much like a fire that runs out of fuel smolders, and eventually goes out. The work may have to continue, but it lacks consequence and meaning for the worker. Burnout occurs in 3 stages: (1) emotional exhaustion, (2) depersonalization, and then (3) decreased professional efficacy. The 3 stages are described following:

1. **Emotional exhaustion** is a sense of fatigue and having nothing left to give, emotionally, at work. Human interaction takes effort, and the most common feature of emotional exhaustion is emotional withdrawal from work and other workers. The worker may go through the motions of social interactions, but the animating energy is noticeably absent. Typically, an emotionally exhausted clinician dreads work and cannot engage emotionally or creatively with work, nurses, staff, or patients.

2. **Depersonalization** is the state of being disengaged emotionally and intellectually from work, nurses, and patients. It is the result of long-standing exhaustion, but it has an added negative component of cynicism or negativity toward others. The depersonalized clinician is detached from work, emotionally unengaged, and likely to have a negative, cynical mindset. Particular targets of the depersonalized clinician might be hospital administration or difficult patients.

3. **Decreased professional efficacy** occurs with longstanding burnout in the first 2 stages. The exhausted, depersonalized clinician becomes less professionally effective. Male clinicians are likely to blame others for their decreased efficacy; female clinicians are more likely to blame themselves. Either way, work performance declines.

Measuring Burnout
The Maslach Burnout Inventory is a commonly used tool for measuring burnout. (See Figure 1.) It contains questions in 3 dimensions, and the score estimates the stage and severity of burnout. Characteristically, burnout starts with exhaustion and can progress to depersonalization, and finally to impaired efficacy. The further along the stages, the worse the burnout effect is on the subject. Emergency clinicians tend to have a slightly higher exhaustion at baseline, compared to other specialties. As long as the exhaustion is mild, the other dimensions are unaffected, and the impairment in function is minimal. Generally, a very high score in 1 stage is associated with higher scores in the other 2 stages. The more dimensions that are affected, the more severe the impairment in function.

See the sidebar, “Do Emergency Medicine Physicians Know How Burned-Out We Are?” (page 9) for a look at what our colleagues in the American College of Surgeons found out when they asked about burnout.

Relationship of Burnout to Stress, Depression, and Suicide

**Burnout and Stress**
Burnout usually begins with work-related stress. There are multiple causes of stress among emergency medicine clinicians, which may include working nights and weekends, patient acuity, and decision-making under uncertainty. Short bursts of work-appropriate stress, such as a challenging intubation or a difficult resuscitation, are probably protective for burnout and, with a break from the stress, the brain recovers quickly and returns to normal. However, prolonged exposure—such as when a clinician is working too much and the shifts come too close together—can be more difficult to recover from. As long as the clinician makes adjustments to get a little more rest, exercise, and energy-recharging activities, the brain will go back to normal. By comparison, unremitting or unresolved stress has no positive role, and leads directly to burnout. In a detailed study of 667 physicians and hospital executives, the Rand Corporation identified 5 main causes of physician burnout.
1. A feeling that salaries are unfair
2. Not being treated with collegiality
3. The electronic health record
4. Loss of professional autonomy
5. Feeling pushed to compromise quality for speed, compliance, policy, or billing

Interestingly, the absolute level of salary was not predictive of burnout or well-being. Chronic, unresolved, or unremitting stress causes measurable, pathologic changes in brain function, including abnormal amygdala activation and accelerated cortical thinning. These changes cause decreased function of areas involved in planning, emotional regulation, and learning, with significant impairments in emotions, adaptability, and behavior. When these impairments become a regular feature of the clinician’s mental state, the clinician can be said to be in a state of burnout.

Burnout and Depression
Burnout and depression are separate constructs, but they may be difficult to distinguish. Burnout and depression share many clinical features, including decreased response to positive stimuli, increased response to unpleasant stimuli, and decreased cognitive function. A high burnout score correlates strongly with depression. Mild burnout is associated with depression (odds ratio [OR], 3). Burnout can cause depression, and vice-versa. Moderate burnout has an OR of 10 for depression, and severe burnout has an OR of 50. Depression and burnout both lead to the same unwanted outcomes.

