The Science of Health Care Worker Burnout

Assessing and Improving Health Care Worker Well-Being

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• ***Context.***—**Problems with health care worker (HCW) well-being have become a leading concern in medicine given their severity and robust links to outcomes like medical error, mortality, and turnover.**

Objective.—**To describe the state of the science regarding HCW well-being, including how it is measured, what outcomes it predicts, and what institutional and individual interventions appear to reduce it.**

Data Sources.—**Peer review articles as well as multiple large data sets collected within our own research team are used to describe the nature of burnout, associations with institutional resources, and individual tools to improve well-being.**

Conclusions.—**Rates of HCW burnout are alarmingly high, placing the health and safety of patients and HCWs at risk. To help address the urgent need to help HCWs, we summarize some of the most promising early interventions, and point toward future research that uses standardized metrics to evaluate interventions (with a focus on low-cost institutional and personal interventions).**

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> "*What is it that every leader. . .never wants, always has, often denies, and painfully mismanages?*
>
> *Workforce burnout.*"
>
> —The Wellness Troll

The ability to predict clinical and operational outcomes at the work setting level is essential in health care quality improvement. Health care worker (HCW) well-being is one of a small handful of work setting variables with this potent power. Similar to leadership concerns about staffing levels, from an operational perspective it is helpful to think of HCW well-being as workers' ability to "get the work done" and to be ready for the next task or challenge. We will take a deep dive into well-being, and in particular the variable of HCW emotional exhaustion as an essential metric predictive of clinical and operational outcomes, as well as patient and HCW outcomes. To manage and understand a workforce, it is instructive to assess and improve workforce well-being.

Before the global pandemic of 2020 placed an even greater strain on busy and stressed HCWs, the impact and consequences of HCW burnout had already captured the attention of national and international health care leaders. Organizations that have come out with formal statements around the need to address burnout include the World Health Organization, the National Academy of Medicine, the Combined Critical Care Societies, the Accreditation Council for Graduate Medical Education, and many others.[1–4] The alarm bells have rung loudly for several years in fact, but the existing peer-reviewed literature does not provide a clear road map for leaders struggling to make evidence-based decisions. A PubMed search on "burnout" during the last 2 decades reveals the number of burnout articles published each year in the medical literature have increased more than 6-fold, with an even more rapid rise in the last 3 years. Remarkably, out of more than 16 000 published articles on burnout in the medical literature, there are fewer than 50 randomized controlled trials focused on interventions to improve burnout in HCWs. Many of these are classified as pilot studies, and almost all have small numbers (<100 participants) or limited follow-up. Many more articles discuss the prevalence or epidemiology of burnout, postulating about potential causes but with minimal data to support theories, and with little direction on potential solutions. Perhaps it should not be surprising that this paucity of evidence scattered throughout the literature interferes with leadership efforts to manage workforce well-being coherently and effectively.

Given the scarcity of high-quality articles investigating HCW burnout, this review seeks to detail the environmental and psychologic factors that drive the pathophysiology of burnout, and to synthesize the existing evidence supporting effective tools to reduce burnout and improve HCW well-being. We will also share our lessons learned from our

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recently completed National Institutes of Health–funded randomized controlled trials on brief tools to improve HCW well-being. These efforts have supplied one of the largest existing data sets for HCW well-being, providing us new insight and perspectives to add to the existing literature on tools to improve well-being. Our hope is that this review may serve as a framework for HCWs, administrators, and researchers to conceptualize HCW well-being, and to provide actionable and evidence-based interventions. In this review of HCW well-being we will discuss the terminology, prevalence, causes, interventions, and the future of work in this field.

OVERVIEW OF BURNOUT, POSITIVE EMOTION, AND WELL-BEING TERMINOLOGY

The classic definition of burnout, as defined by Dr Christina Maslach, is a psychologic syndrome involving emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment.[5] Similar to other psychological syndromes, burnout subsequently affects cognitive processing, coloring how individuals process and interact with their everyday world. A simpler and broader conceptualization that we use in our research is that *burnout is the impaired ability to experience the restorative effects of positive emotions*.[6,7] In fact, burned-out individuals will tend to focus on the negative things happening around them, at the expense of noticing positive events.[8]

Positive Emotion

Just as depression and anxiety have been linked to lower levels of positive emotions,[9,10] the same has been found for burnout.[11] Research has consistently shown that experiencing positive emotion is a causal link in the chain of feeling greater purpose[12] and recovery after emotional upheavals.[13] Positive emotions, like hope, serve to effectively recharge our depleted batteries.[14,15] In controlled experiments, positive emotions demonstrably undo the cardiovascular sequelae of an emotional upheaval relative to negative emotions and control groups.[16] Our characterization of burnout as the impaired ability to experience the restorative effects of positive emotions incorporates extensive research into positive emotions and offers insight into mechanisms responsible for burnout increasing or decreasing because of events or interventions.

What explains changes in burnout? Since 2001, the job demands–resources model[17] has demonstrated with relative precision that increasing demands while decreasing resources creates strain on the workforce.[18] This strain has been called burnout, low engagement, compassion fatigue, moral distress, low-safety culture, and other similar monikers. Interestingly, when there is an increase in resources that is commensurate with demands, the level of strain reported by the workforce is average, rather than high, demonstrating how understanding the 2 fundamental principles of demands and resources is critical to understanding well-being in the workforce.

Positive emotions, like gratitude, interest, and serenity, help people build personal *resources*, such as social bonds, intellectual skills, and motivation for personal growth.[19] When access to positive emotions is interrupted, through new or increasing demands, we end up going to work each day with less and less well-being. This is not weakness on the part of the person, it is the failure of our health care systems to create environments that promote well-being in the workforce.

To illustrate the job demands–resources model, think of the coronavirus disease 2019 (COVID-19) pandemic. It created new *demands* on HCWs as serious stressors to mental health, including social isolation, fear of contracting the disease, economic strain, unexpected homeschooling, and uncertainty about the future. The pandemic has also presented new *resources* to HCWs, through frequent and surprisingly meaningful opportunities for HCWs to see the inherent value of their work, to powerfully connect with patients, to be appreciated and seen as heroes, to exercise a sense of agency, and to experience deep camaraderie among their colleagues and connection to their organization. It is currently unknown if these and other unexpected resources during the COVID-19 pandemic will be enough to buffer against the strain that leads to burnout when demands outpace resources.

As we discuss burnout and well-being, it is important that we also properly define related terms that are often used incorrectly or interchangeably. Resilience is not simply the absence of burnout but is a state of psychologic health allowing an individual to cope with and recover from a psychological insult. Resilience is a function of the ability to cope, and the availability of resources related to health and well-being.[20] In other words, well-being is driven by individual-level factors/interventions and organizational (environmental) level factors/interventions, as we will see in those sections under the heading Addressing Burnout below.

Another frequent question is whether burnout and depression are the same construct. Although burnout has similar characteristics and may be a risk factor for depression, most researchers view burnout and depression as 2 distinct constructs with distinct criteria and features. Depression is a psychologic condition, characterized by either a one-time or recurrent episode of daily depressed mood coupled with symptoms such as anhedonia, feelings of worthlessness, fatigue, or changes with appetite or sleep.[21] Burnout is an occupational phenomenon, defined in the 11th revision of the International Classification of Diseases (ICD-11) as a syndrome resulting from "chronic workplace stress that has not been successfully managed."[21] The ICD-11 goes on to describe the dimensions of burnout fitting with Dr Maslach's original definition, including feelings of energy depletion or exhaustion, increased mental distance from one's job or feelings of negativism or cynicism related to one's job, and reduced professional efficacy. In our own work, we have found that burnout and depression are moderately (but not perfectly) correlated from 0.40 to 0.57 across large and diverse data sets,[6,22] which is similar to the 0.52 correlation reported in a recent systematic review and meta-analysis.[23] Although we agree that burnout and depression appear to share some common features (eg, loss of interest and impaired concentration), it is important to note that there is significantly less stigma associated with burnout than with depression, such that HCWs are much more willing to seek out and use resources for burnout than for depression. Also, although depression is viewed as an "individual" problem, our empirical operationalization of burnout as "reduced access to positive emotions" highlights the impact of the work environment on groups of people. This acknowledgment implies a shared responsibility between the individual and the organization and provides insight toward potential solutions for burnout.

