



Physician Well-being 2.0: Where Are We and Where Are We Going?

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Abstract

Although awareness of the importance of physician well-being has increased in recent years, the research that defined this issue, identified the contributing factors, and provided evidence on effective individual and system-level solutions has been maturing for several decades. During this interval, the field has evolved through several phases, each influenced not only by an expanding research base but also by changes in the demographic characteristics of the physician workforce and the evolution of the health care delivery system. This perspective summarizes the historical phase of this journey (the “era of distress”), the current state (Well-being 1.0), and the early contours of the next phase based on recent research and the experience of vanguard institutions (Well-being 2.0). The key characteristics and mindset of each phase are summarized to provide context for the current state, to illustrate how the field has evolved, and to help organizations and leaders advance from Well-being 1.0 to Well-being 2.0 thinking. Now that many of the lessons of the Well-being 1.0 phase have been internalized, the profession, organizations, leaders, and individual physicians should act to accelerate the transition to Well-being 2.0.

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Awareness of occupational distress among physicians and efforts to cultivate physician well-being have crescendoed in recent years. This awareness was amplified by the COVID-19 pandemic, which emphasized the foundational importance that well-being plays in physicians' ability to serve patients and for health care organizations to achieve their mission.

Although general awareness of the importance of physician well-being has increased during the past several years, the research that defined this challenge, identified the contributing factors, and provided evidence on effective individual and system-level responses has been maturing for several decades. The maturation of this field has evolved through several phases, each influenced not only by an expanding research base but also by changes in the demographic characteristics of the physician workforce and the evolution of the health care delivery system. This perspective summarizes the historical phase of this journey, current state, and insights regarding where

we need to go next. The summary of each phase is intended to be descriptive rather than a critique and to illustrate how the field of physician well-being has evolved and matured.

THE PAST: THE ERA OF DISTRESS

The historical era, or what I will coin the “era of distress,” was characterized by a lack of awareness, or even deliberate neglect, of physician distress. This phase largely described the field before 2005. Although early data on physician burnout and evidence of its potential repercussions on quality of care had begun to be chronicled,¹⁻⁸ the issue of occupational distress was not a meaningful part of the conversation among the profession or society.

Evidence from other fields that occupational burnout was a system issue originating from problems in the work environment, rather than a weakness in the worker,⁹⁻¹¹ was not widely adopted by the field of medicine. Physicians were selected and winnowed through an arduous training

process and were, in many ways, expected to be superhuman. Medical school and residency training were characterized by a “rites of passage” mindset that subjected physicians to unlimited work hours, often involving many consecutive days on duty with little sleep, rest, or breaks.¹²⁻¹⁴ The evolving science on sleep and human performance was not applied to physicians, who were expected to perform with equal excellence throughout the arc of extended-duty shifts independent of whether they had slept. Physicians worked regardless of whether they were ill, and there were few if any backup systems to provide coverage.¹⁵⁻¹⁷ If physicians were unable to report for work, their colleagues “picked up the slack.” For individual physicians, a desire not to shift the burden to colleagues created a powerful disincentive to attend to personal health needs or illness. Individuals who pointed out the inherent problems of this approach were often marginalized as being “uncommitted” or “weak.”

From the demographic perspective, physicians in this era were predominantly men whose spouses or partners did not have a career of their own. This arrangement allowed the spouses and partners of physicians to devote greater time to “keeping things running on the home front” even though the physician was often absent or devoted little time to these activities.¹⁸⁻²⁰

The practice environment was less consolidated, with fewer physicians a part of large group practices.²¹ Electronic health record (EHR) use was not widespread, and measures of patient satisfaction and quality were not routinely assessed. In part because of the different structural characteristics of health care delivery at the time, physicians had greater autonomy, less oversight, and more control over the practice environment.²²⁻²⁴ Nonetheless, payers and regulators in this era used a “gotcha” approach to auditing payment and documentation that communicated a lack of trust and questioned the integrity of all physicians on the basis of the unprofessional behavior of a few.

At the organizational level, there was limited if any attention to the impact of

administrative decisions or regulations on physicians’ work life. The concept that quality of care was a system characteristic had only begun to take hold.²⁵ If medical errors occurred, the default was to blame the individual. This typically took the form of accusatory “root cause analyses” and morbidity and mortality conferences that subjected junior physicians to humiliation and shaming by supervisors and peers.^{26,27} The message conveyed was that the physician should be all-knowing and able to overcome every deficiency of the health care delivery system to ensure optimal care for patients under any circumstance (ie, physicians were supposed to have deity-like qualities).²⁸ There was inattention to the impact of physicians’ personal well-being on the quality of care they provided patients. Institutional needs were prioritized above patient and clinician needs, and there was no appreciation of the economic implications of physician distress on the financial health of the organization.

During this time, the professional culture of medicine was characterized by a mindset of perfectionism that reinforced the concept of physician as deity.²⁹ This framework discouraged vulnerability with colleagues, encouraged physicians to project that they had everything together (“never let them see you sweat”), and contributed to a sense of isolation.³⁰ To the extent there was dialogue about physician distress, the focus was on individuals rather than the system or practice environment.³¹

Collectively, all these factors contributed to physicians’ professional identity subsuming their human identity. There were no limits on work, and the concept of boundaries between personal and professional life was considered a lack of commitment. To the extent there was attention to “physician wellness,” it centered on the concept of self-care: healthy diet, exercise, stress reduction, and getting enough sleep when not on duty.³²⁻³⁴

THE PRESENT: PHYSICIAN WELL-BEING 1.0

Over time, increasing evidence and research began to change many of these historical paradigms. The “Physician Well-being 1.0”

phase, to some extent, began between 2005 and 2010 and largely continues to present day. This phase has been characterized by knowledge and awareness. National studies began to chronicle the prevalence of distress among medical students,^{35,36} residents,^{5,37-39} and practicing physicians⁴⁰⁻⁴³ as well as trends in distress over time. Publication of these studies in peer-reviewed journals also began to result in headlines in the widely disseminated physician press (ie, “throw-away” journals; Medscape) with occasional pickup by the lay press.^{44,45}

Importantly, the repercussions of physician burnout and other forms of occupational distress (eg, moral injury, fatigue/exhaustion) began to be recognized and to have an impact on conversations within the health care delivery system. The personal repercussions of physician distress (eg, broken relationships, problematic alcohol and substance use,^{46,47} depression and suicide⁴⁸⁻⁵¹) began to establish a moral and ethical case for action. Research also demonstrated the links between physician well-being and quality of care,⁵²⁻⁵⁴ including medical errors,^{5,55-58} patient satisfaction,^{59,60} and professional behavior.^{6,61} This evidence began to bring together a broad coalition of stakeholders concerned with clinician well-being and resulted in expansion of the triple aim of health care (improving patient experience, reducing the cost of care, advancing population health) to a quadruple aim that included clinician well-being.⁶² Other studies established links between physician burnout and clinical productivity⁶³ as well as turnover,^{59,64} which drew attention to the economic costs of physician burnout for health care organizations and society.⁶⁵⁻⁶⁷

