



# Beyond Burnout: A Physician Wellness Hierarchy Designed to Prioritize Interventions at the Systems Level

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## ABSTRACT

Burnout has been implicated in higher physician turnover, reduced patient satisfaction, and worsened safety, but understanding the degree of burnout in a given physician or team does not direct leaders to solutions. The model proposed integrates a long list of variables that may ameliorate burnout into a prioritized, easy-to-understand hierarchy. Modified from Maslow's hierarchy, the model directs leaders to address physicians' basic physical and mental health needs first; patient and physician physical safety second; and then address higher-order needs, including respect from colleagues, patients, processes, and the electronic health record; appreciation and connection; and finally, time and resources to heal patients and contribute to the greater good. Assessments based on this model will help leaders prioritize interventions and improve physician wellness.

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Administrators hoping to address physician burnout face a dilemma. In 2017 the National Academy of Science created an Action Collaborative focused on Clinician Well Being and Resilience, bringing together more than 60 key constituents including representatives from professional societies, the Agency for Health Care Research and Quality, leading clinician researchers, electronic health record (EHR) developers, and many others. Working together, the academy listed 80 factors that contribute to burnout.<sup>1</sup> In a similar effort, prominent pioneering research groups have provided a categorized list offering specific strategies by scale so that individuals, units, and organizations can conceptualize opportunities for intervention at whatever level they wish.<sup>2</sup>

While these lists are impressively thorough, institutions and executive teams hoping to address burnout may have difficulty choosing which factors to prioritize, as these lists are overwhelming, even for well-resourced organizations. The lack of structure may result in institutions addressing a random list of factors and they may miss key drivers. Or worse, institutions may avoid addressing the structural issues that cause burnout, choosing instead to cosmetically initiate wellness classes, programs, and trainings that may do little to impact the underlying drivers or consequences of burnout.

With these concerns in mind we have adapted Maslow's Hierarchy into a Physician Burnout and Wellness Hierarchy (Figure). While hardly innovative, this model is practical, necessary, and offers easy-to-understand guidance to leaders hoping to improve burnout. Maslow asserted that humans are motivated by unsatisfied needs. As needs at a given level are sufficiently satisfied, we strive toward needs at the next level. In his classic 1943 paper, Maslow<sup>3</sup> proposed a hierarchical model starting with physiological needs and moving up the pyramid to safety needs, the need for love and belonging, esteem and culminating for those

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fortunate few striving toward, and at least briefly realizing, a state in which they actualize or realize their true potential.

The Health Professional Wellness Hierarchy (Figure) assumes that rather than being motivated by unmet needs, health professionals are motivated by a desire to deliver excellent care for their patients while, at minimum, not paying an overwhelming personal price, and optimally, feeling connected, experiencing joy during practice, and contributing at their fullest ability for their patients and the field.

As an example of how the model functions, we believe that it is hard to benefit from resilience courses or meditation if we are dehydrated, depressed, or scared for our physical safety.

In addition, unlike long lists of variables, this hierarchical model is practical. Using an assessment strategy tailored to the hierarchy will identify the greatest need at whatever organizational scale measured: individual life, work unit, department, institution, or networked system. Put simply, this tells leaders where to start. Our preliminary work using this model has revealed that different units, departments, and even institutions have unique burnout factor “profiles” or sets of variables that are more and less pronounced and that the model helps organize and prioritize interventions.

The following will summarize each proposed level of the hierarchy and recommends preliminary interventions that should impact that level based on the model.

## LEVEL 1: PHYSICAL AND MENTAL HEALTH

This model predicts that the most efficient method to improve burnout rates is to attend to physicians’ physical needs and mental health first. Physically, health professionals need hydration, food, sleep, and access and time to use bathrooms. While mental health is a broad term often used colloquially to mean anything from freedom from serious psychopathology to opportunities for meditation, we are using the former meaning, implying freedom from suicidal ideation, mood disorders, anxiety, substance abuse, or other serious psychiatric symptomology.