MEASURING BURNOUT AND ASSESSING THE PREVALENCE AND CONSEQUENCES OF BURNOUT IN HCWS

To assess well-being as a multidimensional construct, researchers often use diverse sets of psychometrically valid metrics for domains such as burnout, depression, work-life balance, and subjective well-being.[24,25] Currently, the most common method to measure burnout is the Maslach Burnout Inventory, first described in 1981.[26] Having withstood the test of time, this psychometrically valid and widely used survey[27] assesses the 3 separate components of burnout: emotional exhaustion, depersonalization, and personal accomplishment, the latter often equated to job satisfaction.

Unlike its sibling domains of depersonalization and low personal accomplishment, emotional exhaustion heralds several unique attributes, and it is generally the most widely used domain of the Maslach Burnout Inventory. First, emotional exhaustion alone has shown adequate reliability for individual-level measurement.[28] Second, it has been used to discriminate between burned-out and non–burned-out outpatients experiencing work-related neurasthenia (according to the ICD, 10th revision criteria, and the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V).[29,30] Third, according to a psychometric meta-analysis, emotional exhaustion consistently produces the largest and most consistent coefficient α estimates (indicating that the items in the scale group together very well to assess the underlying construct).[31]

To reduce participant respondent burden when multiple domains of well-being are being assessed, a 5-item derivative of the original 9-item emotional exhaustion scale is often used. This 5-item version is reliable ($\alpha = .92$)[32] when used on HCWs,[6,7,33–35] predicts prevalence of disruptive behaviors among HCWs as well as symptoms of depression,[22] and is consistently associated with HCW work-life balance.[22,32,36] The HCW emotional exhaustion assessments with this 5-item version are also associated with improvement readiness (the capacity of HCWs to initiate and sustain quality improvement initiatives)[34] and the use of Patient Safety Leadership WalkRounds.[33] Importantly for this review, HCW assessments using this scale are consistently responsive to interventions.[33] For a guide to assessing burnout, interpreting results, and benchmarking information, please see the supplemental digital content at https://meridian.allenpress.com/aplm in the September 2021 table of contents.

The flip side of emotional exhaustion would be positively valenced measures of well-being, and historically have been used relatively infrequently on HCWs. Importantly, the absence of something bad does not equate to the presence of something good. Low burnout in a work setting does not necessarily mean that HCWs are thriving, and interest in assessing this positive side of well-being has grown considerably in recent years. Finding that existing scales did not adequately capture positively valenced well-being in a health care environment, we developed and validated novel resilience scales.[6] Psychometric analyses revealed 2 domains of resilience: The first is Emotional Thriving, which asks about the level of flourishing of a respondent (eg, "I have a chance to use my strengths every day at work") and is akin to the opposite of Emotional Exhaustion. The second is Emotional Recovery, which assesses the extent to which one is able to "bounce back" from adversity or emotional upheavals (eg, "My mood reliably recovers after frustrations and setbacks"). Emotional Recovery and Emotional Thriving only share about 10% of their variance, so being good at recovery does not ensure thriving, and vice versa (further information can be found in the supplemental digital content).

Prevalence

Recent data suggest the mean prevalence of physician burnout in the United States is estimated between 40% and 50%.[37] Not surprisingly, there is substantial variation by unique specialties and countries.[38–40] There is also significant variation due to differing burnout definitions and thresholds used across studies. The rate of burnout in US physicians is about 1.5 to 2.5 times higher than it is for US workers in other professions.[37,41] Notably, a career in medicine stands in contrast to other highly educated workers: in other professions, years of education after college is associated with reduced burnout, whereas the opposite is true for physicians.[41] Similar to physicians, a wide range of reported burnout prevalence exists for nurses by specialty, work setting, and country. Best estimates report mean nursing burnout in a similar but slightly lower range to physicians, somewhere between 35% and 45%,[42–47] yet this may be notably higher or lower within different subspecialties or work settings. Fewer data exist for the prevalence of burnout in other health care professions; however, available evidence suggests burnout is not substantially different for other roles, such as therapists or technologists.[6,22,48] Most importantly, measuring burnout of large populations may be useful for benchmarking and for monitoring trends, but because burnout varies widely by work setting, it is more important for leaders to understand the local burnout rate in any given work setting.

Severity

The negative effects of burnout on individuals are somewhat intuitive, and they include job dissatisfaction and intent to leave the profession,[49] intent to leave current job, poor sleep, lower-quality interpersonal relationships, poorer immune function, depression, and suicide, and even decreased lifespan.[50–54] The impact of burnout goes well beyond just the negative effects on HCWs themselves. Burnout in health care is extremely costly, with 1 study conservatively estimating the financial toll of increased turnover and reduced productivity at $4.6 billion in the United States alone. Moreover, burnout hurts almost every aspect of work culture and a HCW's ability to care for patients.[55] Burnout has been associated with many areas of quality and safety, including poorer relationships with patients, medical errors, infections, hospital admissions, mortality, and patient dissatisfaction.[56–64] In 1 particular study, after controlling for severity of illness, nurse-patient ratio, and other confounding factors, nurse burnout was the only remaining variable associated with patient mortality.[57] In a large data set of 831 work settings from 31 hospitals in Michigan, we found that when you compare work settings by emotional exhaustion quartiles, higher rates of emotional exhaustion were consistently associated with lower teamwork and safety norms, lower ratings of local leaders, poorer work-life balance, and higher levels of burnout in their peers ("burnout climate"; Figure 1). In other words, an emotional exhaustion score is a potent indicator of safety culture and workforce well-being.

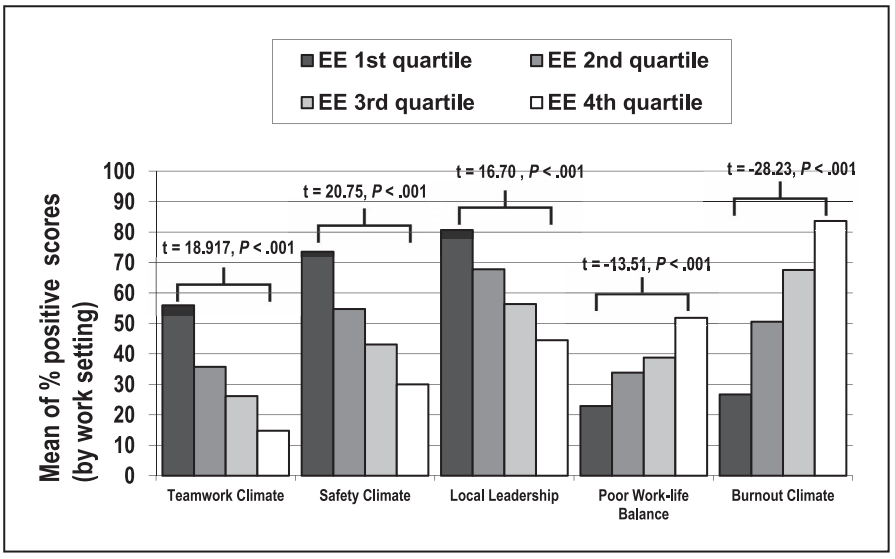

Figure 1. *Teamwork climate, safety climate, local leadership, poor work-life climate, and burnout climate by emotional exhaustion (EE) quartile. First quartile indicates work settings with the lowest percent of workers with EE; fourth quartile indicates work settings with highest percent of workers with EE.*

Pathophysiology of Burnout

The contributors to burnout and well-being are multifactorial, but the key drivers of burnout can be thought of in 2 main categories: institutional factors and individual (or personal) factors. Institutional factors include the characteristics of the work environment, including work culture, work schedule, growth opportunities, participation in decision-making, peer support, and prioritized opportunities to cultivate well-being (eg, potlucks, happy hour, group debriefs around stressful events). Individual contributors include such factors as self-care (eg, yoga, meditation, exercise, fatigue management), one's ability to cultivate meaning, work-life balance, and having supportive relationships (Figure 2). A lack of these factors predicts vulnerability to burnout, whereas having these factors appears to prevent and help reduce burnout.[65,66] Therefore, as we will discuss in more detail below, it is not surprising that institutional and individual interventions are often aimed at increasing these factors.