The demographic profile of physicians in this era evolved, with gender parity among medical school matriculates and an increasing proportion of women among the practicing physician workforce. More physicians were in 2-career relationships that assumed increased involvement of physicians in home responsibilities.⁶⁸⁻⁷⁰ The historical pattern of professional identity subsuming human identity shifted to a dual role and the need to “balance” personal

and professional identities (ie, work-life balance).^{71,72}

In parallel with these demographic changes, tremendous change occurred in the training and practice environment. Residency and fellowship training transitioned to a competency-based framework, and substantial, new limits on work hours were instituted. Consolidation of medical practices occurred, resulting in a majority of physicians working in employed practice models.²¹ Use of the EHR became widespread with the passage of the Health Information Technology for Economic and Clinical Health Act in 2009, which defined and tied reimbursement to “meaningful use” of EHRs. Although organizations also began to appreciate the administrative impact of the EHR on physicians,⁷³⁻⁷⁶ the response was to provide opportunities for physicians to learn “tips and tricks” to become more efficient in their ability to use suboptimal technology.^{77,78}

In an effort to quantify performance, organizations began to evaluate physicians using a host of new metrics, including measures of patient satisfaction, quality, cost, and productivity.⁷⁹⁻⁸² Physicians became familiar with terms such as relative value unit generation, visit/billing targets, payer mix, service lines, top-box score, and net operating income.⁸³ This contributed to a perception of misalignment between the professional values of physicians and the motives and priorities of their organizations.⁸⁴⁻⁹⁰

At the organizational level, awareness of the system nature of the problem began to develop.^{7,91,92} The response, however, typically remained focused on individual-level solutions⁹³ and centered on providing treatment for physicians in distress (eg, mental health resources, peer support)⁹⁴ as well as cultivating personal resilience through interventions such as mindfulness-based stress reduction.^{95,96} Despite these efforts, state licensure questions and stigma about mental health conditions remained a barrier to seeking help.⁹⁷⁻⁹⁹

Organizations began to view addressing physician distress as a necessary cost center,

but, to the extent they allocated resources to advance physician wellness, they viewed it primarily through a “return on investment” mindset. As they considered addressing defects in the practice environment, organizations viewed the issue as a zero-sum game problem. This mindset suggested that the only way to relieve physicians from excessive workload and administrative burden was to shift this work to others. This framework suggested that system approaches to improve physician well-being would invariably worsen the well-being of other members of the health care team, resulting in inaction.

At the professional level, discussions about a “culture of wellness” began to take hold but tended to focus on a message that encouraged physicians to “take care of themselves and become more resilient.” Physicians began to express frustration that this approach failed to address the underlying problems in the practice environment that were the core issue.^{90,100} Some physicians suggested that health care administrators were the root cause of the problem. That oversimplification was neither accurate nor constructive and led to divisiveness and reciprocal scapegoating (physicians blame administrators; administrators blame physicians)¹⁰¹ that drove a wedge between physicians and the individuals they needed to work with to improve the practice environment.^{84,102,103}

Although physicians argued about what label best described their occupational distress and how to measure it,¹⁰⁴⁻¹⁰⁶ there was agreement that the problem was pervasive and that the practice environment was the issue.¹⁰⁷ Acceptance that distress was widespread created openness for more physicians to discuss occupational challenges. This helped move physicians who were struggling in isolation to realize they were not alone and created greater willingness to discuss distress with colleagues.^{108,109}

THE FUTURE: PHYSICIAN WELL-BEING 2.0

Around 2017, vanguard institutions began to transition to the Well-being 2.0 phase. This transition has been accelerated by the COVID-19 pandemic, which illustrated the

foundational importance of clinician well-being to health care delivery systems and the profound impact that work characteristics have on well-being. The Well-being 2.0 phase is characterized by action and system-based interventions to address the root causes of occupational distress.¹¹⁰⁻¹¹⁵

The focus in this phase shifts away from individuals toward systems, processes, teams, and leaders.^{112,116} The importance of transitioning to the Well-being 2.0 phase was validated by the National Academy of Medicine Action Collaborative on Clinician Well-being and the formal report from the Committee on Systems Approaches to Improve Patient Care by Supporting Clinician Well-being released in late 2019.¹¹⁶

The scapegoating and finger-pointing that divided physicians and administrators in the Well-being 1.0 phase are replaced with a mindset of physician-administrator partnership to create practical and sustainable solutions. There is acceptance that physicians are subject to the same human limitations that affect all human beings,¹¹⁷ with attention to appropriate staffing, breaks, and rest as a part of performance. This phase builds from a foundation that burnout is codified as an occupational syndrome by the World Health Organization¹¹⁸; harmonized definitions for burnout have been established¹⁰⁶; instruments to assess the syndrome have been developed, validated, and crosswalked^{9,119-122}; the neurobiology of occupational distress has been recognized¹²³; and the distinction between burnout and depression has been clarified.^{124,125}

At the organizational level, the mindset in this phase centers on cultivating well-being and preventing occupational distress rather than simply reducing burnout.^{110-112,115} Senior leaders, such as Chief Wellness Officers,^{113,114} are appointed to address system-based drivers, and the infrastructure and resources to enable these leaders to drive organizational change are established.^{111,126} The principles of human factors engineering and design are embraced.¹²⁷⁻¹²⁹ The organizational focus shifts from patient needs to a people focus

that attends to the needs of all individuals in the practice environment as both necessary and mutually beneficial to achieve the desired outcomes. This includes caring for the team and creating an organizational environment that attends to leadership, professionalism, teamwork, just culture, voice and input, and flexibility.^{102,112,127,130} The needs of individual clinicians, including sleep and work-life integration, are acknowledged and supported.^{117,131} In the Well-being 2.0 phase, the organization transitions from viewing wellness as a necessary cost center to viewing it as a core organizational strategy.^{65,110,111} The resource allocation mindset shifts from a return on investment framework to value on investment.