### Mental Health

In the words of one pediatrician, “Having depression is like bouncing a basketball off of your forehead every few minutes. It’s hard to think about patients or anything else.” (Hammer R, personal communication to DES, 2018).”

Physicians have suffered from depression in greater numbers than other professionals for as long as we have

been measuring that statistic.<sup>4</sup> Shanafelt et al<sup>5</sup> have reported depression rates of 12% among physicians. In its most severe form, and especially when coupled with substance use, anxiety, hopelessness, or other comorbid psychiatric disorders, suicide is a risk.<sup>6</sup>

Though infrequent, when it occurs, physician suicide is devastating. A widely cited statistic (but likely outdated and perhaps an underestimate) suggests that 300 to 400 physicians commit suicide annually.<sup>7</sup> Suicide is also the leading cause of death among male residents and the second leading cause among female residents.<sup>8</sup>

While the study is now aging, the best and most carefully conducted study of suicide in physicians was probably conducted by Stack,<sup>9</sup> who found that physicians commit suicide 2.5 times as often as age-matched controls in the general public. Shanafelt et al<sup>10</sup> reported suicidal ideation rates (also during the past year) of 6.3%.

With regard to substance abuse, Ore-skovich et al reported that 12.9% of males and 21.4% of females among 7288 responding physicians met diagnostic criteria for alcohol abuse or dependence,<sup>11</sup> repeating rates they’d identified in surgeons in an earlier study.<sup>12</sup> These authors also provided preliminary evidence that positive screenings are associated with experiencing a

recent major medical error.

### Physiological Health

Like Maslow, we focus here on eating, sleeping, hydrating, using bathrooms, and when necessary, breastfeeding. The acute effects of caloric intake on cognition are well understood,<sup>13</sup> but unfortunately, many physicians routinely skip meals, consume food too rapidly, or consume food with poor nutritional value.<sup>14,15</sup> A combination of time pressures, space constraints, and Occupational Safety and Health Administration bloodborne pathogen standards, which prohibit consumption in areas where potential contamination of work surfaces exist, often results in food being inaccessible in common work areas [eg, see standards 29-CFR-1910.1030(d)(2)(ix) or 29-CFR-1910.141(g)(2)].

Too often, there is not enough time to leave a unit, travel to a cafeteria, purchase food, consume, and return. In addition, in some systems, cafeterias are treated like independent profit centers and close in the late evening after the bulk of workers have departed. Physicians working “off-shift” may have no access to food.

A related issue is hydration. One study of clinicians completing 150 shifts in the UK revealed that significant portions started (36%) and ended (45%) their shifts clinically dehydrated.<sup>16</sup> Comparisons revealed that those who were

## CLINICAL SIGNIFICANCE

- Burnout has been implicated in higher physician turnover, reduced patient satisfaction, and worsened quality and safety, but understanding degree of burnout in a given physician or team does not direct leaders to solutions.
- The model described brings together a long list of variables that may ameliorate burnout into a prioritized, easy-to-understand hierarchy.
- We predict that addressing variables described in the model will help administrators efficiently impact the greatest sources of burnout in their environments.



dehydrated had significant short-term memory impairment compared with better hydrated colleagues. Mild dehydration is also proven to worsen mood.<sup>17</sup>

Sleep deprivation is also known to negatively impact mood and decision-making.<sup>18</sup> As examples, studies have shown that anesthesiologists’ reaction times are significantly worsened after a night call shift<sup>19</sup> and tired intensive care unit physicians suffer worsened perceptual reasoning, processing speed, and cognitive flexibility.<sup>20</sup> Evidence supporting improved patient outcomes following brief work breaks mid-shift and even mid-surgery are also growing across specialties, including emergency medicine,<sup>21</sup> surgery,<sup>22,23</sup> and neuroradiology.<sup>24</sup>

Access to bathrooms or time to use bathrooms is understudied, but we suspect it is more problematic than has been acknowledged.