Medical culture is one of extreme self-reliance, and admitting depression is difficult. Burnout, by comparison, is less stigmatized. The greatest value in calling the syndrome “burnout” instead of “depression” is that it makes it easier for clinicians to admit to, talk about, and act on. Burnout is best understood as work-related exhaustion that affects only at work at first, but that eventually bleeds into all facets of life as a generalized depression syndrome.

Mindfulness Tool Box

- “Evidence-based Mindfulness” (University of Wisconsin Department of Family Medicine). Two physicians engage in a 15-minute discussion of the history of mindfulness and the base of evidence on mindfulness and its benefits to the practice of medicine. [ externally linked video]
- CME has been shown to reduce stress and improve work satisfaction. Doing CME and developing added expertise enhances autonomy and will make your work less stressful.
- PowerPoint review of mindfulness training in the United States Marine Corps by Dr. Lori Haase: [externally linked file]
- Video of Dr. Haase narrating the PowerPoint presentation on mindfulness in the Marines. The video references the PowerPoint slides, but does not show any screenshots. We recommend you download the PowerPoint presentation and listen to the video while you scroll through the slides: [externally linked video]
- Major Thomas Jarrett (Chaplain United States Army) Excellent talk on mindfulness and stoicism: [externally linked video]
- Professional Resource: ACEP Wellness link: [externally linked file]
- Mindfulness as a superpower. A short, visually engaging introduction to mindfulness in its many forms: [externally linked video]
- “Happify Channel.” A library of 8 videos, 2 to 8 minutes in length, on mindfulness, resilience, and related topics with experts and authors: [externally linked channel]
- Podcast: “I Should be Meditating, with Alan Klima.” Podcast on meditation and mindfulness techniques. [externally linked podcast]
- A website for purchase of various versions of the Maslach Burnout Inventory tool: [externally linked website]
Burnout and Suicide
Physicians are at a higher risk for suicide than the general population. Of the 1 million physicians in the United States, 400 commit suicide every year.\textsuperscript{46,47} To date, no studies have shown that burnout, by itself, can lead to suicide, but when burnout causes or coexists with hopelessness and/or perfectionism, the risk of suicide increases significantly. Physicians with burnout have high hopelessness scores, as measured by Beck’s Hopelessness Scale, as well as high disengagement scores.\textsuperscript{48} Physicians with advanced burnout may be rightfully considered at some increased risk for suicide. Perfectionism (which is almost a prerequisite for becoming a physician) may also play a role in suicide, particularly when self-criticism is high. The third stage of burnout, lack of efficacy, is characterized by self-criticism, and thus risk may increase with more advanced stages of burnout.\textsuperscript{49-53}

For a deeper exploration of physician suicide, including treatment resources, see “Physician Suicide," by Louise B. Andrew, MD, JD, at: http://emedicine.medscape.com/article/806779-overview

Experimental Data on Burnout: Focused MRI Testing, Cognitive Testing, and Work Performance
Managers, mentors, and coaches understand intuitively that burned-out professionals don’t perform well. Experimental data in many different professions show decreased productivity, increased sick days, and lower performance ratings. Burnout has even been shown to decrease performance in a working military canine.\textsuperscript{54} This suggests that burnout has direct, organic effects on the brain. The negative effects of burnout affect the whole of human function, from the organ level of an individual all the way to the society. Burnout is not just a psychological state: it is more like a cancerous, vertically integrated monopoly of the soul.

Focused Magnetic Resonance Imaging and Burnout
fMRI allows the activity and balance of different parts of the brain to be measured, and activity in different anatomic regions of the brain can be correlated with specific brain functions. Therefore, increased or decreased activity seen on fMRI is thought to correlate with higher or lower function in that specific brain function. Studies have shown that the fMRI of a burned-out brain is different from the fMRI of a healthy brain.