From a demographic perspective, it is recognized that there is an equal mixture of men and women physicians and that most physicians are in 2-career relationships with shared duty for personal and family responsibilities. To enable people to meet these responsibilities, organizations create flexibility in the practice environment that allows physicians to meet both personal and professional obligations. This provides organizations a competitive advantage in recruitment and retention and allows physicians to work full-time and still accommodate personal needs rather than having to work part-time to do so. At the individual level, physicians have transitioned from a mindset of balancing personal and professional identities to one of integrating professional identity and personal identity into a single identity that encompasses human, personal, and professional dimensions.¹³¹

The intersection between diversity, equity, and inclusion to wellness is recognized. Although these are distinct domains, promoting antiracism and addressing threats and system factors that undermine diversity, equity, and inclusion are appreciated as foundational to efforts to advance clinician well-being. Consistent with this premise, more authentic conversations about organizational deficits in these domains occur in concert with action.

At the professional level, the emphasis shifts from a culture of wellness to a culture

of vulnerability^{132,133} and self-compassion,¹³⁴ which acknowledges that physicians are not perfect, that they will make mistakes,³⁰ and that they need to be vulnerable and support one another.^{135,136} Physicians recognize and acknowledge that they may have an Achilles' heel as it pertains to perfectionism and self-criticism and dedicate themselves to developing skills to address these mindsets.^{134,137,138} Supporting colleagues involves creating not only connection but also community involving shared experience, mutual support, and caring for each other.¹⁰⁹ Training programs embrace these principles and work to actively develop these qualities as core dimensions of competence as well as holistically cultivating residents' and fellows' well-being.

CALL TO ACTION

We have now internalized the lessons of the Well-being 1.0 phase, and vanguard institutions have begun to move to the Well-being 2.0 phase (Table). The profession, organizations, leaders, and individual physicians should act to accelerate this transition.

At the broader professional level, physician leaders and professional societies must embrace the physician as human mindset rather than the physician as hero mindset (Figure 1). This mentality should permeate the values transmitted to the next generation of physicians at the earliest phase of training both cognitively and in the structure, design, and expectations of the clinical training process. This will require promulgating the core values of the profession (commitment to patient needs, service, altruism) along with the realities of human limitations and the concept that healthy boundaries, appropriate limits on work, work-life integration, and attention to personal needs are part of professionalism. These values should be embraced by the established members of the profession and care taken to responsibly impart them, along with other core values, to physicians in training. Deliberate efforts to change the professional culture of perfectionism to a culture of excellence in combination with self-compassion and growth mindset must be pursued.

TABLE. Characteristics of the Different Phases of the Physician Well-being Movement

	Era of distress	Well-being 1.0	Well-being 2.0
Awareness state	Lack of awareness Inattention to impact of physician distress on patients	Awareness Appreciation of implications of physician distress and well-being	Action System interventions to prevent distress from affecting patients
Professional culture	Culture of perfection	Culture of wellness	Culture of vulnerability and self-compassion
Professional icon	Physician with deity-like qualities	Physician with hero-like qualities	Physician with human qualities
Training mindset	Rites of passage	Competency-based framework	Organizational environment that attends to both developing competence and holistically caring for clinicians
Organizational mindset	Focus on institutional needs Individuals Self-care Blame individuals for distress (personal weakness)	Focus on patient needs Teams Personal resilience Appreciation that system factors cause distress but promulgate personal solutions	Focus on needs of people (both patients and clinicians) Systems Infrastructure and leadership to advance well-being Address system issues through human factors engineering; evolve characteristics of organizational culture that contribute to distress
Physician-administrator relationship	Mutual neglect	Adversarial: physicians blame administrators for the problems; administrators blame physicians	Physician-administrator partnership to create solutions
Physician mindset	No limits on work	Balance personal and professional life	Integration of personal and professional life including boundaries and healthy limits
Administrator mindset	Disregard of physician distress	Zero-sum game problem	Non-zero-sum game problem
Payers and regulators mindset	No attention to impact that regulations and administrative decisions have on clinicians	Awareness of impact that regulations and administrative decisions have on clinicians	Regulations and administrative decisions influenced by needs of clinicians
Orientation to colleagues	Isolation	Connection	Community (shared experience; care for each other; mutual support)
Approach to individual distress	Neglect/ignore	Treat	Prevent distress and promote professional fulfillment
Approach to technological contributions	Not applicable/lower relevance	Teach physicians tips and tricks to optimize their ability to use suboptimal EHR technology	Develop new models of team-based documentation and order entry Demand better EHR products from vendors Collaborate with EHR and regulatory bodies to limit low-value documentation requirements Track EHR measures to assess efficiency/work burden and proactively address

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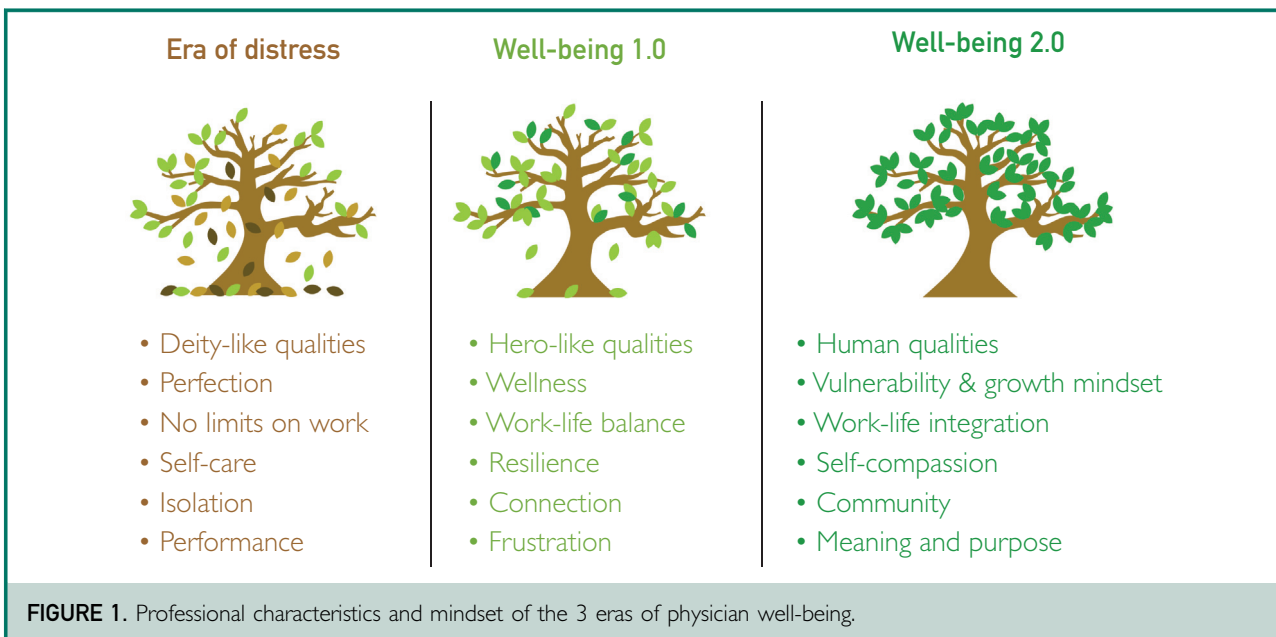
	Era of distress	Well-being 1.0	Well-being 2.0
Scholarship and research focus	Rare descriptive studies focused on individual mental health diagnoses (eg, depression), primarily in resident physicians	Describing the problem and its consequence in medical students, residents, and practicing physicians Limited testing of individual interventions to mitigate distress	Rigorous testing of system-level interventions to mitigate distress and to promote physician well-being
Resource allocation mindset regarding physician wellness	Ignorance	Return on investment Physician well-being is a necessary cost center	Value on investment Physician well-being is a foundational value and core organizational strategy