Finally, it is well documented that breastfeeding improves infant immunity and neurodevelopmental health,<sup>25</sup> with long-term benefits to infants in reduced rates of cardiovascular disease<sup>26</sup> and even some cancers.<sup>27</sup>

Physician-mothers hoping to routinely pump often lack access to private, hygienic space and may experience intense and distracting physical discomfort (Table 1).

### LEVEL 2: SAFETY AND SECURITY

Maslow argued that when we feel endangered by threats, even minor threats to our safety or security, we “may be wholly dominated by them.”<sup>3</sup> He writes that after the urgency of meeting physiological needs, our desires for safety and protection, including routine, predictability, and order are powerful and innate motivators.

### Freedom from Violence

Occupational Safety and Health Administration analyses indicate that serious workplace violence (defined as events requiring days off for recuperation) occur 4 times more often in health care than in private industry.<sup>28,29</sup> Emergency and psychiatric care workers are especially vulnerable, with one study of nurses showing over one-fifth suffering a physical

**Table 1** Suggested Interventions to Address Level 1: Basics

1. Assess the mental health of the staff and the degree to which they are willing to use support systems such as Employee Assistant Programs or other existing resources. If necessary, make it easier for staff to access psychological care by bringing it on-site, or better, embed mental health professional on units as liaisons.
2. Make it easy for physicians and nurses to consume liquids and healthy calories regardless of which shift they work. Assess the sleep deprivation of staff and make sure all workers have adequate sleep between shifts and that on-site sleeping quarters are comfortable and clean. Conduct spot-checks for dehydration and ensure that water and other beverages are easily accessible. Ensure that private bathrooms are always available. Install breastfeeding stations with privacy, sanitation, electricity, and water.

assault every 12-month period.<sup>28</sup> In addition, many health facilities are geographically located in areas with high rates of violence, and professionals may harbor routine concerns about travel in and out of facilities, especially after hours.

### Threats to Personal Safety from Time Pressure or Inadequate Staffing

Health professionals are more likely to be injured in environments with inadequate staffing, poor communication, leadership issues, and inadequate attention to safety.<sup>30</sup> For example, moving patients manually instead of using hover mats (because it's faster), helping patients to bathrooms with insufficient help, or otherwise rushing and risking sharps injuries are still too common.<sup>31</sup>

### Job Security

Notably, Maslow<sup>3</sup> included job safety and security in the safety level of his hierarchy. Job insecurity is a threat to wellness for physicians in downsizing or struggling systems. For example, 100 rural hospitals closed inpatient services between 2005 and 2015, with an additional 1375 currently considered unprofitable.<sup>32</sup> Managing patient care while simultaneously feeling insecure about one's employment is challenging (Table 2).

## LEVEL 3: RESPECT

Where Maslow's<sup>3</sup> third level is belonging, in the case of health professionals, we focus on respect in the clinical milieu, and in this we include respect from coworkers, supervisors, patients, EHRs, technology, respect from the bureaucracy, and respect for personal time.

### Respect from Supervisors and Administrative Leadership

A study of over 20,000 workers conducted by business professor Christine Porath found that workers who feel respected by immediate supervisors report 56% better health and well-being, 89% greater enjoyment and satisfaction with their jobs, and are significantly more likely to stay.<sup>33</sup> In our field, Shanafelt et al<sup>34</sup> have echoed that finding, reporting that physicians who don't share the values of their immediate supervisor are more likely to reduce their clinical effort.

We have observed that one common form of disrespect is endemic in health care. When physicians make requests

of supervisors and never receive a response, this is disrespectful. For example, a surgeon in one of our hospitals was notified that his productivity was low. Attempting to address the concern, he requested the operating rooms be "turned over faster." He heard no response, but a month later he received another notice informing him his productivity was still too low and threatening pay reductions.