For many clinicians, it can be helpful to think about burnout akin to a microbiologic disease process. In this analogy, burnout is the disease, the environment is the pathogen, and an individual's resilience is the immune system. As such, an individual who works in a particularly toxic work environment (ie, aggressive pathogen) is at risk of getting sick independent of their personal resilience, whereas an individual with poor resilience (ie, immunosuppressed) may be at risk for burnout even in supportive environments. This concept may help understand why different individuals may or may not develop the signs of burnout when experiencing similar challenges.

When considering this analogy, it is often natural to think of our environment as the pathogen that is always wearing on us, leading to burnout. However, some features of work and home environments bolster our resilience, in the same manner as a live attenuated vaccine prepares the immune system against future assaults. These work environments may be characterized by meaningful work with recognition from leaders, opportunities for personal growth, colleagues who are considerate and supportive, and leaders who promote autonomy, psychologic safety, and adaptability. Factors outside of the work environment that build resilience include personal physical and mental health, family dynamics, and meaningful social interactions.

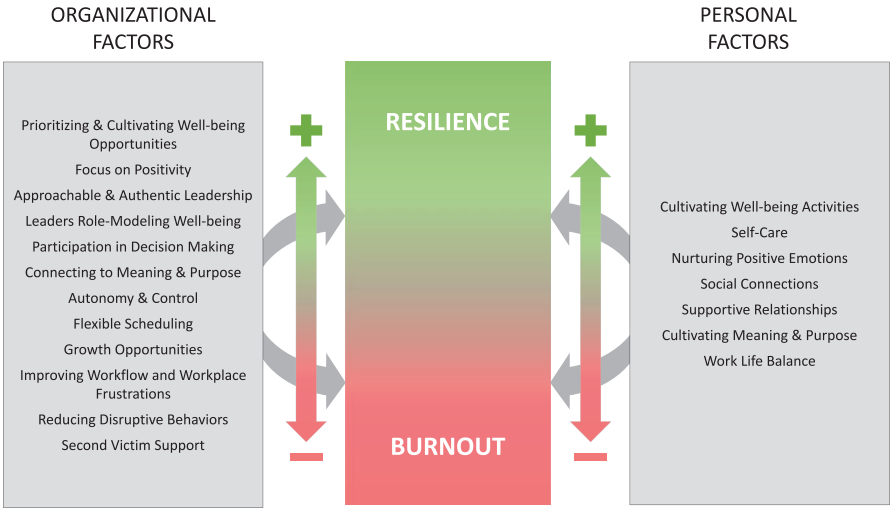

Figure 2. *Organizational and personal factors for burnout and resilience.*

IMPROVING WELL-BEING IN HCWs

Question: If your child is being bullied at school, do you:

A) *Demand systemic changes to the way bullies are handled at the school*
B) *Be with your child during a difficult time, offering care and support*
C) *Both A and B*

Recent perspectives, taskforces, and national collaborations on the topic of HCW well-being have argued strongly for *changes to the health care system* to improve burnout. In their articles,[2,67] these authors espouse a populist approach to burnout, demanding that somebody fix the system, the medical record, staffing, and workflow. These perspectives have validity, in that system issues are a significant contributor to burnout. However, we believe this approach is incomplete in its scope of needed actions. To promote well-being, we must fix both the system and help the people in need who suffered from that system. From the evidence of HCW burnout prevalence reported earlier, one-third to one-half of our health care workforce is struggling with burnout right now. System fixes will help prevent future burnout, but there are HCWs currently suffering who need help. Passions run high around this topic, so do not be surprised when at a meeting about burnout you hear a frustrated HCW shout: "Don't talk about burnout, you just fix the system!" If you are leading well-being efforts in your organization, expect these interactions, listen with compassion, and learn where they are coming from. When looking for solutions to bolster HCW well-being, leaders can look at the underlying causes of burnout to identify solutions. Moreover, because of the variable causes of burnout, it is important to recognize that no single intervention will work to prevent burnout in all workers. Therefore, it is important to understand the factors at play in each work environment before selecting any specific organizational intervention. Otherwise, leaders may devote time and resources to an intervention only to later learn that it was a temporary fix or ultimately made no difference in staff burnout. For example, patient safety leader walkrounds (discussed below) may have minimal effect in a work setting that already has a strong safety culture, but robust effects on another work setting down the hall.

Similarly, it is important to note that burnout frequently results from cumulative stressors; therefore, single interventions may not be as effective as combined interventions, or opportunities for HCWs to choose among interventions. As health care leaders look to improve burnout in their workforce, it is important that they take a comprehensive approach to both organizational and individual factors driving well-being. Ignoring organizational contributors and potential solutions to burnout not only leaves important drivers of burnout unaddressed, but it also risks sending the message that an individual is only burned out because they are not strong or resilient enough. Such messages only compound the underlying problem by making individuals feel unsupported by their leaders and powerless to make positive changes in their workplace. Similarly, a significant portion of the workforce will not be able to address their own burnout through workplace interventions alone, and an added focus on personal interventions should enhance the effectiveness of organizational resilience efforts. Corralling and understanding the well-being offerings and resources at work settings, departmental, institutional, and health system levels is no small task. At Duke University (Durham, North Carolina), it took us more than 2 years just to catalogue and assemble all of our well-being resources in one place, and it is constantly in need of updating. It is worthwhile to classify resources as organizational or individual in nature because this facilitates the ability of leaders to promote and support more comprehensive well-being efforts that afford options to HCWs.

Two meta-analyses of interventions to reduce burnout in HCWs demonstrate that organizational interventions targeting the work environment and interventions targeting individuals each have benefits in reducing burnout.[68,69] Each of these studies also demonstrates a larger potential cumulative benefit with organizational interventions when compared to the interventions focused on individuals included in their studies. Unfortunately, these organizational interventions tend to be more resource intensive than personal interventions and may also be more difficult to sustain.

Organizational Interventions

Organizational support of well-being is primarily focused on making systematic changes to the work environment, including work demands and resources, work schedules, and interactions with leaders and with colleagues. Organizational interventions also typically target aspects of the work environment that an individual has minimal ability to change, outside of being in a leadership position.