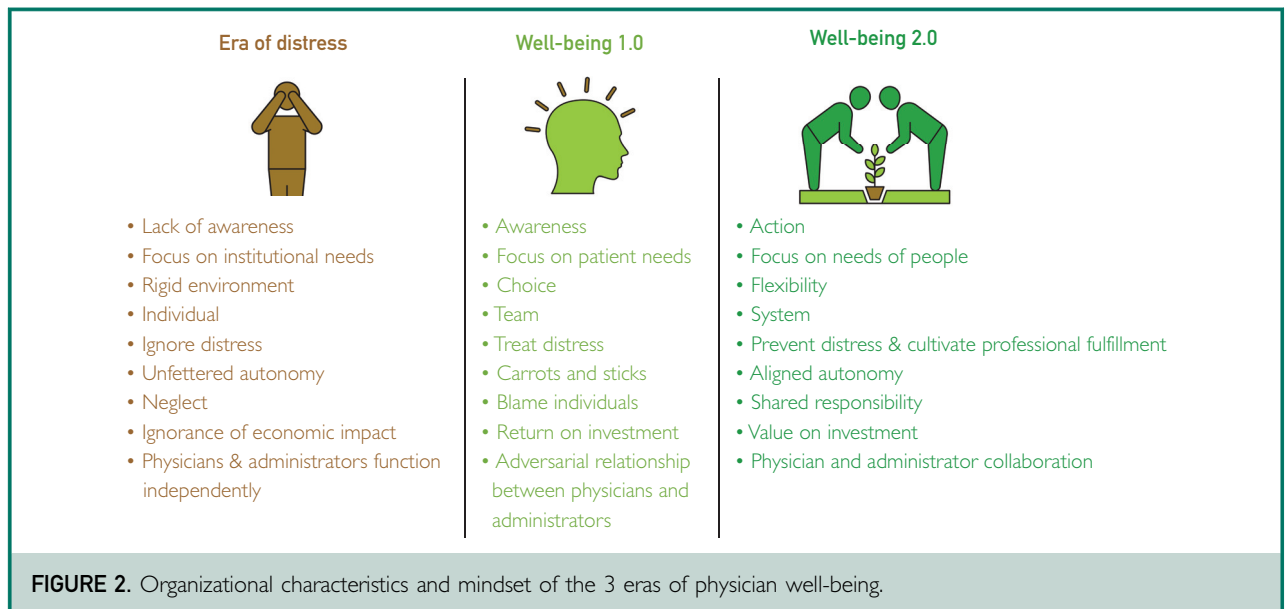
EHR, electronic health record.

At the organizational level, the transition to Well-being 2.0 requires a shift from awareness to action (Figure 2). It requires organizations to establish the leadership, structure, and process necessary to foster sustained progress toward desired outcomes.^{111,113,126} This involves addressing system factors that drive occupational distress and reduce professional fulfillment. It includes attention to the efficiency of the practice environment and dimensions of organizational culture that can promote or inhibit well-being.⁸⁴ Organizations must embrace human factors engineering and pursue system redesign that creates sustainable

workloads, provides coverage when physicians are ill, and incorporates appropriate breaks and rest.¹²⁷⁻¹²⁹ Health care organizations must deepen their commitment to leadership development, increase receptivity to input from health care professionals, make a more authentic commitment to teamwork and optimization of team-based care, and foster an environment built on trust.⁸⁹

For leaders, accelerating the transition to Well-being 2.0 requires attending to the leadership behaviors that cultivate professional fulfillment for individuals and teams.¹⁰² This includes caring about people





always, cultivating individual and team relationships, and inspiring change.¹³⁹ It requires both physicians and administrative leaders to foster a collaborative relationship and to engage in partnership to redesign and implement necessary changes. Working together to develop a shared sense of purpose and to create alignment of organizational and professional values is a foundational step.

At the individual level, the transition to Well-being 2.0 requires mindfully considering how to incorporate self-compassion, boundaries, and self-care alongside other professional values. Physicians must acknowledge that they are subject to normal human limitations and attend to rest, breaks, sleep, personal relationships, and individual needs. They must reject the role of victim, stop blaming administrators, and be part of the solution. This requires casting off the narrative that physicians are powerless to effect change in large health care organizations (learned helplessness), which is not true and is a barrier to creating the system change that is needed. Catalyzing such change requires physicians to work in partnership with operational leaders to improve the practice environment and health care delivery system. Physicians must hold fast to the

belief that it is a privilege to be a physician and that honor requires dedication to others and responsibilities that involve sacrifice. That duty to patients and society, however, has limits. Times of intense work must be offset with appropriate time to recharge. Individual physicians are responsible to learn to simultaneously navigate the challenges of their career and attend to personal needs. This includes cultivating self-compassion and attention to self-care (sleep, exercise, rest) and work-life integration. Individual physicians must also preserve a strong commitment to supporting their colleagues. They should strive to create community with one another, including relationships that enable vulnerability and mutual support.

Roadmaps to facilitate these changes at the profession,⁸⁴ organization,^{110-113,115,127,140-142} leader,¹³⁹ and individual^{7,31,93,95,137} level have been developed, studied, and published. Organizations and individuals that have not started their journey should use these roadmaps as a place to begin. All physicians should work to accelerate progress in their sphere of influence. Continued research and organizational discovery will enhance current knowledge and provide new learnings to help the Well-

being 2.0 phase flourish. As this phase matures, the contours of a yet to be defined Well-being 3.0 phase will inevitably develop.