### Respect from Colleagues

A 2013 survey of 4884 health care workers revealed that disrespectful behaviors, ranging from thrown objects (18%) to condescending or demeaning comments, are common (54%).<sup>35</sup> An innovative simulation evaluating the impact of rudeness has shown that even just one rude observer of an intensive care unit team reduces creativity, diagnostic ability, and procedural efficiency.<sup>36</sup>

Within institutions, the degree to which entitlement, bullying, and other noxious behaviors are addressed fairly also varies. Gerald Hickson has done careful work in this area for over 2 decades, categorizing types of clinician misbehavior and designing calibrated responses that peers, supervisors, and other witnesses can use to intervene.<sup>37-43</sup> Being exposed to noxious coworkers is unpleasant; it is especially noxious when leaders fail to respond.

### Respect from Patients

There is growing attention on the impact of patient disrespect on health professionals<sup>44-47</sup> and health care trainees.<sup>48</sup> We don't yet have evidence that working repeatedly with rude, discriminatory, or abusive patients causes burnout. This model, however, predicts that patient disrespect is relevant and, where possible, policy and procedures should protect health professionals as much as is ethically reasonable.

### Respect from the EHR, Bureaucracy, and Other Technology

While not peer reviewed, repeated annual Internet-based studies conducted by Medscape have found that bureaucracy (eg, charting and paperwork) is the leading self-reported cause of burnout among responding physicians (n = 15,543 in 2018), with 56% endorsing it as a major contributor.<sup>49</sup> Time studies by Sinsky et al and others found that only between 27%<sup>50</sup> and 46%<sup>51</sup> of physician time is face-to-face time with patients, with the remainder dedicated to the EHR and deskwork, including insurance authorizations, claims,

**Table 2** Suggested Interventions to Address Level 2: Safety and Security

1. Train staff for de-escalation of violence and embed security on units where violence is likely, especially in psychiatric and emergency units.
2. Add security when necessary.
3. Staff adequately for safety of patients and clinicians. Avoid double roles that may force staff to be in 2 places at once, risking the health of coworkers.
4. Where possible, make job-impacting changes as predictable as possible and recognize that whenever mergers, acquisitions, or downsizing is discussed, there will be deep concerns about job security that impact wellness.

**Table 3** Suggested Interventions to Address Level 3: Respect

1. Continue to improve electronic health records so that logging on, finding information, entering information, and communicating with other health professionals is intuitive and efficient. Reduce clicks.
2. Address electronic problems quickly, including computers that don't work, issues with logging on, "black holes" in institutions, and communication systems that routinely fail.
3. Wherever possible, consolidate mandatory trainings and make them interactive.
4. Reduce e-mail quantity.
5. Create patient rights and responsibilities charters that prevent patient abuse of staff and create procedures to intervene when patients are abusive or sexually harass staff.
6. Train leaders to hold entitled, bullying, or otherwise abusive staff accountable and, when necessary, remove repeat offenders.
7. Respond to physician requests, even if the answer is "no."
8. Intervene in units that have low civility. If necessary, remove leaders who are either too passive or too harsh to manage unit civility with the emotional intelligence required.
9. Measure speed and quality of internal consultation. Intervene with units that lag in either.
10. In systems in which physicians must routinely travel between hospitals or clinics mid-day, protect parking spots or create reliable shuttle services. Schedule meetings so that they allow individuals to have time between meetings for travel and meeting biological needs.
11. Come on-site and round with physicians, listen and track complaints, and respond quickly.

and billing.<sup>52</sup> After-hour charting is also invading home life, with primary care doctors spending roughly 1.4 hours charting each day after hours.<sup>53</sup> This may explain the finding that physicians' satisfaction with work-life balance decreased between 2011 and 2014.<sup>54</sup>

While EHRs are the frequent target of complaints, there are other technological insults. "Swiping" into parking lots but not opening the gate, computers that do not work or routinely "log me out," phones and pagers that fail to send or receive, "black holes" in hospitals or clinics where electronic communication is impossible, private messages that routinely interrupt face-to-face time with patients, and a deluge of unnecessary e-mails are common culprits.

Mandatory Internet training on topics such as fire safety, Health Insurance Portability and Accountability Act, cyber security, and others have also proliferated. When these training sessions are not coordinated, nor designed for efficiency, they are inevitably irritating.