The typical fMRI study takes otherwise-normal subjects with conditions such as chronic stress, depression, or burnout and compares their fMRIs with similarly normal subjects without chronic stress, depression, or burnout. fMRI studies show that burnout is associated with decreased activity of the dorsolateral prefrontal cortex, which is associated with impaired anxiety control. Activity of the posterior cingulate cortex is also increased, and this is associated with decreased working memory. The amygdala is overactive, and its connections with regulatory centers are attenuated. fMRI findings also suggest decreased empathic ability is associated with burnout. This combination of features would be expected to decrease working memory, decrease emotional regulation, and decrease the ability to control attention, among other critical functions. fMRI studies are limited by small sample sizes, but they predict and correlate well with cognitive testing results.\textsuperscript{33,34,55-60}

Cognitive Testing and Burnout
Burnout is associated with decreased cognitive performance and impaired emotional regulation. With exhaustion burnout, reaction times are reduced by as much as 30%.\textsuperscript{61} In a study of 67 patients (41 with burnout, 26 controls), burnout was associated with decreased control of attention, decreased working memory, and increased susceptibility to negative stimuli.\textsuperscript{62,63} Burnout is also associated with decreased executive function, which is defined as higher-order cognitive processes.\textsuperscript{64} A 2011 study of military Special Operations training (32 subjects) showed that cognitive errors increased by 35% among subjects with emotional burnout, with equal decline in performance metrics.\textsuperscript{65} In a German study of 50 subjects, normal subjects with burnout also demonstrated decreased emotional regulation.\textsuperscript{66} A 2015 study of 59 outpatients with work-related stress complaints (without major depression), compared with 59 controls, demonstrated that chronically stressed workers show impaired function across the entire spectrum of cognitive testing.\textsuperscript{67} Fortunately, dysfunction is usually not permanent, and reverses when burnout recedes.\textsuperscript{68} The negative effects of burnout on
cognitive function are strong and are especially meaningful in light of their potential impact on clinical skills and work performance.

**Clinical Skills, Work Performance, and Burnout**
Burnout reduces clinical skills and work performance in many dimensions. A 2014 Dutch study of 95 patients and a follow-up study in 2016 showed a 5% to 10% decline in function across cognitive measures, including reaction time, matching tasks, and flanker tasks. Studies of caregivers show decreased empathy, by as much as 50%, on validated scales. A prospective study of 69 firefighters showed a major drop in motivation. Organization commitment and organizational citizenship declined by as much as 50% in a survey of 204 hospital employees. Burned-out leaders showed diminished leadership and increased adoption of a laissez-faire approach (n = 205). There is some evidence that burnout is associated with decreased physician productivity. Interestingly, a 2015 study in a Macedonian teaching hospital of 286 nurses and physicians noted that nurses tend to burn out in a group, and physicians tend to burn out as individuals. Their burnout syndromes were, otherwise, very similar.

In a survey of 1537 physicians published in 2016, burnout was associated with doubling of self-reported errors. In a survey of 7905 surgeons published in 2010, each point in the scale for burnout was associated with a 5% increase in errors. A significantly higher rate of suboptimal care was self-reported by emergency physicians. Burn-out emergency physicians reported: (1) greater use of imaging and laboratory resources; (2) less-timely treatment of pain; (3) using admission or discharge to make a patient more manageable; (4) lower-quality handoffs; (5) decreased communication with the patient; and (6) decreased communication with other team members. Among 178 matched pairs of doctors and patients, the patients of doctors with higher burnout had lower customer satisfaction scores and experienced longer recovery times. Burn-out primary-care providers were also more likely to make referral to specialists compared with controls (n = 136). Medication errors were more common among burn-out and depressed residents than controls (n = 123). Two high-quality meta-analyses (n = 210,669, n = 40,612) showed that physician burnout is negatively correlated with patient outcomes, and physician well-being is positively correlated with patient outcomes. The most-measured dimensions were patient satisfaction, patient adherence to treatment, and interpersonal metrics. Despite multiple PubMed searches, no evidence that burnout is beneficial in any way was found, and there is overwhelming evidence that it is harmful.