CONCLUSION

The last 3 decades have been a time of tremendous progress for the field of physician well-being. We have moved from the era of distress, characterized by ignorance and neglect, to an era of awareness and insight. Leading institutions have now transitioned from knowledge to authentic action. Robust research and application by leading institutions has been the key to the maturation of the field. The profession, organizations, leaders, and individual physicians should commit themselves to accelerating this transition to the Well-being 2.0 era. Now is the time for action.

Abbreviations and Acronyms: EHR, electronic health record

Potential Competing Interests: Dr Shanafelt is co-inventor of the Well-being Index instruments (Physician Well-being Index, Nurse Well-being Index, Medical Student Well-being Index, the Well-being Index) and the Participatory Management Leadership Index. Mayo Clinic holds the copyright for these instruments and has licensed them for use outside of Mayo Clinic. Mayo Clinic pays Dr Shanafelt a portion of any royalties received. As an expert on the well-being of health care professionals, Dr Shanafelt frequently gives grand rounds/key note lecture presentations and provides advising for health care organizations. He receives honoraria for some of these activities.

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REFERENCES

- Konrad TR, Williams ES, Linzer M, et al. Measuring physician job satisfaction in a changing workplace and a challenging environment. SGIM Career Satisfaction Study Group. Society of General Internal Medicine. *Med Care*. 1999;37(11):1174-1182.
- Linzer M, Konrad TR, Douglas J, et al. Managed care, time pressure, and physician job satisfaction: results from the physician worklife study. *J Gen Intern Med*. 2000;15(7):441-450.
- Williams ES, Konrad TR, Scheckler WE, et al. Understanding physicians' intentions to withdraw from practice: the role of job satisfaction, job stress, mental and physical health. *Health Care Manage Rev*. 2001;26(1):7-19.
- Linzer M, Visser MR, Oort FJ, Smets EM, McMurray JE, de Haes HC. Predicting and preventing physician burnout: results from the United States and the Netherlands. *Am J Med*. 2001;111(2):170-175.
- Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med*. 2002;136(5):358-367.
- Bellini LM, Baime M, Shea JA. Variation of mood and empathy during internship. *JAMA*. 2002;287(23):3143-3146.
- Shanafelt T, Sloan J, Habermann T. The well-being of physicians. *Am J Med*. 2003;114(6):513-517.
- Linzer M, Baier Manwell L, Mundt M, et al. Organizational climate, stress, and error in primary care: the MEMO study. In: Henriksen K, Battles JB, Marks ES, Lewin DI, eds. *Advances in Patient Safety: From Research to Implementation (Volume 1: Research Findings)*. Rockville, MD: Agency for Healthcare Research and Quality; 2005.
- Maslach C, Jackson S, Leiter M. *Maslach Burnout Inventory Manual*. 3rd ed. Palo Alto, CA: Consulting Psychologists Press; 1996.
- Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. *J Appl Psychol*. 2001;86(3):499-512.
- Leiter MP, Maslach C. Areas of worklife: a structured approach to organizational predictors of job burnout. In: Perrewe P, Ganster DC, eds. *Research in Occupational Stress and Well-being*, Vol 3. Oxford: Elsevier; 2004:91-134.
- Firth-Cozens J. Emotional distress in junior house officers. *Br Med J (Clin Res Ed)*. 1987;295(6597):533-536.
- Hsu K, Marshall V. Prevalence of depression and distress in a large sample of Canadian residents, interns, and fellows. *Am J Psychiatry*. 1987;144(12):1561-1566.
- Stress and impairment during residency training: strategies for reduction, identification, and management. Resident Services Committee, Association of Program Directors in Internal Medicine. *Ann Intern Med*. 1988;109(2):154-161.
- Jena AB, Baldwin DC Jr, Daugherty SR, Meltzer DO, Arora VM. Presenteeism among resident physicians. *JAMA*. 2010;304(11):1166-1168.
- Esbenshade JC, Edwards KM, Esbenshade AJ, et al. Respiratory virus shedding in a cohort of on-duty healthcare workers undergoing prospective surveillance. *Infect Control Hosp Epidemiol*. 2013;34(4):373-378.
- Mitchell KJ, Vayalumkal JV. Sickness presenteeism: the prevalence of coming to work while ill among paediatric resident physicians in Canada. *Paediatr Child Health*. 2017;22(2):84-88.
- Gabbard GO, Menninger RW. The psychology of postponement in the medical marriage. *JAMA*. 1989;261(16):2378-2381.
- Gabbard GO, Menninger RW, Coyne L. Sources of conflict in the medical marriage. *Am J Psychiatry*. 1987;144(5):567-572.
- Myers MF. Overview: the female physician and her marriage. *Am J Psychiatry*. 1984;141(11):1386-1391.
- Kane CK. Updated data on physician practice arrangements: for the first time, fewer physicians are owners than employees. <https://www.ama-assn.org/system/files/2019-07/prp-fewer-owners-benchmark-survey-2018.pdf>. Accessed July 5, 2021.
- McKinlay JB, Stoeckle JD. Corporatization and the social transformation of doctoring. *Int J Health Serv*. 1988;18(2):191-205.
- Light D, Levine S. The changing character of the medical profession: a theoretical overview. *Milbank Q*. 1988;66(suppl 2):10-32.
- McKinlay JB, Marceau LD. The end of the golden age of doctoring. *Int J Health Serv*. 2002;32(2):379-416.

25. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academies Press; 2001.
26. Bechtold ML, Scott S, Nelson K, Cox KR, Dellsperger KC, Hall LW. Educational quality improvement report: outcomes from a revised morbidity and mortality format that emphasized patient safety. *Qual Saf Health Care*. 2007;16(6):422-427.
27. Walker M, Rubio D, Horstman M, Trautner B, Stewart D. Stop the blame game: restructuring morbidity and mortality conferences to teach patient safety and quality improvement to residents. *MedEdPORTAL*. 2016;12:10475.
28. Dowd M. Decoding the God complex. *New York Times*. September 27, 2011.
29. Gabbard GO. The role of compulsiveness in the normal physician. *JAMA*. 1985;254(20):2926-2929.
30. Martinez W, Lehmann LS. The "hidden curriculum" and residents' attitudes about medical error disclosure: comparison of surgical and nonsurgical residents. *J Am Coll Surg*. 2013;217(6):1145-1150.
31. Quill TE, Williamson PR. Healthy approaches to physician stress. *Arch Intern Med*. 1990;150(9):1857-1861.
32. McCue JD, Sachs CL. A stress management workshop improves residents' coping skills. *Arch Intern Med*. 1991;151(11):2273-2277.
33. Frank E, Brogan DJ, Mokdad AH, Simoes EJ, Kahn HS, Greenberg RS. Health-related behaviors of women physicians vs other women in the United States. *Arch Intern Med*. 1998;158(4):342-348.
34. Frank E, Segura C. Health practices of Canadian physicians. *Can Fam Physician*. 2009;55(8):810-811.e7.
35. Dyrbye LN, Thomas MR, Power DV, et al. Burnout and serious thoughts of dropping out of medical school: a multi-institutional study. *Acad Med*. 2010;85(1):94-102.
36. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Acad Med*. 2006;81(4):354-373.
37. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. *JAMA*. 2011;306(9):952-960.
38. Sen S, Kranzler HR, Krystal JH, et al. A prospective cohort study investigating factors associated with depression during medical internship. *Arch Gen Psychiatry*. 2010;67(6):557-565.
39. Mata DA, Ramos MA, Bansal N, et al. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. *JAMA*. 2015;314(22):2373-2383.
40. Shanafelt TD, Balch CM, Bechamps GJ, et al. Burnout and career satisfaction among American surgeons. *Ann Surg*. 2009;250(3):463-471.
41. 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(18):1377-1385.
42. 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(12):1600-1613.
43. Shanafelt TD, West CP, Sinsky C, et al. Changes in burnout and satisfaction with work-life integration in physicians and the general US working population between 2011 and 2017. *Mayo Clin Proc*. 2019;94(9):1681-1694.
44. Ulene V. Physician burnout affects patients too. *Los Angeles Times*. June 7, 2010.
45. Chen P. The widespread problem of doctor burnout. *New York Times*. August 23, 2012.
46. Oreskovich MR, Kaups KL, Balch CM, et al. Prevalence of alcohol use disorders among American surgeons. *Arch Surg*. 2012;147(2):168-174.
47. Oreskovich MR, Shanafelt T, Dyrbye LN, et al. The prevalence of substance use disorders in American physicians. *Am J Addict*. 2015;24(1):30-38.
48. Dyrbye LN, Thomas MR, Massie FS, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med*. 2008;149(5):334-341.
49. van der Heijden F, Dillingh G, Bakker A, Prins J. Suicidal thoughts among medical residents with burnout. *Arch Suicide Res*. 2008;12(4):344-346.
50. Shanafelt TD, Balch C, Dyrbye LN, et al. Special report: suicidal ideation among American surgeons. *Arch Surg*. 2011;146(1):54-62.
51. Menon NK, Shanafelt TD, Sinsky CA, et al. Association of physician burnout with suicidal ideation and medical errors. *JAMA Netw Open*. 2020;3(12):e2028780.
52. Welp A, Meier LL, Manser T. Emotional exhaustion and workload predict clinician-rated and objective patient safety. *Front Psychol*. 2014;5:1573.
53. Tawfik DS, Scheid A, Profit J, et al. Evidence relating health care provider burnout and quality of care: a systematic review and meta-analysis. *Ann Intern Med*. 2019;171(8):555-567.
54. Halbesleben JR, Rathert C. Linking physician burnout and patient outcomes: exploring the dyadic relationship between physicians and patients. *Health Care Manage Rev*. 2008;33(1):29-39.
55. West CP, Huschka MM, Novotny PJ, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. *JAMA*. 2006;296(9):1071-1078.
56. Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Manage Rev*. 2007;32(3):203-212.
57. Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. *Ann Surg*. 2010;251(6):995-1000.
58. West CP, Tan AD, Habermann TM, Sloan JA, Shanafelt TD. Association of resident fatigue and distress with perceived medical errors. *JAMA*. 2009;302(12):1294-1300.
59. Windover AK, Martinez K, Mercer MB, Neuendorf K, Boissy A, Rothberg MB. Correlates and outcomes of physician burnout within a large academic medical center. *JAMA Intern Med*. 2018;178(6):856-858.
60. Welle D, Trockel MT, Hamidi MS, et al. Association of occupational distress and sleep-related impairment in physicians with unsolicited patient complaints. *Mayo Clin Proc*. 2020;95(4):719-726.
61. Dyrbye LN, West CP, Hunderfund AL, et al. Relationship between burnout, professional behaviors, and cost-conscious attitudes among US physicians. *J Gen Intern Med*. 2020;35(5):1465-1476.
62. Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Ann Fam Med*. 2014;12(6):573-576.
63. Shanafelt T, Mungo M, Schmitgen J, et al. Longitudinal study evaluating the association between physician burnout and changes in professional work-effort. *Mayo Clin Proc*. 2016;91(4):422-431.
64. Hamidi MS, Bohman B, Sandborg C, et al. Estimating institutional physician turnover attributable to self-reported burnout and associated financial burden: a case study. *BMC Health Serv Res*. 2018;18(1):851.
65. Shanafelt T, Goh J, Sinsky C. The business case for investing in physician well-being. *JAMA Intern Med*. 2017;177(12):1826-1832.
66. Han S, Shanafelt TD, Sinsky CA, et al. Estimating the attributable cost of physician burnout in the United States. *Ann Intern Med*. 2019;170(11):784-790.