As one physician wrote, "Luke Filde's 19th century painting of a contemplative doctor alone with a sick child might now be replaced by a harassed doctor trying to park his car to get to a meeting on time."<sup>55</sup> (Table 3).

#### LEVEL 4: APPRECIATION AND CONNECTION

Maslow wrote of his fourth level, which he labeled 'the esteem needs', "All people in our society have a need or desire for a stable, firmly based, usually high evaluation of themselves, for self-respect, or self-esteem, and for the esteem of others."<sup>3</sup> Maslow went on to note that esteem from others is a significant, normal, and reasonable desire.

#### Appreciation

While we in health care may resist the notion that we deserve or desire thanks, and value altruism, this model predicts that health professionals want and deserve, as much as any other professional, to be noticed and appreciated.

One widely cited experimental study split volunteer fundraising callers into 2 groups: one heard a gratitude-filled speech while a control group received a conventional orientation. Those who were thanked generated 50% more calls and were significantly more likely to take on additional work.<sup>56</sup>

Single-institution, uncontrolled studies in health care imply that expressions of appreciation by leaders do improve worker satisfaction.<sup>57</sup> While the impact of appreciation on burnout has been understudied, this model predicts that appreciation is important, and its component parts: being noticed, and then receiving a message of gratitude, are valid methods for reducing the impact of burnout. Whether this appreciation is ideally delivered from patients, peers, supervisors, or the highest-level leaders (or all) deserves study.

#### Interpersonally Connected

Also, most, but not all, health professionals want to feel interpersonally connected at work. At Mayo, West<sup>58</sup> designed an innovative trial that reduced burnout by connecting physicians through sponsored after-hours dinners; and others have written about the social isolation commonly experienced by physicians.<sup>59</sup>

#### Compensation

With other appreciative messages, pay matters. In the UK, for example, when salaries for physicians were significantly lower than those earned by other professionals, this was a significant driver of burnout and unhappiness.<sup>55</sup> Adequate pay appears to be a necessary but not, in and of itself, sufficient factor to inoculate physicians or other health professionals from burnout. When compensation is low, we also suspect leaders must make additional efforts to help front-line health care workers feel appreciated (Table 4).

**Table 4** Suggested Interventions to Address Level 4: Appreciation and Connection

1. Compensate physicians fairly.
2. Communicate appreciation that is individualized, specific, and frequent. Make it easy for patients, colleagues, supervisors, and system leaders to express appreciation.
3. Publicize major “wins” such as team responses to complex cases, traumas, or other significant medical challenges.
4. Facilitate community and connection by creating shared spaces such as physician lounges and opportunities to connect through meals and other events.

**Table 5** Suggested Interventions to Address Level 5: Contributing Fully

1. Improve systems to facilitate more time for face-to-face physician–patient and nurse–patient interactions.
2. Reduce the interference of the business on the daily practice of medicine and health care.
3. For those who desire academic time, protect it by eliminating the need for clinical activity at the same time.
4. Arrange and support mentorship.
5. Use ongoing development to help professionals become as skilled as possible and resource them to facilitate their use of these skills.

## LEVEL 5: HEALING PATIENTS AND CONTRIBUTING AT THE FULLEST OF ONE'S ABILITY

Maslow's highest level is self-actualization; in describing this he wrote:

Even if all these needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will so on develop, unless the individual is doing what he is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man can be, he must be. This need we may call self-actualization . . . This tendency might be phrased as the desire to become more and more what one is, to become everything that one is capable of becoming.<sup>3</sup>

### Practicing Medicine Fully

For those drawn to medicine and health care, improving lives by ameliorating suffering and healing the ill is a need. Like Maslow's<sup>3</sup> example of the musician who must play music beautifully to be satisfied, health professionals want the time and resources to practice at the highest levels, healing the ailing. They want the authority, resources, autonomy, and support to be as good at this practice as they can possibly be.