Burnout lowers performance in every dimension of skills and work studied. As such, addressing burnout must be a key element for improving the healthcare ecosystem. The best care for patients demands that physician, advanced practice provider, and staff wellness be a core measure, as relevant as door-to-needle time, fluid resuscitation in sepsis, or antibiotics before surgery.

**Long-Term Effects of Burnout**
According to medical economist Michael Crane, behavioral changes associated with burnout increase the physician’s risk of being sued. Burned-out doctors retire sooner and are expensive to replace. The medical system can ill afford to lose physicians, as long-term demographic trends show that an increasing physician work force will be needed. Retaining doctors and advanced practice providers is imperative for maintaining a healthy population. Population health is a national strategic resource; an unfit, unhealthy population cannot compete in a world economy and is a weak substrate for national security.

### Mindfulness and its Role in Managing Stress and Burnout
There are many definitions of mindfulness. For purposes of this review, mindfulness is any practice that puts the mind in a state of increased and nonjudgmental awareness of the present moment. Traditionally, we think of mindfulness as meditation, but it can take many other forms. Mindfulness can be practiced through an engaging hobby, a creative activity, and even through physical activity. Any activity that engages the mind in such a way that one feels a sense of heightened, nonjudgmental awareness of the present is mindful. When one is being mindful, the activity is enjoyable for its own sake, and one experiences a sense of timelessness. (For mindfulness resources, see the Mindfulness Tool Box, page 6.)
Do Emergency Medicine Physicians Even Realize How Burned-out We Are?

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It is now well established that burnout is more common in physicians than in other age-matched professionals. Varying studies across a wide range of specialties are reporting that emergency physicians are the most burned-out of all specialists, with the latest study suggesting that more than 72% of emergency physicians exhibit burnout. Burnout in physicians seems to be increasing yearly, with the average number of physicians experiencing at least 1 symptom of burnout increasing from 45.5% to 54.4% between 2011 and 2014, along with decreasing career satisfaction. Midcareer seems to be the point at which burnout and career dissatisfaction are most prevalent.1-3

I spent many years staffing the American College of Emergency Physicians (ACEP) Wellness Booth where, since the early 1990s, we offered participants the opportunity to take the Maslach Burnout Inventory and receive confidential results. Quite a few participants declined the opportunity because they said they already knew they were burned out (“I know I’m toast,” was a common response).

The American College of Surgeons Survey on Burnout

As emergency physicians, we may reasonably believe that we are terminally burned out, but there is a specialty that has actually studied its members systematically, and the results of the American College of Surgeons (ACS) study were eye-popping. Dr. Mick Oreskovich, a surgeon turned addictions specialist (a practicing psychiatrist, suicidologist, and former director of the Washington state Physician Health Program) has maintained his ties with the American College of Surgeons, and he spearheaded a committee in 2008 that launched a systematic survey of all of its members.

In an article published in 2009,4 Oreskovich and ACS revealed that 40% of its members met formal criteria for burnout. Looking more closely over the next several years, Oreskovich and others conducted studies of both surgeons and a cohort of all physicians from the American Medical Association (AMA) Masterfile and compared them with “normals.” Shanafelt, Dyrbye, Oreskovich et al found that there were highly statistically significant correlations between burnout and alcohol misuse/dependence, diminished work/life satisfaction, depression, suicidal ideation, and medical errors.5 Frighteningly, most of the surgeons had no idea that they were burned out until they formally took the Maslach Burnout Inventory as part of the survey. Even more worrisome, surgeons were, in very large measure, reluctant to seek help for depression, fearing licensure repercussions. Yet many were taking prescribed antidepressant medications. Were they treating themselves? Receiving “curbstone consultations” (including prescriptions) from colleagues? This was not explored further.