67. Dewa CS, Jacobs P, Thanh NX, Loong D. An estimate of the cost of burnout on early retirement and reduction in clinical hours of practicing physicians in Canada. *BMC Health Serv Res*. 2014;14:254.
68. Linzer M, McMurray JE, Visser MR, Oort FJ, Smets E, de Haes HC. Sex differences in physician burnout in the United States and The Netherlands. *J Am Med Womens Assoc (1972)*. 2002;57(4):191-193.
69. Dyrbye LN, Shanafelt TD, Balch CM, Satele D, Sloan J, Freischlag J. Relationship between work-home conflicts and burnout among American surgeons: a comparison by sex. *Arch Surg*. 2011;146(2):211-217.
70. Dyrbye LN, West CP, Satele D, Sloan JA, Shanafelt TD. Work/home conflict and burnout among academic internal medicine physicians. *Arch Intern Med*. 2011;171(13):1207-1209.
71. Keeton K, Fenner DE, Johnson TR, Hayward RA. Predictors of physician career satisfaction, work-life balance, and burnout. *Obstet Gynecol*. 2007;109(4):949-955.
72. Shanafelt TD, West CP, Poland GA, LaRusso NF, Menaker R, Bahn RS. Principles to promote physician satisfaction and work-life balance. *Minn Med*. 2008;91(12):41-43.
73. 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(11):753-760.
74. Shanafelt TD, Dyrbye LN, Sinsky C, et al. Relationship between clerical burden and characteristics of the electronic environment with physician burnout and professional satisfaction. *Mayo Clin Proc*. 2016;91(7):836-848.
75. Tai-Seale M, Dillon EC, Yang Y, et al. Physicians' well-being linked to in-basket messages generated by algorithms in electronic health records. *Health Aff (Millwood)*. 2019;38(7):1073-1078.
76. Adler-Milstein J, Zhao W, Willard-Grace R, Knox M, Grumbach K. Electronic health records and burnout: time spent on the electronic health record after hours and message volume associated with exhaustion but not with cynicism among primary care clinicians. *J Am Med Inform Assoc*. 2020;27(4):531-538.
77. Dastagiri MT, Chin HL, McNamara M, Poteraj K, Battaglini S, Alstot L. Advanced proficiency EHR training: effect on physicians' EHR efficiency, EHR satisfaction and job satisfaction. *AMIA Annu Symp Proc*. 2012;2012:136-143.
78. Jalota L, Aryal MR, Mahmood M, Wasser T, Donato A. Interventions to increase physician efficiency and comfort with an electronic health record system. *Methods Inf Med*. 2015;54(1):103-109.
79. Berwick DM. The toxicity of pay for performance. *Qual Manag Health Care*. 1995;4(1):27-33.
80. Khullar D, Wolfson D, Casalino LP. Professionalism, performance, and the future of physician incentives. *JAMA*. 2018;320(23):2419-2420.
81. Shrank WH, Rogstad TL, Parekh N. Waste in the US health care system: estimated costs and potential for savings. *JAMA*. 2019;322(15):1501-1509.
82. Schuster MA, Onorato SE, Meltzer DO. Measuring the cost of quality measurement: a missing link in quality strategy. *JAMA*. 2017;318(13):1219-1220.
83. Nurok M, Gewertz B. Relative value units and the measurement of physician performance. *JAMA*. 2019;332(12):1139-1140.
84. Shanafelt TD, Schein E, Minor LB, Trockel M, Schein P, Kirch D. Healing the professional culture of medicine. *Mayo Clin Proc*. 2019;94(8):1556-1566.
85. Agarwal SD, Pabo E, Rozenblum R, Sheritt KM. Professional dissonance and burnout in primary care: a qualitative study. *JAMA Intern Med*. 2020;180(3):395-401.
86. Shanafelt T, Wang H, Leonard M, et al. Assessment of the relationship between leadership behaviors of supervising physicians and personal-organizational values alignment among staff physicians. *JAMA Open*. 2021;4(2):e2035622.
87. Souba W, Way D, Lucey C, Sedmak D, Notestine M. Elephants in academic medicine. *Acad Med*. 2011;86(12):1492-1499.
88. Linzer M, Manwell LB, Williams ES, et al. Working conditions in primary care: physician reactions and care quality. *Ann Intern Med*. 2009;151(1):28-36. W6-9.
89. Linzer M, Poplous S, Prasad K, et al. Characteristics of health care organizations associated with clinician trust: results from the healthy work place study [erratum appears in *JAMA Netw Open*. 2019;2(8):e199999]. *JAMA Netw Open*. 2019;2(6):e196201.
90. Ofri D. The covenant. *Acad Med*. 2019;94(11):1646-1648.
91. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *Lancet*. 2009;374(9702):1714-1721.
92. Sinsky CA, Willard-Grace R, Schutzbank AM, Sinsky TA, Margolius D, Bodenheimer T. In search of joy in practice: a report of 23 high-functioning primary care practices. *Ann Fam Med*. 2013;11(3):272-278.
93. Shanafelt TD, Oreskovich MR, Dyrbye LN, et al. Avoiding burnout: the personal health habits and wellness practices of US surgeons. *Ann Surg*. 2012;255(4):625-633.
94. Shapiro J, Galowitz P. Peer support for clinicians: a programmatic approach. *Acad Med*. 2016;91(9):1200-1204.
95. Krasner MS, Epstein RM, Beckman H, et al. Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *JAMA*. 2009;302(12):1284-1293.
96. Zwack J, Schweitzer J. If every fifth physician is affected by burnout, what about the other four? Resilience strategies of experienced physicians. *Acad Med*. 2013;88(3):382-389.
97. Sansone RA, Wiederman MW, Sansone LA. Physician mental health and substance abuse. What are state medical licensure applications asking? *Arch Fam Med*. 1999;8(5):448-451.
98. Schroeder R, Brazeau CM, Zackin F, et al. Do state medical board applications violate the Americans with Disabilities Act? *Acad Med*. 2009;84(6):776-781.
99. Dyrbye LN, West CP, Sinsky CA, Goeders LE, Satele DV, Shanafelt TD. Medical licensure questions and physician reluctance to seek care for mental health conditions. *Mayo Clin Proc*. 2017;92(10):1486-1493.
100. Shanafelt T. Physician burnout: stop blaming the individual. *NEJM Catalyst*. June 2017. http://contentmanager.med.um.edu/docs/physician_burnout_the_root_of_the_problem_and_the_path_to_solutions/faculty-affairs-documents/physician_burnout_the_root_of_the_problem_and_the_path_to_solutions.pdf?svsn=2. Accessed December 18, 2020.
101. Keller EJ, Giafiglione B, Chrisman HB, Collins JD, Vogelzang RL. The growing pains of physician-administration relationships in an academic medical center and the effects on physician engagement. *PLoS One*. 2019;14(2):e0212014.
102. Shanafelt TD, Gorringer G, Menaker R, et al. Impact of organizational leadership on physician burnout and satisfaction. *Mayo Clin Proc*. 2015;90(4):432-440.
103. Swenson SJ, Kabcenell A, Shanafelt TD. Physician-organization collaboration to reduce physician burnout and promote engagement: the Mayo Clinic experience. *J Healthc Manag*. 2016;61(2):105-127.
104. Talbot S, Dean W. Physicians aren't 'burning out.' They're suffering moral injury. *Boston Globe*. August 5, 2018.
105. Schwenk TL, Gold KJ. Physician burnout—a serious symptom, but of what? *JAMA*. 2018;320(11):1109-1110.
106. Guseva Canu I, Marca SC, Dell'Oro F, et al. Harmonized definition of occupational burnout: a systematic review, semantic analysis, and Delphi consensus in 29 countries. *Scand J Work Environ Health*. 2021;47(2):95-107.