For many, this also extends to contributing creatively to the science or practice of medicine. Some physicians are eager to contribute by conducting research, and training or mentoring other health professionals. For these individuals, especially when they know their work will help others, having little opportunity to pursue these contributions is stultifying and frustrating (Table 5).

## HOW TO USE THE BURNOUT AND WELLNESS HIERARCHY

To effectively use the hierarchy, we recommend that institutions systematically assess every level of the hierarchy.

We've used a combination of focus groups, empirical assessments, and qualitative analysis of open-ended responses to create burnout profiles using this model. Some important factors, like hydration, may be difficult to assess without testing.

After data are collected, we recommend intervening at the lowest level of need first. Like Maslow,<sup>3</sup> who asserted that his stages were not fixed levels that could only be ascended in order, we also believe that addressing challenges across levels is indicated.

In creating the hierarchy, we are attempting to balance the needs of patients, institutions, and individuals. This is, at best, a starting place. We also believe that before we can make wider progress scientifically, it is time to combine the various independent progress factors we now know impact physician burnout into a galvanized, prioritized, scaffolding. This will allow us to compare the relative importance of variables, create “burnout profiles,” and tailor interventions to specific profiles.

We are hopeful that others will join us in refining this structure, evaluating measurement strategies, and testing the impact of prioritized interventions.

## References

1. National Academy of Medicine. Factors affecting clinician well-being and resilience. Available at: <https://nam.edu/clinicianwellbeing/resources/a-journey-to-construct-an-all-encompassing-conceptual-model-of-factors-affecting-clinician-well-being-and-resilience/2018>. Accessed October 1, 2018.
2. Shanafelt TD, Noseworthy JH. Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. *Mayo Clin Proc*. 2017;92:129–146.
3. Maslow AH. A theory of human motivation. *Psychol Rev*. 1943;50:370–396.
4. Bucknill JD, Tuke DH. *A Manual of Psychological Medicine: Insanity*. Philadelphia: Blanchard and Lea; 1858.
5. Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med*. 2012;172:1377–1385.