Workload, Workflow, and Work-Life Balance.—The intensity of demands on HCWs has often been cited as a primary contributor to the increase in HCW burnout in recent years.[38,70,71] In addition to the 24/7 nature of health care, which disrupts personal and family life, the growing medical and social complexity of patients, increased documentation demands through electronic medical record systems, financial constraints, and lack of administrative support for clerical tasks all add to a HCW's daily workload. In fact, physicians who are burned out are more likely to regulate their own workload by voluntarily decreasing their clinical effort over the next 48 months.[72]

Improving workload by streamlining workflow or adding clinical support is one of the most common strategies for burnout reduction, particularly for physicians. Several studies have shown improvement in burnout through interventions in targeting workload.[72,73] Examples of interventions include addition of advance practice providers or medical assistants, offloading clerical tasks, streamlining patient flow through the clinic, additional time per patient visit, or reducing patient-nurse ratios.[73–75]

Although increased demands and frustrations with workflow undoubtedly contribute to HCW burnout, the job demands–resources model details that it is not simply increased workload that drives burnout. Burnout occurs when those increased demands are not paired with increased resources and support from the organization. Leaders can leverage this knowledge to support well-being by ensuring balancing new demands on HCW time with an increase in allocated resources that will improve workflow or workload.

Work-life imbalance is another intuitive contributor to HCW well-being that has been supported by data.[32,36] Burnout has been linked to hours worked, number of nights spent in the hospital, longer duration shifts, and consecutive days worked.[76–79] Unfortunately, the data on work-life balance and burnout are inconsistent,[80] and in

particular, the addition of work hour limitations for physician trainees has not made a significant impact on burnout rates.[81]

Burnout has frequently been shown to be higher in women (approximately 20%–60% increased odds of higher burnout) compared with men.[82,83] These effects are likely due to increased household and child care demands along with greater dissatisfaction around work-life balance.[84] With higher numbers of women entering the health care field in recent years, rates of gender differences in burnout are diminished.[85] Age is also associated with burnout, with younger HCWs reporting approximately double the risk of those 55 years or older. Higher levels of educational debt,[86] younger age of children, and having a spouse/partner who is not a HCW are also correlated with burnout.[87] Leaders, medical schools, and health care systems may benefit from policies (eg, robust antidiscrimination and bullying; equitable pay) and programs (eg, bias training) designed to specifically counteract some of the culturally ingrained barriers to well-being.[88]

A broader view of associations between personal wellness and burnout[89] has led many health systems to start wellness programs for their employees. Most recently, a large randomized controlled trial of a wellness program for more than 4000 employees across 20 hospitals (compared with a much larger control group) demonstrated improved self-reported exercise and weight control but no difference in clinical or employment outcomes.[59] This, along with mixed data on the effects of work hours and the poor sustainability of many workflow interventions, highlights the challenge of many organizational interventions for personal well-being: their success depends on a substantial investment of organizational resources, and unless appropriately targeted, promoted, and sustained, they may not result in the desired effect.

Improving HCW Voice and Agency.—For HCWs to feel engaged, it is important that they have a voice in decisions that are made in their work area, as well as a degree of autonomy concerning their work schedule or environment. Once these highly trained professionals feel like cogs in a wheel rather than partners, engagement drops and burnout climbs.[38,90–92] To combat the lack of engagement that occurs when staff feel they have no voice in the workplace, leaders can focus on interventions to start a dialogue with and empower frontline workers. One specific intervention that has shown success in this area is leader walkrounds, originally pioneered by Frankel et al[93] and later modified by Pronovost et al[94] as a method for executives to promote and support quality improvement efforts. Staff participation in leader walkrounds has been associated with improved safety culture[93,95] and reduced burnout,[96] particularly when feedback is provided afterwards.[33]

Intentionally involving staff in decision-making and problem-solving is another strategy to empower HCWs by leveraging resources for HCWs. Participation in decision-making is an engagement variable that we measure during safety culture assessments, and we have found strong positive correlations with safety culture and well-being domains, such as improvement readiness, local leadership, teamwork climate, safety climate, emotional exhaustion, burnout climate, growth opportunities, and career advancement.[33] Involvement in quality improvement projects has been associated with decreased burnout,[73] despite the potential to add workload to participants. The sense of agency that comes from working to solve some of the everyday problems that drive burnout appears to counteract the effects of that burnout. The caveat, however, is that you should offer well-being resources, role model their use, and make options accessible to HCWs in work settings struggling with burnout before asking them to show up early and stay late for new quality improvement–related projects.

Staff Support.—Similar to having some voice and control in the workplace, a sense that local leadership and the organization "has your back" can have a profound impact on workers' daily experience and perceptions of work.[92] Perceptions of local leadership affect staff well-being, such that each 1-point gain in composite leadership rating correlates with a 3.3% decrease in likelihood of burnout.[90] We have similarly found that HCW assessments of effective leadership predict lower emotional exhaustion rates (J.B.S. unpublished data, July 2020). Leadership support is particularly important when an error, an unexpected bad outcome, or a crisis unrelated to patient care has led to a "second victim."[97] The concept of the second victim has been most commonly used in the setting of medical errors, describing the patient who experienced the medical error as the primary victim and the HCW involved in the error as the second victim. Second victims often report feelings of guilt, shame, moral distress, professional inadequacy, and symptoms of burnout,[98] and in some cases symptoms of Posttraumatic Stress Disorder.[99] Second victims might also fear punitive action or leave the profession altogether.[100] Although involvement in preventable adverse events is associated with higher burnout, a study of more than 1000 nurses found that higher levels of support from management, nurse peers, and physician colleagues buffered against this association.[101] The HCWs who report that their organization supports second victims report significantly lower emotional exhaustion and better safety culture.[102]

Interactions With Colleagues.—Improving teamwork can have profound effects on HCW interactions with colleagues and their overall work environment. Health care worker well-being has been shown in multiple studies to correlate with the teamwork climate of their work setting.[32,33,36,92,96,103] In a further proof of concept, work settings have seen improvements in staff well-being following team training interventions.[104,105]

One particular aspect of teamwork and work environment that can have a profound effect on mood is rudeness or incivility from coworkers or patients.[106] A large study of almost 8000 HCWs demonstrated those who are routinely exposed to rudeness or incivility in their work environment report significantly higher levels of emotional exhaustion and depression than those not exposed to these same behaviors.[22] These disruptive behaviors contribute to a negative work culture, increasing the risk for burnout, including staff turnover, poorer teamwork, and growing distrust in leadership. Organizational efforts to combat disruptive behaviors include formal professionalism programs, policies that are clear, predictable, and enforced, and engaged leaders who are willing to have difficult conversations. The first step is a culture where it is psychologically safe to discuss and provide feedback around these behaviors.[107] Peer messenger programs have then been successfully used as a nonpunitive method to reduce the incidence of routine disruptive behaviors, saving punishment for recurrent or egregious infractions.[108]

Meaning in Work.—Furthermore, to maintain engagement and avoid burnout, individuals need to experience

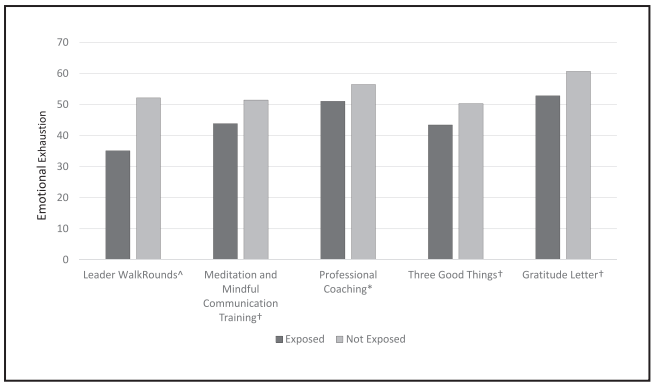

Figure 3. *Average health care worker emotional exhaustion by exposure to interventions. ^Exposure/not exposed is indicative of the emotional exhaustion (EE) of those reporting participation/not in Leader WalkRounds.[33] †Exposure is indicative of postintervention EE scores; not exposed is indicative of baseline EE scores (within subject). *Exposure is indicative of postcoaching EE scores in the randomized intervention group; not exposed is indicative of the postassessments in the control group. Leader WalkRounds and Three Good Things used a 5-item EE scale derived from the Maslach EE subscale, with a 5-point Likert scale, rescaled to 0–100. The Dyrbye et al[110] professional coaching intervention and the Krasner et al[145] meditation intervention used the Maslach 9-item EE scale with a 7-level Likert scale. To rescale the coaching and meditation interventions from a 0- to 54-point scale to a 0- to 100-point scale, EE scores were multiplied by 1.85.*

meaning and purpose in their work. This meaning can come in different forms: seeing that daily work is tied to a greater purpose, witnessing progress toward a shared goal, or receiving recognition for excellence. It can also be through opportunities for personal development, such that daily work is not just a job but a career with opportunities for personal growth and advancement.[38,89,90]