Alcohol misuse/dependence was especially highly correlated with medical errors and suicidal ideation, and alcohol abuse has previously been recognized to be a significant occupational hazard for surgeons. Alcohol is commonly used by all populations as a form of self-medication for depression. When compared with age and income-matched professionals, surgeons scored far higher on measures of burnout, alcohol misuse/dependence, depression, and suicidal ideation. Normally protective mechanisms such as marriage, higher educational level, income, and (presumably) access to first-class medical care, were not operant in these studied surgeons.

Addressing Burnout

The specialty of surgery has launched a program aimed at directly addressing burnout among its members. Members are able to receive graphical assessments of their condition, access resources and materials, and actually measure their progress towards overcoming burnout. Results are not yet in, but it is a safe bet that there will be a more positive response than to sticking their heads in the sand.

Oreskovich on Burnout6:
1. There is a high prevalence of physicians, as a whole, with over-representation in certain specialties.
2. Those with burnout are more likely to abuse substances, become depressed and suicidal, make medical errors, and be markedly dissatisfied with both their professional and personal lives.
3. Burnout is easily recognizable.
4. Burnout is reversible.
5. Burnout is treatable.

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Mindfulness: A Historical Perspective

“Mindfulness” may sound like it belongs in a monastery more than in an ED; however, mindfulness can improve cognitive function and enhance performance in medical practice. A full discussion of the history of mindfulness is beyond the scope of this paper, but a brief summary of its development in medicine is worthwhile.

The scientific study of mindfulness originated with the works of Dr. Jon Kabat-Zinn and Dr. Richard Davidson in the 1970s. Dr. Kabat-Zinn worked in the field of psychology, studying the psychological effects of meditation on stress. Dr. Davidson worked in a similar vein, with a focus on objective measures (such as electroencephalograms), and their relation to the high cognitive functioning and resilience of individuals who have engaged in life-long meditation.

Mindfulness remained a niche area in medicine until the 1990s. With the publication of books such as Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life (1994), public interest in mindfulness surged. Research in mindfulness intensified and became a mainstream subject. Today, mindfulness research, principles, and practice are applied in wide-ranging fields, from the military to the workplace; from the boardroom to the ED. Mindfulness can be applied in almost any human situation, and mindfulness training is an effective therapy in medicine and psychiatry.

Mindfulness: Experimental Findings

Mindfulness training is effective in a broad range of activities and settings, which suggests it has a direct effect on the human brain. This effect has been studied in many settings. We will discuss the 4 settings most relevant to medicine:

1. fMRI
2. Cognitive testing
3. Clinical skills/work performance
4. Clinical trials of mindfulness as treatment for stress and burnout

Focused MRI and Mindfulness

The brains of a people who have engaged in mindfulness training can be distinguished from controls on fMRI. On fMRI, mindfulness-trained brains appear different from controls. Mindfulness training is associated with increased activation in areas of higher function and emotional control. The prefrontal cortex and anterior cingulate cortex, which control planning, emotional regulation, and high-level decision-making, are more active.90-94 In a 2016 study of 27 participants who volunteered for 8 weeks of mindfulness training versus 24 control participants (who engaged in “active control training”), it
was determined by fMRI that the septal region, associated with cooperativeness, showed increased activity in the mindfulness-training participants.95

The pattern of brain activity induced by mindfulness training is a natural antidote to burnout. Overactivity of the amygdala, which is associated with stress, anger, autonomic overactivation, and decreased judgment, is dampened.96 Studies also suggest better global function. The aggregated data are robust, though limited because most studies compared the mindfulness-trained brain with controls, and not the same brain before and after mindfulness training.97 More-recent studies compare the brain before and after mindfulness training. The results of a meta-analysis data collected on the neural effects of meditation (in 110 studies, with 2875 participants) are consistent and suggest the mindful brain is higher functioning, better regulated, more deliberate and rational, and better suited to teamwork.98

Cognitive Performance and Mindfulness
Mindfulness training improves cognitive function in many dimensions. There is a robust body of literature on the effects of meditation, which is a specific type of mindfulness training. It seems clear that the mindful brain is higher-performing; the weakness of these studies is that they lack internal control or crossover. That is to say, the brains of subjects in most of these studies were not evaluated prior to adoption of meditation as mindfulness training, so it is difficult to show causality. The brains of subjects could have been higher-performing before adoption of meditation.