6. Hawton K, Casanas ICC, Haw C, Saunders K. Risk factors for suicide in individuals with depression: a systematic review. *J Affect Disord.* 2013;147:17–28.
7. Center C, Davis M, Detre T, et al. Confronting depression and suicide in physicians: a consensus statement. *JAMA.* 2003;289:3161–3166.
8. Yaghmour NA, Brigham TP, Richter T, et al. Causes of death of residents in ACGME-accredited programs 2000 through 2014: implications for the learning environment. *Acad Med.* 2017;92:976–983.
9. Stack S. Suicide risk among physicians: a multivariate analysis. *Arch Suicide Res.* 2004;8:287–292.
10. Shanafelt TD, Balch CM, Dyrbye L, et al. Special report: suicidal ideation among American surgeons. *Arch Surg.* 2011;146:54–62.
11. Oreskovich MR, Shanafelt T, Dyrbye LN, et al. The prevalence of substance use disorders in American physicians. *Am J Addict.* 2015;24:30–38.
12. Oreskovich MR, Kaups KL, Balch CM, et al. Prevalence of alcohol use disorders among American surgeons. *Arch Surg.* 2012;147:168–174.
13. Mahoney CR, Taylor HA, Kanarek RB. The acute effects of meals on cognitive performance. In: Lieberman HR, Kanarek RB, Prasad C, eds. *Nutritional Neuroscience*, Boca Raton, FL: Taylor and Francis Group; 2005:73–91.
14. Lemaire JB, Wallace JE, Dinsmore K, Roberts D. Food for thought: an exploratory study of how physicians experience poor workplace nutrition. *Nutr J.* 2011;10:18.
15. Lemaire JB, Wallace JE, Dinsmore K, Lewin AM, Ghali WA, Roberts D. Physician nutrition and cognition during work hours: effect of a nutrition based intervention. *BMC Health Serv Res.* 2010;10:241.
16. El-Sharkawy AM, Bragg D, Watson P, et al. Hydration amongst nurses and doctors on-call (the HANDS on prospective cohort study). *Clin Nutr.* 2016;35:935–942.
17. Armstrong LE, Barquera S, Duhamel JF, Hardinsyah R, Haslam D, Lafontan M. Recommendations for healthier hydration: addressing the public health issues of obesity and type 2 diabetes. *Clin Obes.* 2012;2:115–124.
18. Harrson Y, Home JA. The impact of sleep deprivation on decision making: A review. *J Exp Psychol Appl.* 2000;6(3):236–249.
19. Saadat H, Bissonnette B, Tumin D, et al. Effects of partial sleep deprivation on reaction time in anesthesiologists. *Paediatr Anaesth.* 2017;27:358–362.
20. Maltese F, Adda M, Bablon A, et al. Night shift decreases cognitive performance of ICU physicians. *Intensive Care Med.* 2016;42:393–400.
21. Mitra B, Cameron PA, Mele G, Archer P. Rest during shift work in the emergency department. *Aust Health Rev.* 2008;32:246–251.
22. Engelmann C, Schneider M, Grote G, et al. Work breaks during minimally invasive surgery in children: patient benefits and surgeon's perceptions. *Eur J Pediatr Surg.* 2012;22:439–444.
23. Park AE, Zahiri HR, Hallbeck MS, et al. Intraoperative "micro breaks" with targeted stretching enhance surgeon physical function and mental focus: a multicenter cohort study. *Ann Surg.* 2017;265:340–346.
24. Reicher J, Currie S, Birchall D. Safety of working patterns among UK neuroradiologists: what can we learn from the aviation industry and cognitive science? *Br J Radiol.* 2018;91:20170284.
25. Bar S, Milanaik R, Adesman A. Long-term neurodevelopmental benefits of breastfeeding. *Curr Opin Pediatr.* 2016;28:559–566.
26. Nguyen B, Jin K, Ding D. Breastfeeding and maternal cardiovascular risk factors and outcomes: a systematic review. *PLoS One.* 2017;12:e0187923.
27. Victora CG, Bahl R, Barros AJ, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet.* 2016;387:475–490.
28. Occupational Safety and Health Administration (OSHA). Workplace violence in healthcare: understanding the challenge; 2015. Available at: <https://www.osha.gov/Publications/OSHA3826.pdf>. Accessed December 16, 2018.
29. Occupational Safety and Health Administration (OSHA). Guidelines for preventing workplace violence for healthcare and social service workers; 2015. Available at: <https://www.osha.gov/Publications/OSHA3148.pdf>. Accessed December 16, 2018.
30. Trinkoff AM, Geiger-Brown JM, Caruso CC, et al. Personal safety for nurses:ed. In: Hughes RG, ed. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*; 2008. Rockville, MD.
31. Sundler AJ, Johansson E, Johansson L, Heden L. Incidents reported by nurse anaesthetists in the operating room. *J Interprof Care.* 2018; 32:699–705.
32. North Carolina Rural Health Research and Policy Analysis Center. Prediction of financial distress among rural hospitals. 2016. [ruralhealthresearch.org/publications/998](http://ruralhealthresearch.org/publications/998). Accessed December 16,2018.