Professional coaching or mentoring is 1 method to fight burnout by building interest and engagement through personal growth and development.[77,109] One randomized study demonstrated that 6 coaching sessions improved emotional exhaustion, quality of life, and resilience scores in the intervention group compared with the control group at 5-month follow-up (Figure 3).[110] Although these improvements were substantial, the intervention did not reduce depersonalization or improve job satisfaction or engagement in work. The researchers note that although coaching appears useful it is not a replacement for organizational approaches to improve the work environment in an effort to reduce burnout and dissatisfaction. This is important research to help understand how to impact emotional exhaustion, but at $1400 per participant, it is an intervention that is likely out of reach for many.

Schwartz Rounds were developed by the Schwartz Center for Compassionate Healthcare to "offer healthcare providers a regularly scheduled time during their fast-paced work lives to openly and honestly discuss the social and emotional issues they face in caring for patients and families."[111] These multidisciplinary case conferences discuss the psychosocial aspects of difficult cases, both from the patient perspective and the HCW perspective. Health care workers who have attended Schwartz rounds report reduced stress, improved interactions with colleagues, improved ability to deal with the psychosocial aspects of care, and increased sense of shared purpose, with likely dose effect for repeat attendance.[112–115] It is reasonable to expect that similar gains might be achieved through similar activities focused on the psychosocial aspects of care, linking the daily work of HCWs to the benefit for patients and families.

The COMPASS program (Colleagues Meeting to Promote and Sustain Satisfaction) out of the Mayo Clinic has received attention as a promising intervention to boost meaning in work and job satisfaction among physicians.[69] The program involves groups of 6 to 10 physicians meeting during protected time in the workday while eating a provided meal. A group leader uses question prompts to drive discussion of topics that reflect common stressful physician experiences. Time was also built in for socialization and building relationships. In a randomized design, the COMPASS program reported gains in empowerment and engagement, and reductions in depersonalization at 3 and 12 months after the study, compared with the control group. COMPASS participants also reported increases in finding their work meaningful; however, there were no differences in stress, depression symptoms, or job satisfaction compared with the control group. Importantly, these structured efforts to increase meaning among groups of HCWs demonstrate promising first steps into a world of deliberate organizational well-being efforts that many leaders are afraid to enter, or of which they are completely unaware.

Individual Interventions

Hand in hand with organizational efforts to improve well-being is the availability of multiple options for HCWs to select individual interventions that appeal to their specific situation and needs. As we consider strategies that individuals can use to improve their resilience and fight burnout, we must recognize a few key themes that permeate this group of interventions. The first essential element is deliberately increasing positive emotions to counteract the flood of negative emotions that accompany burnout. The second group of strategies is built around mindfulness and other reflective activities that bolster self-care. Thirdly are strategies that enhance individuals' sense of purpose and meaning in their work. Research demonstrates that individuals will benefit most from activities that they select themselves, that they enjoy, that they value, that are not difficult, and that do not induce guilt.[116]

Of concern for those with burnout is the tendency to focus on negative information and possible threats in the environment, at the expense of noticing positive information. In 1 study using eye tracking technology, researchers demonstrated that individuals experiencing higher levels of burnout spent less time focusing on uplifting images and more time focusing on distressing images.[8] In this same manner, burnout makes it difficult for individuals to notice positive events and interactions, thereby shaping the individual's experience into a constant stream of negative occurrences, which only serves to perpetuate burnout.

Not only is a focus on negative events associated with burnout, it is predictive of mortality. A large analysis of the Twitter feeds in the northeastern United States for negative tweets (reflections on things going poorly) found a high correlation with heart disease mortality.[117] Conversely, tweeting about positive events was associated with less mortality. In a separate study, researchers found that nuns who displayed highly positive emotion early in life lived on average a decade longer than their less cheerful peers.[118] The theme here is that reflecting on the positive is associated with global well-being.

Humans have a hard-wired "negativity bias" wherein negative stimuli captures and holds attention much more so

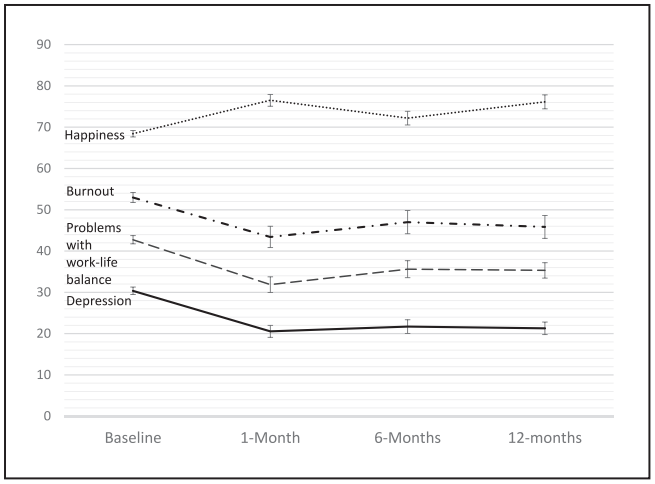

Figure 4. *Well-being metrics at baseline, 1-, 6-, and 12-month follow-up for participants of Three Good Things. For demonstration purposes, all variables were scaled 0–100 in this graph. Burnout was already scaled 0–100, depression scores (response range, 0–30) were multiplied by 3.33, work-life balance (response range, 1–4) was subtracted by 1 and multiplied by 33.33, and subjective happiness scores (response range, 1–7) were subtracted by 1 and multiplied by 16.66. Reuse permitted under Creative Commons CC BY-NC 2.0. Used with permission from Sexton JB, Adair KC.* BMJ Open. *2019;9(3):e022695.*

than positive stimuli. Barbara Fredrickson, a leader in this field, puts it succinctly: "The negative screams at you, but the positive only whispers."[119] As mammals have evolved, the ability to recognize, remember, and quickly respond to things that pose a danger to us has developed as a survival mechanism.[120] During these moments of threats, the "flight or fight" response is triggered and we see a host of associated physiologic responses, including increased heart rate, blood pressure, and respiratory rate, and increased levels of stress hormones, such as adrenaline and cortisol.[121] Unfortunately, advanced cognition in humans leads us to perseverate on these negative events, leading to a prolonged elevated stress response and subsequent chronic conditions, such as hypertension.[122]

Psychologic techniques are useful to combat burnout through retraining the individual to take notice of positive experiences.[24,123] This is achieved by cultivating 10 positive emotions: love, joy, amusement, hope, awe, serenity, inspiration, interest, pride, and gratitude. The goal of positive psychology in this setting is not to ignore negative experiences, but to reestablish a balance between positive and negative experiences to promote well-being.[124] After September 11, 2001, research showed that across the well-being spectrum people felt anxious, distressed, and angry, but it was those with high well-being who also felt challenged to make a change, able to notice the helpers rising to the occasion, and viewed the event as temporary rather than permanent.[125]

Barbara Fredrickson and her colleagues[13] have also demonstrated the "undoing effects of positive emotion," referring to the ability of positive psychology to assist in physiologic recovery from stressful events. Her research has shown that activities that bolster positive emotion result in a quicker return of vital signs to baseline after a stressor.[13]