Fortunately, there is a growing body of experimental data showing the positive effects of mindfulness on cognitive performance. These studies compare people before and after mindfulness training, or cohorts randomly assigned to mindfulness or control arms. A randomized trial of mindfulness showed enhanced ability to detect errors in complex task completion.99 A cohort of 80 military recruits had fewer attention lapses after mindfulness training.100 Mindfulness training also improves episodic memory.101 Executive function and self-control improved in other clinical trials, and impulsivity declined.102-104 These results are most likely related to the specific brain areas activated and suppressed by mindfulness. There is also evidence that mindfulness reduces serum markers of stress, though the evidence in meta-analyses is not conclusive.105-107

It has been known for some time that the mindful brain is higher-functioning than the untrained brain. The body of work showing positive effects in experimental designs is persuasive and growing rapidly. Mindfulness can be valuable for the clinician who simply wants to improve performance.

Mindfulness for Treating Burnout
Multiple clinical trials have shown that mindfulness is an effective treatment for burnout. Sustained reductions in depressive symptoms, stress, and burnout scores are seen in many studies, some of which are summarized below:

• In a 3-arm trial (mindfulness, control, and nonexperimental, n = 424) mindfulness substantially decreased exhaustion and depersonalization in the mindfulness arm and resulted in greater work engagement. Furthermore, the effect was sustained over time.
• A large meta-analysis (n = 1034) bore out a 40% reduction in burnout among physicians with mindfulness intervention.108,109
• A 2-arm trial with crossover of 144 managers showed marked increase in self-esteem and positive affect, and decreases in work stress, negative affect, and sick days.110
• In a mindfulness program with 74 physicians, exhaustion, depersonalization, and overall burnout scores decreased by 10% to 15%, and work engagement increased by 7%.111
• A meta-analysis of health professional students (19 studies, 1815 students) demonstrated that mindfulness interventions decreased stress, anxiety, and depression while improving mindfulness, mood, self-efficacy, and empathy.112
• An interesting meta-analysis of online mindfulness training also demonstrated significant and lasting improvement in perceived stress.113
• Other studies that demonstrated successful mitigation of burnout and stress include:
  1. The effect of mindfulness-based CME in a small study of residents (n = 30).114,115
  2. Physician-led initiatives can make the workplace better (clinical trial, 34 clinics, 134 physicians).116
3. Workplace interventions to decrease burnout have many positive impacts on physician well-being and clinical outcomes (systematic review, 18 articles).

There are many other studies, and improvement with mindfulness is near-universal. Although there is a bias against studies where no difference is shown, despite exhaustive searching, not a single study showing a negative effect of mindfulness could be found. One area lacking data is the effect of mindfulness on clinical errors. Clinical errors are rare and hard to find, and can be correlated with many different independent variables. Self-reported errors have been studied by survey in burnout and perhaps similar surveys could be done with physicians and advanced practice providers after mindfulness training.

**Small, Brief Interventions Make a Large, Lasting Difference**

It is remarkable that, in many studies, the mindfulness intervention is very brief, but still highly effective. As such, even the busiest clinician can find 10 to 15 minutes each day to engage in mindfulness exercises. Mindfulness training can even be done online. The evidence suggests the benefits are significant and durable.