33. Porath C. Half of employees don't feel respected by their bosses. *Harv Bus Rev*; 2014. Available at <https://hbr.org/2014/11/half-of-employees-dont-feel-respected-by-their-bosses>. Accessed October 1, 2018.
34. Shanafelt TD, Gorringer G, Menaker R, et al. Impact of organizational leadership on physician burnout and satisfaction. *Mayo Clin Proc.* 2015;90:432–440.
35. Grissinger M. Unresolved disrespectful behavior in healthcare: practitioners speak up (again)-part 1. *P T.* 2017;42(1):432–440.
36. Riskin A, Eriz A, Foulk TA, et al. The impact of rudeness on medical team performance: a randomized trial. *Pediatrics.* 2015;136:487–495.
37. Cooper WO, Guillaumondegui O, Hines OJ, et al. Use of unsolicited patient observations to identify surgeons with increased risk for post-operative complications. *JAMA Surg.* 2017;152:522–529.
38. Hickson GB, Entman SS. Physician practice behavior and litigation risk: evidence and opportunity. *Clin Obstet Gynecol.* 2008;51:688–699.
39. Martinez W, Etchegaray JM, Thomas EJ, et al. 'Speaking up' about patient safety concerns and unprofessional behaviour among residents: validation of two scales. *BMJ Qual Saf.* 2015;24:671–680.
40. Martinez W, Lehmann LS, Thomas EJ, et al. Speaking up about traditional and professionalism-related patient safety threats: a national survey of interns and residents. *BMJ Qual Saf.* 2017;26:869–880.
41. Martinez W, Pichert JW, Hickson GB, Cooper WO. Programs for promoting professionalism: questions to guide next steps. *Jt Comm J Qual Patient Saf.* 2014;40:159–160.
42. Pichert JW, Moore IN, Hickson GB. Professionals promoting professionalism. *Jt Comm J Qual Patient Saf.* 2011;37:446.
43. Pichert JW, Moore IN, Karrass J, et al. An intervention model that promotes accountability: peer messengers and patient/family complaints. *Jt Comm J Qual Patient Saf.* 2013;39:435–446.
44. Fontana N. Ethical moment: how can I handle a rude patient? *J Am Dent Assoc.* 2005;136:1739–1740.
45. Giesen P, Mokkink H, Hensing M, van den Bosch W, Grol R. Rude or aggressive patient behaviour during out-of-hours GP care: challenges in communication with patients. *Patient Educ Couns.* 2008;73:205–208.
46. Dick T. Apologies. Do we have to tolerate disrespect from the public? *EMS World.* 2013;42(9):26.
47. Miedema B, Easley J, Fortin P, Hamilton R, Tatemichi S. Disrespect, harassment, and abuse: all in a day's work for family physicians. *Can Fam Physician.* 2009;55:279–285.
48. Whitgob EE, Blankenburg RL, Bogetz AL. The discriminatory patient and family: strategies to address discrimination towards trainees. *Acad Med.* 2016;91:S64–S69.
49. Peckham C. Medscape national physician burnout and depression report 2018; 2018. Available at: <https://www.medscape.com/slideshow/2018-lifestyle-burnout-depression-6009235#1>. Accessed December 16, 2018.
50. Sinsky C, Colligan L, Li L, et al. Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. *Ann Intern Med.* 2016;165:753–760.
51. Young RA, Burge SK, Kumar KA, Wilson JM, Ortiz DF. A time-motion study of primary care physicians' work in the electronic health record era. *Fam Med.* 2018;50:91–99.
52. Casalino LP, Nicholson S, Gans DN, et al. What does it cost physician practices to interact with health insurance plans? *Health Aff (Millwood).* 2009;28(4):w533–w543.
53. Arndt BG, Beasley JW, Watkinson MD, et al. Tethered to the EHR: primary care physician workload assessment using EHR event log data and time-motion observations. *Ann Fam Med.* 2017;15:419–426.

54. Shanafelt TD, Hasan O, Dyrbye LN, 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;90:1600–1613.
55. Smith R. Why are doctors so unhappy? There are probably many causes, some of them deep. *BMJ.* 2001;322:1073–1074.
56. Grant AM, Gino F. A little thanks goes a long way: explaining why gratitude expressions motivate prosocial behavior. *J Pers Soc Psychol.* 2010;98:946–955.
57. Stegen A, Wankier J. Generating gratitude in the workplace to improve faculty job satisfaction. *J Nurs Educ.* 2018;57:375–378.
58. West CP, Dyrbye LN, Rabatin JT, et al. Intervention to promote physician well-being, job satisfaction, and professionalism: a randomized clinical trial. *JAMA Intern Med.* 2014;174:527–533.
59. Goitein L. Physician well-being: addressing downstream effects, but looking upstream. *JAMA Intern Med.* 2014;174:533–534.