The most studied tool for fostering positive emotion is "Three Good Things." Based on research by Seligman et al,[24] this exercise asks participants to write down 3 good things that happened that day each evening. A randomized controlled trial of this tool found gains in happiness and reductions in depression symptoms at the end of the study and 6 months later.[24] A recent study with HCWs demonstrated that 15 days of Three Good Things resulted in reduced emotional exhaustion and depression, and improved happiness at 1 month, 6 months, and 12 months of follow-up, and improved work-life balance at 1- and 6-month follow-up (Figure 4).[6] A separate study replicated these results and found emotional exhaustion, emotional thriving, emotional recovery, depression symptoms, happiness, and problems with work-life balance all improved by day 15.[7] Gains in emotional exhaustion, emotional recovery, depression symptoms, and work-life balance endured at 6- and 12-month follow-up (Figure 5). Three Good Things participants evaluated the experience positively, with 95.8% reporting, "I would recommend the Three Good Things exercise to a friend"; 85.3% reporting, "I have encouraged others to try Three Good Things"; and 92.7% reporting, "I would like to participate in Three Good Things again next year."

Reflecting on what went well through Three Good Things has been a practical, bite-sized, and easy-to-share intervention using enrollment links (Sexton[126]) and brief videos (see Table 1 for all tool links and descriptions).[127] We have learned that HCWs high in emotional exhaustion are also high in hopelessness.[128] To this end, and using the same published methodology from the Three Good Things intervention, we developed other bite-sized interventions that we reference throughout the individual interventions section of this review. The first of these is the Looking Forward tool.[7] It was designed to shift HCWs' focus deliberately toward what they anticipate will be positive experiences in the future. This shift of focus onto positive future events is enjoyable and facilitates hopeful anticipation. Using simple prompts sent via email or text message during the course of a month (days 1, 3, 7, 14, 21, and 28), participants were asked to describe something they hoped to experience or were looking forward to, for example, 1, 3, 5, or 10 years into the future. Participants were also prompted to write about thoughts and feelings associated with what they are looking forward to. Results revealed significant improvement in depression symptoms, optimism, emotional thriving, and emotional recovery between baseline and day 28 (Figure 6).

Strengthening Social Connections.—Social connections are another large predictor of well-being and have been associated with improved cardiovascular health and immune function and lower rates of anxiety and depression.[129–133] A meta-analysis of 148 studies demonstrates the lack of strong social relationships is as predictive of mortality as smoking more than 15 cigarettes per day, and more predictive of mortality than routine physical activity or body mass index.[129] Similarly, measures of loneliness in college students has been associated with poor immune response to immunization.[134] Also, as discussed above in organizational interventions, negative interactions with others appear to be a significant contributor to HCW burnout.[22] In a recent study of 20 intensive care units, one-on-one discussions with colleagues and informal social interactions with colleagues outside of works were the most common interventions associated with improved staff well-being.[112] This notion of "other people matter"[135] is memorialized in

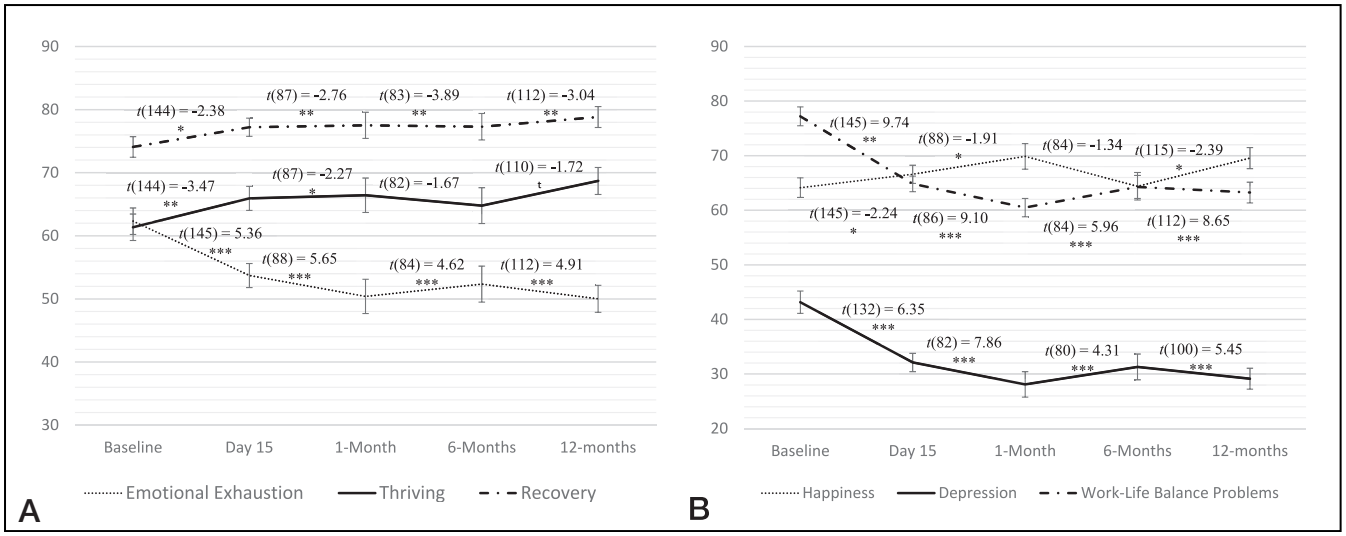

Figure 5. *Three Good Things means and standard errors for well-being metrics across assessment points.* ***P $<.001$, **P $<.01$, *P $<.05$, ᵗP $<.10$. *Paired* t *tests reflect changes from baseline. Displayed means at baseline reflect those from the baseline to day 15 analyses. Reuse permitted under Creative Commons Attribution License, CC BY 3.0. Used with permission from Adair KC, Kennedy LA, Sexton JB.* J Posit Psychol. *2020;15(5):613–622.*

our bite-sized well-being tool called 1 Good Chat, designed to cultivate meaningful interactions with others.

Gratitude and Giving.—Giving to others and gratitude toward others blend both the benefits of positive emotion along with social connections. Random acts of kindness toward coworkers increased happiness and reduced depressive symptoms in both givers and receivers, and promoted other kind behaviors in the workplace.[136] The link to a bite-sized version of this intervention can be found in Table 1.

In a recent randomized trial of HCWs, we found that a single, Web-based gratitude writing prompt resulted in increased happiness, lower burnout, and improved work-life balance at 1-week follow-up (Figure 7).[35] This benefit did not differ regardless of whether the letter prompt was self-focused or focused on others. We replicated these results in a separate sample and found benefits across all 3 outcomes at 1-month after intervention.[7] We have adapted this exercise in different ways to foster well-being, including gratitude writing activities during staff meetings or a bulletin board in a common space allowing team members to express gratitude to their colleagues. We have even had patients and families join in, writing notes or recording

Table 1. Bite-Sized Well-Being Tools and Brief Descriptions[a]

Tool Name	Tool Link	Description
Three Good Things	bit.ly/start3gt	2 min, 8 d Cultivate your uplifts
Forward Tool	bit.ly/fwdtool	2 min, 8 d Cultivate hope
One Good Chat	bit.ly/1goodchat	3 min, 8 d Cultivate connection
Random Acts of Kindness Tool	bit.ly/kindtext	3 min, 8 d Cultivate kindness
Gratitude Letter Tool	bit.ly/grattool	10 min, 2 d Cultivate gratitude
Work-life Balance Tool	bit.ly/wlbtool	2 min, 4 d Cultivate work-life balance
Sleep Tool	bit.ly/sleeptool	2 min, 8 d Cultivate rest
Three Good Minutes	bit.ly/3goodminutes	3 min, 8 d Cultivate mindfulness
Self-Compassion Tool	bit.ly/selfcomptool	10 min, 2 d Cultivate a kinder internal voice
Serenity Tool	bit.ly/serenitytool	2 min, 4 d Cultivate routines and rituals
All Tools	hsq.dukehealth.org/tools	
Three Good Things Demo Video	bit.ly/3gtdemo	

[a] Most tools involve an informed consent, as well as baseline and follow-up assessments. All accessed April 23, 2021.