#### Frequently Asked Questions the Experimental Data Cannot Answer

**Q. What should you do if you feel burned-out?**

A. The first step is to measure and see how severe it is. Most emergency clinicians have mild to moderate exhaustion. This will usually respond to a recharge of personal resources through rest, a few days off, and time with loved ones. Spiritual practice, as well as reflection on the greater goals in life, may also enhance resilience and mindfulness. Mindfulness training is effective at treating burnout, but can be adopted even before burnout begins. If the burnout has advanced to mild-to-moderate depersonalization, consider reducing the number of shifts worked, and do everything you can to recharge your resources. Adopt mindfulness or meditation at least a couple of times a day. Seek out a trusted colleague or mentor or even a figure outside of work, (such as a member of the clergy) for advice and how to recharge. If the burnout is so severe that it is at the level of diminished efficacy, you are at some significant risk, and if you make a clinical mistake in this delicate state, you may not be able to manage it psychologically. Try to get more rest and work fewer shifts. When you are at work, bounce cases off your colleagues more often, and check in with members of the care team more often. You should probably get professional guidance and support. As always, eat healthily, sleep enough, and get some exercise.

**Q. Is there protection for you if you disclose you have burnout?**

A. You will not get fired if your burnout is mild. If it is severe, the risk of disclosing to your employer is likely lower than the risk of committing a severe medical mistake or psychological decompensation. You are very fragile at this point, and you should consider a few days off. The middle ground is tricky, and probably varies from state to state and group to group. At this time, burnout is not a protected class. If burnout has progressed to depersonalization, you definitely want someone on your team: a spouse, member of the clergy, or other professional advisor.

**Q. What should you do if you spot burnout in a colleague?**

A. If you think a colleague is an imminent danger to patients, you should report. Burnout does not, in and of itself, represent an imminent danger to any patient. Try to engage your colleague and check in and see if he is OK. Ask how he is doing. If he gives you an opening, talk about this interesting article you read about burnout, and perhaps share your own story. Tell him about any resources you find valuable. Generally, the best thing is for an ED group to have a Wellness Committee to serve as a resource for doctors in the group. As always, the best treatment is prevention. Or, like a rabies vaccine, it protects you a lot better if you start it before anything bad happens.
Summary

Burnout and wellness are not “soft” topics. They are scientifically valid and you should understand them if you want to thrive in 21st-century medicine. If you feel burned-out from time to time, it’s not your fault. Multiple recent changes in medicine have contributed to the burnout epidemic. These include the electronic health record, because it is intrusive and tends to require more time away from patients. Increasingly coercive tactics by insurance companies also play a part. The opioid epidemic means that whenever you write a prescription, there is a risk of diversion or death, but if you don’t write the prescription, you risk a bad customer service score. These kind of “darned if you do, damned if you don’t” dilemmas cause unresolved stress and contribute to burnout. As part of regaining professional autonomy, we are going to have to step into the boardroom and even the legislature. There is no reason why clinicians should not be the leaders of healthcare system design. We just have to prepare for it. And mindfulness is the way.

Key Points

- Burnout is a major problem for doctors and, potentially, for patients.
- Exhaustion is almost an occupational hazard in emergency medicine, but burnout doesn’t have to be.
- Burnout has 5 main external causes: unfairness, unprofessionalism, the electronic health record, loss of autonomy, and feeling that quality has to be compromised.
- Burnout has direct negative effects on the brain.
- The negative effects of burnout are manifest and concordant in multiple modalities: fMRI, cognitive testing, and in the workplace.
- Burnout probably causes increased medical errors and may contribute to lawsuits.
- Mindfulness training has direct positive effects on the brain.
- The positive effects of mindfulness are manifest and concordant in multiple modalities: fMRI, cognitive testing, and the workplace.
- Mindfulness treats and reverses burnout.
- Mindfulness is useful to the healthy brain for burnout prevention and cognitive skills optimization.

References

Evidence-based medicine requires a critical appraisal of the literature based upon study methodology and number of subjects. Not all references are equally robust. The findings of a large, prospective, randomized, and blinded trial should carry more weight than a case report.

To help the reader judge the strength of each reference, pertinent information about the study, such as the type of study and the number of patients in the study, will be included in bold type following the reference, where available.


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