107. Schonfeld IS, Bianchi R, Palazzi S. What is the difference between depression and burnout? An ongoing debate. *Riv Psichiatr.* 2018;53(4):218-219.
108. 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(4):527-533.
109. West CP, Dyrbye LN, Satele D, Shanafelt TD. A randomized controlled trial evaluating the effect of COMPASS (Colleagues Meeting to Promote and Sustain Satisfaction) small group sessions on physician well-being, meaning, and job satisfaction. *J Gen Intern Med.* 2015;30:S89.
110. Shanafelt T, Swensen SJ, Woody J, Levin J, Lillie J. Physician and nurse well-being: seven things hospital boards should know. *J Healthc Manag.* 2018;63(6):363-369.
111. Shanafelt T, Sherilyn S, Springer J, Murphy D, Bohman B, Trockel M. A blueprint for organizational strategies to promote the well-being of health care professionals. *NEJM Catalyst Innovations in Care Delivery.* 2020;1(6).
112. Shanafelt TD, Noseworthy JH. Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. *Mayo Clin Proc.* 2017; 92(1):129-146.
113. Ripp J, Shanafelt T. The health care chief wellness officer: what the role is and is not. *Acad Med.* 2020; 95(9):1354-1358.
114. Shanafelt T, Farley H, Wang H, Ripp J, Network CC. Responsibilities and job characteristics of health care chief wellness officers in the United States. *Mayo Clin Proc.* 2020;95(11):2563-2566.
115. Swensen SJ, Shanafelt TD. *Mayo Clinic Strategies to Reduce Burnout: 12 Actions to Create the Ideal Workplace.* New York: Oxford University Press; 2020.
116. National Academies of Sciences, Engineering, and Medicine; Committee on Systems Approaches to Improve Patient Care by Supporting Clinician Well-being. *Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-being.* Washington, DC: The National Academies Press; 2019.
117. Trockel MT, Menon NK, Rowe SG, et al. Assessment of physician sleep and wellness, burnout, and clinically significant medical errors. *JAMA Netw Open.* 2020;3(12):e2028111.
118. World Health Organization. Burn-out an "occupational phenomenon": International Classification of Diseases. https://www.who.int/mental_health/evidence/burn-out/en/. Accessed August 25, 2020.
119. Kristensen T, Borritz M, Villadsen E, Christensen K. The Copenhagen Burnout Inventory: a new tool for the assessment of burnout. *Work & Stress.* 2005;19(3):192-207.
120. Trockel M, Bohman B, Lesure E, et al. A brief instrument to assess both burnout and professional fulfillment in physicians: reliability and validity, including correlation with self-reported medical errors, in a sample of resident and practicing physicians. *Acad Psychiatry.* 2018;42(1):11-24.
121. Brady KJS, Ni P, Sheldrick RC, et al. Describing the emotional exhaustion, depersonalization, and low personal accomplishment symptoms associated with Maslach Burnout Inventory subscale scores in US physicians: an item response theory analysis. *J Patient Rep Outcomes.* 2020;4(1):42.
122. Brady KJS, Ni P, Carlasare L, et al. Establishing crosswalks between common measures of burnout in US physicians. *J Gen Intern Med.* 2021 Mar 31. <https://doi.org/10.1007/s11606-021-06661-4>.
123. Amsten AFT, Shanafelt T. Physician distress and burnout: the neurobiological perspective. *Mayo Clin Proc.* 2021;96(3):763-769.
124. Menon NK, Shanafelt TD, Sinsky CA, et al. Differences between physician burnout and depression: associations with suicidal ideation and medical errors. *JAMA Open.* 2020; 3(12): 2028780.
125. Summers RF. The elephant in the room: what burnout is and what it is not. *Am J Psychiatry.* 2020;177(10):898-899.
126. Shanafelt T, Trockel M, Ripp J, Murphy ML, Sandborg C, Bohman B. Building a program on well-being: key design considerations to meet the unique needs of each organization. *Acad Med.* 2019;94(2):156-161.
127. Privitera MB. Human Factors/Ergonomics (HFE) in leadership and management: organizational interventions to reduce stress in healthcare delivery. *Health.* 2020;12(9):1262-1278.
128. Xie A, Carayon P. A systematic review of human factors and ergonomics (HFE)-based healthcare system redesign for quality of care and patient safety. *Ergonomics.* 2015;58(1):33-49.
129. Carayon P, Salwei ME. Moving toward a sociotechnical systems approach to continuous health information technology design: the path forward for improving electronic health record usability and reducing clinician burnout. *J Am Med Inform Assoc.* 2021;28(5):1026-1028.
130. Goitein L. Clinician-directed performance improvement: moving beyond externally mandated metrics. *Health Aff (Millwood).* 2020;39(2):264-272.
131. Karakash S, Solone M, Chavez J, Shanafelt T. Physician work-life integration: challenges and strategies for improvement. *Clin Obstet Gynecol.* 2019;62(3):455-465.
132. Martin A, Chilton J, Paasche C, et al. Shared living experiences by physicians have a positive impact on mental health attitudes and stigma among medical students: a mixed-methods study. *J Med Educ Curric Dev.* 2020;7: 2382120520968072.
133. Kirch DG. Physician mental health: my personal journey and professional plea. *Acad Med.* 2021;96(5):618-620.
134. Trockel M, Sinsky C, West CP, et al. Self-valuation challenges in the culture and practice of medicine and physician well-being. *Mayo Clin Proc.* 2021;96(8):2123-2132.
135. Brower KJ. Professional stigma of mental health issues: physicians are both the cause and solution. *Acad Med.* 2021; 96(5):635-640.
136. Coverdale J, West CP, Roberts LW. Courage and mental health: physicians and physicians-in-training sharing their personal narratives. *Acad Med.* 2021;96(5):611-613.
137. Trockel MT, Hamidi MS, Menon NK, et al. Self-valuation: attending to the most important instrument in the practice of medicine. *Mayo Clin Proc.* 2019;94(10):2022-2031.
138. Lemaire JB, Wallace JE. How physicians identify with predetermined personalities and links to perceived performance and wellness outcomes: a cross-sectional study. *BMC Health Serv Res.* 2014;14:616.
139. Shanafelt TD, Trockel M, Rodriguez A, Logan D. Wellness-centered leadership: equipping healthcare leaders to cultivate physician well-being and professional fulfillment. *Acad Med.* 2021;96(5):641-651.
140. West CP, Dyrbye LN, Erwin PJ, Shanafelt TD. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *Lancet.* 2016;388(10057):2272-2281.
141. DeChant PF, Acs A, Rhee KB, et al. Effect of organization-directed workplace interventions on physician burnout: a systematic review. *Mayo Clin Proc Innov Qual Outcomes.* 2019; 3(4):384-408.
142. American Medical Association. Joy in medicine health system recognition program. <https://www.ama-assn.org/system/files/2020-10/joy-award-brochure.pdf>. Accessed June 4, 2021.