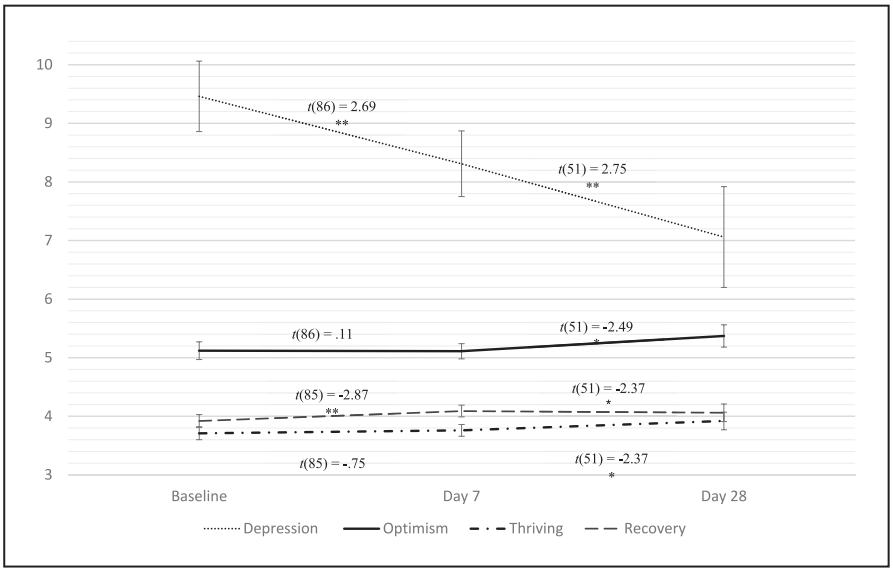

Figure 6. *Looking forward tool means and standard errors for depression symptoms, optimism, thriving, and recovery across assessment points.* **P <.01, *P <.05, ᵗP <.10. *Paired* t *tests reflect changes from baseline. Reuse permitted under Creative Commons Attribution License, CC BY 3.0. Used with permission from Adair KC, Kennedy LA, Sexton JB.* J Posit Psychol. *2020;15(5):613–622.*

videos to thank their medical providers. It is as simple and effective as it sounds, and it lends itself to modifications for various applications.

Self-Care.—Before we briefly discuss self-care practices, such as yoga, exercise, sleep, and meditation, it is necessary to provide a disclaimer about the evidence: it matters whether your self-care practices are finely honed habits or an attempt to cultivate a new life skill during a crisis. In other words, when you are drowning, it is not the right time to try to learn how to swim—you need a life preserver. If you are an avid runner or a consistent meditator, or you have been practicing yoga for many years, then leaning on those skills during a rough patch is an excellent idea. However, if you are not a yogi/zen/marathoner but are confronting severe emotional exhaustion, lack of sleep, relationship difficulties, and a compromised immune system, perhaps you should consider one of the bite-sized examples described earlier (Table 1) to put a little gas back into your tank. That said, there is evidence that exercise is good for burnout,[137,138] as is yoga.[139] In our experience, however, they are 2 of the least heeded suggestions, and they often result in eye rolls and snarky comments. They are effective, but they are not very practical as a starting point for many people who are struggling. Similarly, sleep is foundational to well-being,[140] and getting less than 6 hours[141] a night is a risk factor for burnout, but like exercise, it is effective without being practical for many people in need of something simpler. For an excellent summary of fatigue management, sleep hygiene, and naps, we highly recommend Matthew Walker's book *Why We Sleep*.[142] We have also created a bite-sized tool to cultivate sleep quality and quantity, called the sleep tool.

Mindfulness Meditation.—There is an impressive amount of quality evidence around mindfulness meditation,

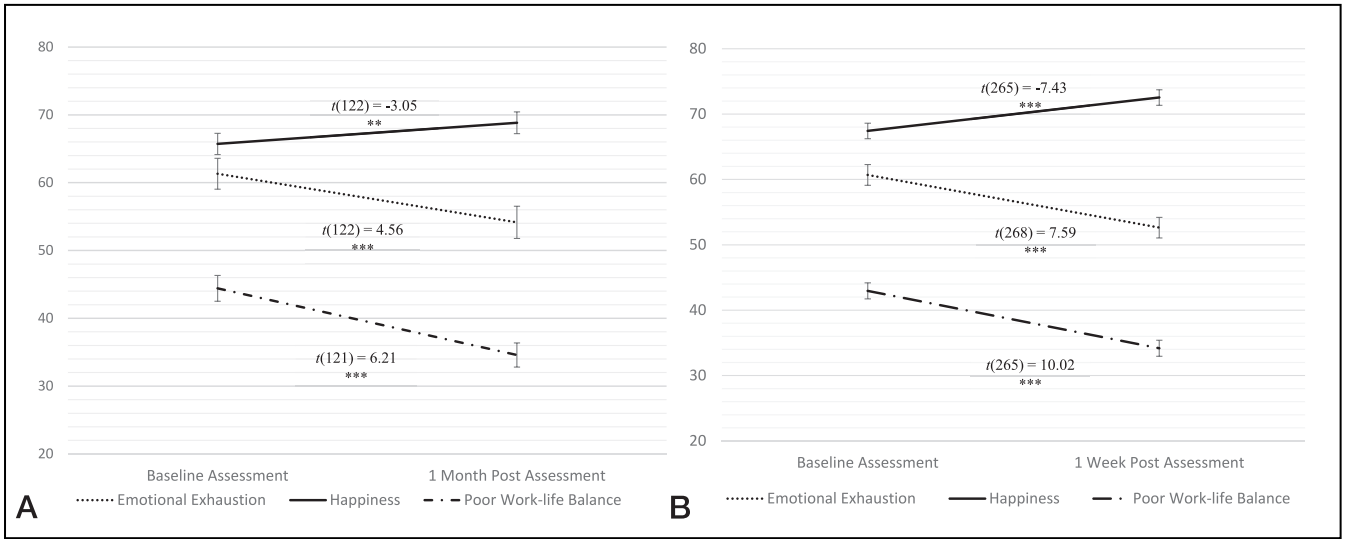

Figure 7. *Gratitude letter intervention means and standard errors for emotional exhaustion, subjective happiness, and work-life balance between baseline and (A) 1-month and (B) 1-week postassessments.* ***P <.001, **P <.01. *Work-life balance problems was rescaled for the graph by subtracting 1 and multiplying by 33.33. A, Reuse permitted under Creative Commons Attribution License, CC BY 3.0. Used with permission from Adair KC, Kennedy LA, Sexton JB.* J Posit Psychol. *2020;15(5):613–622. B, Reuse permitted under Creative Commons Attribution License, CC BY 4.0. Used with permission from* [35]*Adair KC, Rodriguez-Homs LG, Masoud S, Mosca PJ, Sexton JB.* J Med Internet Res. *2020;22(5):e15562.*

including more recent iterations of mindful self-compassion.[143] Mindfulness meditation training has received significant attention for its promise to improve burnout. Indeed, a recent meta-analysis of 38 randomized control trials of mindfulness for HCWs found that mindfulness training had significant moderate effects on anxiety, depression, and psychologic distress, as well as a small to moderate effect on burnout and well-being.[144] Programs that emphasize ways to integrate mindfulness into day-to-day clinical work have also shown positive results. For instance, Krasner and colleagues[145] lead an 8-week program on mindfulness, communication, and self-awareness for primary care physicians. They found benefits for mindfulness, burnout (emotional exhaustion, depersonalization, and personal accomplishment), empathy, and mood disturbance across the course of the training and benefits were sustained at the 15-month follow-up. Qualitative analysis revealed that physicians felt they benefited from the training because of the opportunities to (1) connect with colleagues and reduce professional isolation, (2) improve mindfulness skills to be attentive, listen deeply to patients, and respond more effectively, and (3) develop greater self-awareness.[146] Although mindfulness programs for burnout show considerable promise, not all HCWs are interested in learning meditation techniques. Moreover, the time commitment of training required (typically approximately 8 to 10 weeks, or around 75 total hours) is often a limiting factor for busy HCWs.[146,147] We have distilled many of these insights into our bite-sized well-being tools, including the cultivation of mindfulness, self-compassion, and serenity.

Although the evidence on individual interventions for well-being is still in the early stages, the data tell a convincing story regarding the benefits of cultivating positive emotions, self-care, and mindfulness. Figure 4 provides a rough approximation to allow for comparison across some of these interventions. You can see that the Three Good Things intervention is similar to mindfulness meditation and coaching in terms of the relative impact on emotional exhaustion. Although the relative change across a population is similar for each intervention, the benefit will undoubtedly vary for individuals. Said another way, there are consistent benefits to cultivating positive emotions, but which positive emotion will provide the greatest impact and be sustainable will be different for unique individuals. For this reason, we encourage leaders and HCWs to try one of these interventions that appeals to them, and to also consider additional subsequent interventions.

SPECIAL CONSIDERATIONS FOR PATHOLOGISTS AND CLINICAL LABORATORIES

There is a paucity of data regarding well-being and burnout in pathologists and clinical laboratory workers. Despite this, the underlying contributors to well-being and to burnout in HCWs is largely consistent across specialties and disciplines, and therefore we can still make relatively decisive statements around drivers of well-being in this population.

Pathologists and laboratory medicine professionals may have a few unique characteristics that affect their own resilience and their risk factors for burnout. Because they are often 1 or 2 steps removed from direct patient care, their risk for depersonalization is likely higher. Given their role in diagnosis, pathologists and laboratory medicine professionals are also at high risk of second victim syndrome. Any benefit from a lower likelihood of working nights and weekends compared with some other specialties may be negated by high workload or long workdays. Also, laboratory medicine efforts often go unrecognized until there is a problem or issue, potentially setting up an imbalance between workload, resources, respect and value, and meaning in work.[148] This imbalance has likely worsened during the COVID-19 pandemic with dramatically increased demand for testing development and turnaround.

The available data tell us that as a discipline, pathologists have similar but slightly less than the mean physician burnout rate of 44%, with 33% to 40% of pathologists experiencing at least 1 domain of burnout.[37,149] Similarly, approximately 36% of pathology trainees report burnout,[150] whereas as much as half of clinical laboratory professionals report burnout.[151] However, these data may not accurately depict COVID-19 pandemic prevalence. Satisfaction with work-life balance among pathologists also decreased notably from 2011 to 2017.[37] Data for pathologists, pathology trainees, and clinical laboratory professionals demonstrate that workload and dealing with difficult colleagues are primary stressors in their daily work.[149,150,152]

Interventions focused on pathology or laboratory groups are rare to nonexistent in the literature.[151,153] Authors postulate that the largest well-being benefits in pathologists and clinical laboratory professionals will likely come from focusing on minimizing nonessential tasks, strengthening meaning in work, building autonomy and control, and fostering mentoring.[151,153–155] Our own experience in the Duke University Clinical Laboratories has demonstrated well-being benefits from enhancing these aspects of culture as well as personal well-being interventions. However, a better understanding of the contributors and supportive interventions of well-being in pathologists and clinical laboratory professionals is sorely needed and should be a future focus of research.

DEBRIEFING HEALTH CARE LEADERS AND WORK SETTINGS

If you are reading this article, you may be asked at some point to debrief a leader or an entire work setting on their well-being survey results. We find that clinical outcomes suffer when less than 60% of staff report positive well-being (ie, more than 40% of staff report emotional exhaustion).[33] These work settings will see the largest benefit from well-being interventions and are also likely to struggle adopting other new initiatives until burnout is addressed. Similarly, when >80% of staff report well-being, efforts should be focused on maintaining that well-being, and devoting resources to other culture domains will often have greater efficacy.

High levels of burnout within a work setting will almost always be accompanied by strong emotions: frustration, doubt, anger, cynicism, apathy, and distrust. These emotions are often a result of the working conditions that contributed to burnout, only to be further cultivated by the focus on negative experiences inherent in burnout. Distrust in local and organizational leaders is common, and attention to mending that relationship will be important to make progress in group well-being.

The most important task of the debrief is to listen. Common themes will likely present themselves as staff discuss their concerns and "pain points." Participants may describe lack of voice, little control over decisions in their

work area, or an absence of autonomy. They will also likely highlight the high demands of their work, where they feel overextended, and what resources they lack. Although it will be natural to immediately suggest solutions, maintaining humble inquiry during the debrief will be important for a complete understanding of staff perspectives, and it will let the staff feel that their voice has been heard. After the debrief, synthesizing the feedback and communicating these findings back to staff ensure their concerns were heard accurately and completely. Then, passing these findings on to local leaders allows those leaders to more directly apply resources and the most efficacious wellness interventions.

Following a recent culture survey for the Duke University Health System, we identified work settings that scored in the bottom decile for both well-being and teamwork domains as "high-touch units." A few selected health system leaders sat down for debriefs with respective sampling focus groups of members for each of these work settings, asking about things going well in their work area as well as items of concern. After confirming accuracy of feedback with the debrief participants, that feedback was passed onto local leadership along with suggested targeted interventions consistent with the concepts discussed in this manuscript. Despite there being no specific required actions for those leaders, the subsequent work culture survey (18 months later) demonstrated remarkable improvements. Statistically significant gains were noted in well-being scores for each of these work settings, as well as almost every other safety culture domain. Relative to the rest of the health system, these work settings saw greater improvements in their safety culture and workforce well-being.

All too often, local leaders feel helpless, not knowing how to address growing burnout and dissatisfaction among their staff. These feelings themselves make any organizational interventions more challenging to take hold and sustain, because the physiology of burnout directly depletes staff members' readiness for change. The success of the debriefing events described above for work settings that may be particularly struggling is offered as a proof of concept for the well-being interventions and strategies discussed in this manuscript.

CONCLUSIONS

Health care worker well-being arises from an intricate balance of many influences, yet its impact on patient and organizational outcomes is undeniable. Health care worker burnout is a complex pathology that directly assaults the ability of HCWs to provide optimal and compassionate care for patients, to recover from stressful and emotionally events, and to innovate in their daily work.

As health care leaders, it is imperative that we role-model well-being behaviors and demonstrate that HCW well-being is an organizational priority. No single intervention will be effective in promoting and sustaining well-being in a health care organization. Thoughtful application of multiple interventions can be expected to have an additive effect, particularly when addressing the different organizational and individual factors driving well-being. Existing HCW burnout must be addressed while well-being strategies are integrated into the culture of the organization to achieve well-being sustainability.

In this review, we have highlighted a host of evidence-based well-being interventions, focusing on those interventions that require low resources and minimal initiation effort. Our hope is that leaders will be able to use these resources and strategies to continue an organizational cultural change that prioritizes HCW well-being. Caring for our workers is not only the right thing to do, it will lead to financial and operational benefits.

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